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April 14, 2025

Ms. Mary Alice Evans, Director
State of Hawai‘i
Office of Planning and Sustainable Development
Environmental Review Program
235 South Beretania Street, Room 702
Honolulu, Hawai‘i 96813

Subject: Army Training Land Retention at Pōhakuloa Training Area
Final Environmental Impact Statement
(3) 4-4-015:008; (3) 4-4-016:005; (3) 7-1-004:007
Pōhakuloa Training Area, Island of Hawai‘i, Hawai‘i

Dear Ms. Evans:

On behalf of the Applicant, United States (U.S.) Army Garrison-Hawaii (USAG-HI) and U.S. Army Installation Management Command (IMCOM), G70 is submitting the Final Environmental Impact Statement (EIS) for Army Training Land Retention at Pōhakuloa Training Area located on the Island of Hawai‘i, State of Hawai‘i, at the subject referenced TMK parcels, to the State Office of Planning and Sustainable Development, Environmental Review Program, for publication in the April 23, 2025 edition of *The Environmental Notice* (*TEN*). In accordance with Hawai‘i Administrative Rules (HAR) §11-200.1-5(e)(6)(C), the Final EIS document package has been simultaneously filed with the Board of Land and Natural Resources (BLNR), the accepting authority, for acceptance pursuant to HAR §11-200.1-28.

This Final EIS consists of three volumes and has been prepared in compliance with the Hawai‘i Environmental Impact Statement rules (Hawai‘i Revised Statutes §343) and HAR §11-200.1.

Should you have any additional questions, please contact Ethan McKown, Project Manager, at (808) 523-5866.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal

cc: Board of Land and Natural Resources

From: webmaster@hawaii.gov
To: DBEDT OPSD Environmental Review Program
Subject: New online submission for The Environmental Notice
Date: Tuesday, April 15, 2025 6:03:23 PM

Action Name

Army Training Land Retention at Pōhakuloa Training Area

Type of Document/Determination

Final environmental impact statement (FEIS)

HRS §343-5(a) Trigger(s)

- (1) Propose the use of state or county lands or the use of state or county funds
- (2) Propose any use within any land classified as a conservation district

Judicial district

Hāmākua, Hawai‘i

Tax Map Key(s) (TMK(s))

(3) 4-4-015:008; (3) 4-4-016:005; (3) 7-1-004:007

Action type

Applicant

Other required permits and approvals

Numerous

Discretionary consent required

Use of State Land

Agency jurisdiction

State of Hawai‘i

Approving agency

DLNR Land Division

Agency contact name

Russell Tsuji

Agency contact email (for info about the action)

dlnr.land@hawaii.gov

Email address for receiving comments

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Agency contact phone

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Agency address

1151 Punchbowl Street, Room 220
Honolulu, HI 96813
United States
Map It

Accepting authority

State of Hawai‘i Board of Land and Natural Resources

Applicant

U.S. Army Garrison-Hawaii & U.S. Army Installation Management Command

Applicant contact name

Matthew Foster

Applicant contact email

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Applicant contact phone

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Applicant address

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United States
Map It

Is there a consultant for this action?

Yes

Consultant

Group 70 International

Consultant contact name

Jeff Overton

Consultant contact email

ATLR-PTA-EIS@g70.design

Consultant contact phone

(808) 526-5866

Consultant address

111 S. King Street
Suite 170
Honolulu, HI 96813
United States
Map It

Action summary

The Pōhakuloa Training Area (PTA) on Hawai‘i Island encompasses approximately 132,000 acres of U.S. Government-owned and State-owned land. The U.S. Government leases approximately 23,000 acres from the State of Hawai‘i. The lease expires on August 16, 2029. The Army proposes to retain up to 22,750 acres of State-owned

land in support of continued military training. The retention will preserve maneuver area, provide austere environment training, enable access between major parcels of U.S. Government-owned land, retain infrastructure investments, allow for future modernization, and maximize use of the impact area. Loss of this land would impact the ability of the Army to meet training requirements and its mission of readiness. The Proposed Action is a real estate action that would enable continuation of ongoing activities. It does not include construction or changes in ongoing activities. Revisions between the Second Draft EIS and Final EIS are generally in Volume 1. If you are experiencing any ADA compliance issues with the above project, please contact U.S. Army Garrison-Hawaii Directorate of Public Works at usarmy.hawaii.nepa@army.mil or 808-656-6821.

Attached documents (signed agency letter & EA/EIS)

- 2022-04-08-HA-DEIS-Army-Training-Land-Retention-at-PTA-Scoping-Meeting-Oral-Comments2.mp3
- ERP-FEIS-Publication_OPSD-Transmittal2.pdf
- BLNR-Transmittal-Letter-EPA_2504032.pdf
- ATLR-PTA_Final-EIS_HEPA_Vol32.pdf
- ATLR-PTA_Final-EIS_HEPA_Vol22.pdf
- ATLR-PTA_Final-EIS_HEPA_Vol12.pdf

ADA Compliance certification (HRS §368-1.5):

The authorized individual listed below acknowledges that they retain the responsibility for ADA compliance and are knowingly submitting documents that are unlocked, searchable, and may not be in an ADA compliant format for publication. The project files will be published without further ADA compliance changes from ERP, with the following statement included below the project summary in The Environmental Notice: "If you are experiencing any ADA compliance issues with the above project, please contact (agency submitting the project and phone and/or email)."

Shapefile

- The location map for this Final EIS is the same as the location map for the associated Draft EIS.

Action location map

- ATLRPTAEIS_StateOwnedLands2.zip

Authorized individual

Ethan McKown

Email

ATLR-PTA-EIS@g70.design

Phone

(808) 526-5866

Authorization

- The above named authorized individual hereby certifies that he/she has the authority to make this submission.

ARMY TRAINING LAND RETENTION AT PŌHAKULOA TRAINING AREA

FINAL ENVIRONMENTAL IMPACT STATEMENT
VOLUME I: EIS DOCUMENT

PŌHAKULOA TRAINING AREA, ISLAND OF HAWAIʻI, HAWAIʻI

Photo: G70

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 W9128A19D0004

APRIL 2025

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ARMY TRAINING LAND RETENTION AT PŌHAKULOA TRAINING AREA

FINAL
ENVIRONMENTAL IMPACT STATEMENT

VOLUME I: EIS DOCUMENT

PŌHAKULOA TRAINING AREA, ISLAND OF HAWAIʻI, HAWAIʻI

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 W9128A19D0004

APRIL 2025

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.

~~SECOND DRAFT~~ FINAL ENVIRONMENTAL IMPACT STATEMENT
FOR THE
ARMY TRAINING LAND RETENTION AT PŌHAKULOA TRAINING AREA
ISLAND OF HAWAI'I, 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 ~~Second Draft~~ Final EIS and all ancillary documents were prepared under my direction or supervision and 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.

REVIEWED BY:

PHI L. DANG
Chief, Environmental Division
U.S. Army Garrison-Hawaii
Directorate of Public Works

SUBMITTED BY:

RHONDA L. SUZUKI
Director
U.S. Army Garrison-Hawaii
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APPROVED BY:

TIMOTHY L. ALVARADO
Lieutenant Colonel
U.S. Army Garrison-Pōhakuloa Training Area
Commanding

APPROVAL DATE:

28 MAR 2025

RACHEL D. SULLIVAN
Colonel
U.S. Army Garrison-Hawaii
Commanding

03 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 Hawaiʻi Board of Land and Natural Resources
Proposed Action:	Army Training Land Retention at Pōhakuloa Training Area
Planning/Environmental Consultant:	Group 70 International, Inc. dba G70 111 S. King St., Suite 170 Honolulu, HI 96813 Contact: Jeff Overton, AICP, LEED AP Phone: (808) 523-5866 Email: ATLR-PTA-EIS@g70.design
Project Location:	Pōhakuloa Training Area, Island of Hawaiʻi, State of Hawaiʻi
Judicial District:	Hāmākua & North Kona
Tax Map Key(s):	(3) 4-4-015:008; (3) 4-4-016:005; (3) 7-1-004:007
Land Area:	Approximately 22,750 acres of State-owned Land
Location:	Pōhakuloa Training Area
State Land Use District:	Conservation District
County of Hawaiʻi Zoning:	Open – Open District FR – Forest Reserve
Special Management Area (SMA):	Not within the SMA
Flood Zone:	Zone X – Outside the 0.2 percent annual chance floodplain
Chapter 343, HRS Trigger(s):	(1) Propose the use of state or county lands (2) Propose any use within any land classified as a conservation district
Permits Required:	See Table 1-1

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9.0 Glossary

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Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
ACM	asbestos-containing material
AFFF	aqueous film forming foam
AGL	above ground level
AHA	ammunition holding area
ALISH	Agricultural Lands of Importance to the State of Hawai'i
amsl	above mean sea level
AOR	area of responsibility
APZ	Accident Potential Zone
AR	Army Regulation
Army	U.S. Army
ASP	ammunition supply point
ASR	Area of Species Recovery
AST	aboveground storage tank
ATC	Air Traffic Control
BAAF	Bradshaw Army Airfield
BAX	Battle Area Complex
bgs	below ground surface
BLNR	Board of Land and Natural Resources
BMP	best management practice
BO	Biological Opinion
°C	degrees Celsius
CAB	Clean Air Branch
CAS	close air support
CDUP	Conservation District Use Permit
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFA	controlled firing area
CFR	Code of Federal Regulations
CIA	Cultural Impact Assessment
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COC	contaminant of concern
COMP	Court-Ordered Management Plan
CRB	coconut rhinoceros beetle
CRM	cultural resources management
CWA	Clean Water Act
CWRM	Commission on Water Resource Management
CZ	Clear Zone
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
dB	decibel
dBA	A-weighted decibel
dBP	Peak Sound Level
DDESB	DoD Explosives Safety Board
DHHL	Department of Hawaiian Home Lands
DKI	Daniel K. Inouye
DLNR	Department of Land and Natural Resources
DNL	day-night average sound level
~~DMM~~	~~discarded military munitions~~
DoD	Department of Defense
DoDD	Department of Defense Directive
DoDI	Department of Defense Instruction
DOFAW	Division of Forestry and Wildlife
DOH	Department of Health
~~DOT~~	~~Department of Transportation~~
DPW	Directorate of Public Works

DRO	diesel range organics
DU	depleted uranium
EA	Environmental Assessment
EAL	Environmental Action Level
ECOP	Environmental Condition of Property
EIS	Environmental Impact Statement
EISPN	Environmental Impact Statement Preparation Notice
EMS	electromagnetic spectrum
EO	Executive Order
EPC	Exposure Point Concentration
ERL	exposure reference level
ERP	Environmental Review Program
ESA	Endangered Species Act
ESQD	explosive safety quantity-distance
°F	degrees Fahrenheit
FAA	Federal Aviation Administration
FARP	forward arming and refueling point
FEMA	Federal Emergency Management Agency
FIP	Facilities Improvement Program
FIRM	Flood Insurance Rate Map
FP	firing point
FR	*Federal Register*
GHG	greenhouse gas
GIS	geographic information system
Hāmākua CDP	Hāmākua Community Development Plan
HAR	Hawaiʻi Administrative Rules
HCF	Honolulu Control Facility
HDOT	Hawaiʻi Department of Transportation
HELCO	Hawaiʻi Electric Light Company
HEPA	Hawaiʻi Environmental Policy Act
HIARNG	Hawaii Army National Guard
HRS	Hawaiʻi Revised Statutes
ICRMP	Integrated Cultural Resources Management Plan
ICUZ	Installation Compatible Use Zone
ID	Infantry Division
IEEE	Institute of Electrical and Electronics Engineers
IFR	Instrument Flight Rules
IMC	instrument meteorological conditions
INRMP	Integrated Natural Resources Management Plan
IPMP	Installation Pest Management Plan
ITAM	Integrated Training Area Management
ITO	Hilo International Airport
IWFMP	Integrated Wildland Fire Management Plan
KMA	Keamuku Maneuver Area
KOA	Ellison Onizuka Kona International Airport
kW	kilowatt
LBP	lead-based paint
LFA	little fire ant
LOS	Level of Service
LRAM	Land Rehabilitation and Maintenance
LTA	Local Training Area
LUPZ	Land Use Planning Zone
MARFORPAC	Marine Corps Forces, Pacific
MBTA	Migratory Bird Treaty Act
MC	munitions constituents
MEC	munitions and explosives of concern
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MOUT	military operations on urban terrain

mph	miles per hour
MSL	mean sea level
MTA	Major Training Area
NAAQS	national ambient air quality standards
NAGPRA	Native American Graves Protection and Repatriation Act
NDS	National Defense Strategy
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHOs	Native Hawaiian Organizations
NHPA	National Historic Preservation Act
NMS	National Military Strategy
NNL	National Natural Landmark
NOA	Notice of Availability
NOI	Notice of Intent
NOTAM	Notice to Airmen
NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRP	Natural Resources Program
NSS	National Security Strategy
O_3	ozone
OHA	Office of Hawaiian Affairs
OSD	Office of the Secretary of Defense
PA	programmatic agreement
PACAF	U.S. Pacific Air Forces
PACFLT	U.S. Pacific Fleet
PCB	polychlorinated biphenyl
PFAS	Per- and polyfluoroalkyl substances
PIFWO	Pacific Island Fish and Wildlife Office
PIP	Pōhakuloa Implementation Plan
P.L.	Public Law
$PM_{2.5}$	particulate matter measured less than or equal to 2.5 microns in diameter
PM_{10}	particulate matter measured less than or equal to 10 microns in diameter
POL	petroleum, oils, and lubricants
PTA	Pōhakuloa Training Area
~~RAM~~	~~Rapid Assessment Monitoring~~
RCMP	Range Complex Master Plan
RCRA	Resource Conservation and Recovery Act
REPI	Readiness and Environmental Protection Integration
ROI	region of influence
ROD	Record of Decision
RPMP	Real Property Master Plan
RSL	Regional Screening Level
SARA	Superfund Amendments and Reauthorization Act
SDZ	Surface Danger Zone
SDWA	Safe Drinking Water Act
SDWB	Safe Drinking Water Branch
SHPD	State Historic Preservation Division
SMA	Special Management Area
SO_2	sulfur dioxide
SONMP	Statewide Operational Noise Management Plan
SOP	standard operating procedures
SPCCP	Spill Prevention, Control, and Countermeasures Plan
State	State of Hawai‘i
SUA	special use airspace
SVFR	Special Visual Flight Rules
SVOH	Scoping Virtual Open House
TA	training area

TCP	Traditional Cultural Properties
TMK	Tax Map Key
TMT	Thirty Meter Telescope
TPH	total petroleum hydrocarbons
TSCA	Toxic Substances Control Act
UAV	unmanned aerial vehicle
UH	University of Hawai‘i
UIC	Underground Injection Control
U.S.	United States
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USAG-HI	U.S. Army Garrison-Hawaii
USAG-PTA	U.S. Army Garrison, Pōhakuloa
USAPHC	U.S. Army Public Health Command
USARHAW	U.S. Army Hawaii
USARPAC	U.S. Army Pacific
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USINDOPACOM	U.S. Indo-Pacific Command
USMC	U.S. Marine Corps
USN	U.S. Navy
UST	underground storage tank
UXO	unexploded ordnance
VFR	Visual Flight Rules
VMC	visual meteorological conditions
WCB	weed control buffer

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 22,750 acres of the 23,000 acres of State-owned land at Pōhakuloa Training Area (PTA) to support continued military training. The 22,750 acres does not include the 250 acres of land administered by Department of Hawaiian Home Lands (DHHL). This EIS was prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA; 42 United States Code [U.S.C.] Section 4321 *et seq*.); the 1978 version of the Council on Environmental Quality NEPA regulation, as amended (40 Code of Federal Regulations [CFR] Parts 1500–1508); applicable Army requirements, including the Army NEPA regulation (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 content requirements under the NEPA and HEPA regulations and identifies the EIS section in which that content is provided.

> 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.

The Army published a Notice of Intent (NOI) on September 4, 2020, held a public Scoping Virtual Open House on September 23, 2020, initiated the Draft EIS public review period on April 8, 2022, initiated a Second Draft EIS public review period on April 19, 2024, and will publish the availability of the Final EIS in the *Federal Register* (FR) and Environmental Review Program's bulletin, *The Environmental Notice*. See **Section ES.7** for details regarding public participation. ~~On September 4, 2020, the Army published a Notice of Intent (NOI) for the EIS in the *Federal Register* (FR), and on September 8, 2020, the HEPA EIS Preparation Notice was published in the Office of Environmental Quality Control (now Environmental Review Program) bulletin *The Environmental Notice*. Both notices informed the public of the 40-day scoping period that ended on October 14, 2020. On September 23, 2020, an amended NOI was published in the FR canceling in-person comment stations to comply with the *Interim Army Procedures for National Environmental Policy Act (NEPA)* and Hawai'i emergency rules and proclamations for COVID-19 public gathering restrictions. A public Scoping Virtual Open House was created to provide the public an opportunity to view and listen, through an on-line platform, to prerecorded presentations, review project documents, and to submit oral comments via telephone.~~

~~The public notice for scoping was published in three newspapers on three separate dates and approximately 100 stakeholders were mailed postcards. Nineteen State agency divisions attended a Virtual Agency Scoping Meeting on September 21, 2020. A 5-hour public Scoping Virtual Open House was conducted on September 23, 2020; 36 oral comments were received. During the 40-day scoping period, 417 substantive comments covering 24 topics were received. The Draft EIS public review period was~~

~~initiated through publication of a notice of availability (NOA) in the FR, and in *The Environmental Notice* on April 8, 2022. This initiated a 60-day public comment period that ended on June 7, 2022. Draft EIS public meetings were held on April 25, 2022, in Hilo, Hawai'i and on April 26, 2022, in Waimea, Hawai'i; a phone line was established for oral comments for those unable to attend in-person from 12:01 AM on April 24, 2022, through 11:59 PM on April 26, 2022.~~

~~This Second Draft EIS presents a refined Proposed Action from that published in the PTA Draft EIS (April 2022). Rather than seek to retain up to 23,000 acres, the full acreage currently leased by the U.S. Government at PTA, the acreage has been reduced by approximately 250 acres of State-owned land administered by the DHHL. Based on comments on the Draft EIS from agencies and the public, the Army is no longer considering retention of these 250 acres.~~

ES.2 Location

PTA encompasses approximately 132,000 acres between Mauna Loa, Mauna Kea, and Hualālai mountains on the island of Hawai'i. The Army leases approximately 23,000 acres of land within PTA from the State of Hawai'i (State). The lease began in 1964 and extends 65 years. The State-owned land entirely surrounds the 758-acre U.S. Government-owned parcel that houses the Cantonment and Bradshaw Army Airfield, and provides access among the Cantonment and Bradshaw Army Airfield and two other U.S. Government-owned parcels (i.e., approximately 25,000 acres containing the Ke'āmuku parcel to the north and 84,000 acres containing the impact area and training ranges to the south). In preparation for this EIS, the Army obtained Preliminary Title Reports and completed a metes and bounds survey for the State-owned land; completed an Environmental Condition of Property (Phase I and II) and Analysis of Alternatives Study; and obtained a Major Land Acquisition Waiver from the Under Secretary of Defense for Acquisition and Sustainment.

The geographical location of Hawai'i is a strategic one for national defense and rapid deployment of military forces, and the island 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. PTA is the only Army Major Training Area in Hawai'i, making it the Army's primary ground maneuver tactical training area supporting home-station, joint, and multinational training in the State. PTA can accommodate collective live-fire and maneuver training above the company level (i.e., battalion and brigade). No other training area in Hawai'i can accommodate collective live-fire training at larger than company size. Additionally, PTA is the largest contiguous live-fire range and maneuver training area in the State. It is the only training area where U.S. Army Hawaii (USARHAW) units can use weapons systems at maximum capabilities and complete all their training requirements without leaving Hawai'i.

ES.3 Scope

The scope of this EIS includes a description of the Proposed Action, alternatives considered, existing conditions, and 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 land. Current ongoing Army environmental monitoring and conservation activities conducted within the State-owned land were previously analyzed in separate NEPA documents. **Appendix E** lists the NEPA documents completed, as well as best management practices

(BMPs), standard operating procedures (SOPs), management measures, and mitigation measures used by the Army at PTA.

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 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 Comprehensive Environmental Response, Compensation, and Liability Act process has its own decision-making and remedy-selection procedures and is not subject to NEPA analysis.

NEPA and HEPA require the action's relationship to environmental reviews, laws, and Executive Orders 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 National Historic Preservation Act; the Endangered Species Act (ESA); Coastal Zone Management Act (CZMA); HRS Chapter 6E, Historic Preservation; and HAR Chapter 13-5, Conservation District; and HRS Section 205-6, Land Use Commission. Applicable State regulations for ongoing activities are also briefly discussed, and include Resource Conservation and Recovery Act (RCRA) HRS Chapter 195D, Conservation of Aquatic Life, Wildlife, and Land Plants; HRS Chapter 342E, Nonpoint Source Pollution Management and Control; and HAR Chapter 11-62, Wastewater Systems Community Noise Control.

Relevant NEPA Documents. Current ongoing activities conducted within the State-owned land at PTA 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 at PTA. **Appendix E** provides additional details on these NEPA documents, as well as BMPs, SOPs, management measures, and mitigation measures used by the Army at PTA.

Table ES-1: NEPA Documents for Training and Infrastructure within PTA

Training/Infrastructure	Applicable NEPA Document
Battle Area Complex	Environmental Impact Statement: Transformation of the 2nd Brigade, 25th Infantry Division (L) to a Stryker Brigade Combat Team in Hawaii, 2004
Military Operations on Urban Terrain	Environmental Assessment: Development and Use of Military Training Facilities on Pohakuloa Training Area, Hawaii, 2009
Ammunition Supply Point	Environmental Impact Statement: Transformation of the 2nd Brigade, 25th Infantry Division (L) to a Stryker Brigade Combat Team in Hawaii, 2004 Record of Environmental Consideration Unnumbered, July 14, 2014
Ammunition Holding Area	Environmental Impact Statement: Transformation of the 2nd Brigade, 25th Infantry Division (L) to a Stryker Brigade Combat Team in Hawaii, 2004 Record of Environmental Consideration 938, July 5, 2006 Record of Environmental Consideration 944, July 5, 2006
Cooper Air Strip	Record of Environmental Consideration 2700, Aug 19, 2010 Record of Environmental Consideration Unnumbered, December 10, 2009

Table ES-1: NEPA Documents for Training and Infrastructure within PTA	
Training/Infrastructure	**Applicable NEPA Document**
Firing Point	Environmental Impact Statement: Transformation of the 2nd Brigade, 25th Infantry Division (L) to a Stryker Brigade Combat Team in Hawaii, 2004 Record of Environmental Consideration 4522, March 13, 2019 Record of Environmental Consideration 4527, September 13, 2019 Record of Environmental Consideration 4528, October 21, 2019 Record of Environmental Consideration 4534, August 4, 2020 Record of Environmental Consideration 4610, April 30, 2020
Portion of Range 14 in Training Area 9	Environmental Impact Statement: Transformation of the 2nd Brigade, 25th Infantry Division (L) to a Stryker Brigade Combat Team in Hawaii, 2004 ~~Not available~~
Landing Zone	Environmental Impact Statement: Basing of MV-22 and H-1 Aircraft in Support of III MEF Elements in Hawaii, 2012
Drop Zone	Not available
Forward Arming and Refueling Point	Environmental Impact Statement: Basing of MV-22 and H-1 Aircraft in Support of III MEF Elements in Hawaii, 2012
Forward Operating Base	Environmental Assessment: Development and Use of Military Training Facilities on Pohakuloa Training Area, Hawaii, 2009
Helicopter Dip Tank	Programmatic Environmental Assessment: Implementation of the Integrated Wildland Fire Management Plan, 2006 Record of Environmental Consideration Unnumbered, July 24, 2007
Roads and Training Trails	Environmental Impact Statement: Transformation of the 2nd Brigade, 25th Infantry Division (L) to a Stryker Brigade Combat Team in Hawaii, 2004 Programmatic Environmental Assessment: Implementation of the Integrated Wildland Fire Management Plan, 2006 Environmental Assessment: Use of M1117 Armored Security Vehicles at Army Installations in Hawaii, 2008
Firebreaks/Fuel Breaks	Not available
Conservation Fence Units	Programmatic Environmental Assessment: Construction of Large-Scale Fence Units, 2006

Note: See **Appendix E** for additional information.

Permits and Approvals. ~~NEPA and HEPA require that the action's relationship to environmental reviews, laws, and Executive Orders 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 (ESA); Coastal Zone Management Act (CZMA); National Historic Preservation Act (NHPA); HRS Chapter 6E, Historic Preservation; HAR Chapter 13-5, Conservation District; and HRS Section 205-6, 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 NEPA Section 107(a)(2)(D, E); 32 CFR Part 651, Appendix E (b)(2); ~~at~~ 40 CFR Section 1502.25(b); and HAR Section 11-200.1-24(k);~~,~~ a list of all considered and potential permits, licenses, authorizations, and approvals 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 considered and 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.

Table ES-2: Considered and Potential Permits, Licenses, Authorizations, and Approvals for the Proposed Action and Ongoing Activities

Permit, License, Authorization, or Approval	Agency	Status
Federal Requirements Considered for the Proposed Action		
NHPA, Section 106 *36 CFR Part 800*	State Historic Preservation Office/Division of Land and Natural Resources (DLNR) State Historic Preservation Division (SHPD)	Consultation not required for Proposed Action (EIS **Sections 1.4.2** and **5.3.1**).
ESA *16 U.S.C. Section 1531 et seq.*	U.S. Fish and Wildlife Service (USFWS)	Consultation not required for Proposed Action (EIS **Section 3.3.4.3**).
Native Endangered & Threatened Species Recovery Endangered & Threatened Plants (TE40123A-3)	USFWS	Issued (EIS **Section 3.3.4**)
Federal Fish and Wildlife Permit—Scientific Collection with Import / Export (MB95880B)	USFWS	Issued (EIS **Section 3.3.4**)
National Wildlife Refuge System Research and Monitoring Special Use Permits (121516-21020-G, 12516-22023-R, and 12516-23020-R)	USFWS	Issued (EIS **Section 3.3.4**)
State Requirements Considered for the Proposed Action		
Coastal Zone Management Act *16 U.S.C. Section 1531 et seq.* *HRS Chapter 205A*	State Office of Planning and Sustainable Development	To be completed prior to the Record of Decision (EIS **Sections 1.4.2** and **5.3.2**).~~The Army will apply for consistency review after publication and comment to this Second Draft EIS (EIS **Sections 1.4.2** and **5.3.2**).~~
Hawai'i Historic Preservation Review *HRS ~~Chapter~~ Section 6E-42~~8~~* and *HAR Chapter 13-284~~75~~*	State DLNR SHPD	Compliance with HRS Chapter 6E would follow the EIS process (EIS **Sections 1.4.2** and **5.3.2**).

Table ES-2: Considered and Potential Permits, Licenses, Authorizations, and Approvals for the Proposed Action and Ongoing Activities		
Conservation District *HRS Chapter 183C* and *HAR Chapter 13-5*	State DLNR Office of Conservation and Coastal Lands	Compliance with HRS Chapter 183C and HAR Chapter 13-5 would follow identification of the land retention estate(s) and method(s) (EIS **Sections 1.4.2** and **5.3.2**).
Existing and Potential State Permits for Ongoing Activities		
Conservation of Aquatic Life, Wildlife, and Land Plants *HRS Chapter 195D* and *HAR Chapters 13-107 and 13-124*	State DLNR Division of Forestry and Wildlife	Army holds permit(s) that authorize collection of threatened and endangered plants for scientific purposes, to possess salvaged bird carcasses from PTA, and for off-site mitigation with threatened or endangered plants (EIS **Section 3.3.4**).
Protected Wildlife Permit–Scientific Collection (Upland Gamebirds: WL21-11)	State DLNR Division of Forestry and Wildlife	Issued (EIS **Section 3.3.4**)
Protected Wildlife Permit—Scientific Collection (WL19-42 and WL21-15)—Band-rumped Storm Petrel (*Hydrobates castro*)	State DLNR Division of Forestry and Wildlife	Issued (EIS **Section 3.3.4**)
Permit for Threatened and Endangered Plant Species (I2942 and I5287)	State DLNR Division of Forestry and Wildlife	Issued (EIS **Section 3.3.4**)
Hawai‘i Experimental Tropical Forest Research Permit	State DLNR Division of Forestry and Wildlife	Issued (EIS **Section 3.3.4**)
Mauna Loa Forest Reserve Permit for Access and Research, Pu‘u Huluhulu Native Plant Sanctuary	State DLNR Division of Forestry and Wildlife	Issued (EIS **Section 3.3.4**)
Wildlife Control Permit (WHI-PTA1)	State DLNR Division of Forestry and Wildlife	Issued (EIS **Section 3.3.4**)
Nonpoint Source Pollution Management and Control *HRS Chapter 342E*	State Department of Health	Army obtains National Pollutant Discharge Elimination System permits when needed (e.g., for industrial activities at Ahi Quarry) (EIS **Section 3.9.4.6**).
Wastewater Systems *HAR Section 11-62*	State Department of Health	Portable toilets for permanent structure on State-owned land require approval by the Hawai‘i DOH Director (EIS **Section 3.15**).

ES.4 Agency Roles and Decisions to be Made

The Army's decision will determine which part of State-owned land it will seek to retain. ~~This Second Draft EIS presents t~~The Army's preferred alternative is Alternative 2 (**Section 2.4**). Following issuance of this Final EIS (**Section 1.6.5**), the Army's final decision and rationale for selection of an alternative for implementation will be presented 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 continue to conduct military training on the State-owned land within PTA to meet its ongoing training and operational requirements.

The Proposed Action is needed to:

- Preserve limited maneuver area.
- Provide austere environment training.
- Enable access among major parcels of U.S. Government-owned land located within PTA.
- Retain substantial infrastructure investments.
- Allow for future facility and infrastructure modernization (which is not currently planned and would require separate, future NEPA and HEPA analysis, as applicable~~compliance~~).
- Maximize use of the impact area in support of USARHAW-coordinated training.

The Army needs to retain the State-owned land at PTA for the following reasons:

- The State-owned land provides essential connections for maneuvering throughout PTA.
- Critical U.S. Government-owned facilities, utilities, and infrastructure are located on the State-owned land.
- Retention of maneuver area on State-owned land at PTA is important for maneuver, live-fire, and non-live-fire training, and to accommodate larger than company-sized units.
- PTA is the only training area in Hawai'i that can accommodate collective live-fire training at larger than company size.
- PTA is the primary ground maneuver tactical training area for U.S. Indo-Pacific Command and is used for joint and multinational training exercises.
- Loss of the State-owned land at PTA would result in substantial impacts to training at PTA and Hawai'i because several of the training features and capabilities within the State-owned land are not available elsewhere within PTA or Hawai'i and several of the training and support facilities and features within the State-owned land cannot be rebuilt within the U.S. Government-owned portions of PTA due to operational, safety, and environmental constraints.

ES.6 Brief Description of the Action

The Army proposes to retain up to approximately 22,750 acres of the 23,000 acres of State-owned land at PTA in support of continued military training. The Proposed Action does not include retention of approximately 250 acres of the State-owned land that is administered by the DHHL. 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 land prior to the expiration of the 1964 lease to ensure uninterrupted training. Following the arrangement for retention of the State-owned land, the Army would continue to conduct Army ongoing activities (military training; facility, utility, and infrastructure maintenance and repair activities; resource management actions; and associated activities such as emergency services) on the retained State-owned land. The Army also would continue to permit and coordinate ongoing activities (training and other activities such as public use programs) by other PTA users, including Department of Defense agencies, international partners, local agencies, and the community.

The Proposed Action is a real estate action (i.e., administrative action) that would enable continuation of ongoing activities on the State-owned land retained by the Army. It does not include construction, modernization, or changes in ongoing activities in the retained State-owned land. Additionally, the Proposed Action does not include changes to the use, size, or configuration of the special use airspace over the State-owned land. Any such changes would be subject to separate NEPA and HEPA analysis, as applicable, in the future. The duration for land retention is not identified because it would be negotiated with the State following completion of this EIS.

ES.7 Public Participation

Public scoping was conducted to provide relevant information about and gather public input on the Proposed Action and alternatives. Public participation is a key component of the NEPA and HEPA processes; the NEPA and HEPA public participation processes are running concurrently to fulfill both regulations. The NOI was initially published in the FR on September 4, 2020 (85 FR 55263), and the EIS Preparation Notice was published in *The Environmental Notice* on September 8, 2020. In response to emerging COVID-19 mandates (*Interim Army Procedures for National Environmental Policy Act (NEPA)*) [March and June 2020], the County of Hawai‘i COVID–19 Emergency Rule No. 11 [August 25, 2020], and the State’s Twelfth Proclamation Related to the COVID–19 Emergency [August 20, 2020], a NOI amendment was published on September 23, 2020 (85 FR 59753), to remove in-person comment stations. This amendment had no impact on the 40-day scoping period, which ended on October 14, 2020.

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 three newspapers on three separate dates. Additionally, postcards were mailed to approximately 100 stakeholders. On September 21, 2020, 19 different State agency divisions attended a Virtual Agency Scoping Meeting. On September 23, 2020, a public Scoping Virtual Open House provided the public an opportunity to view and listen to prerecorded presentations, review project documents, and submit written and oral comments. During the 5-hour period of the Scoping Virtual Open House event, 36 oral comments were received. During the 40-day scoping period, 240 written submissions were received; the EIS team identified 417 substantive comments covering 24 topics in the written submittals. Most of the substantive comments fell under the following topics: biological resources, historic and cultural

resources and cultural practices, hazardous substances and hazardous wastes, land use and lease issues, and noise.

The Draft EIS public review period was initiated through publication of a Notice of Availability (NOA) in the FR, and in *The Environmental Notice* on April 8, 2022. This initiated a 60-day public comment period that ended on June 7, 2022. In accordance with 32 CFR Part 651, a public notice also was published in local newspapers. Additionally, postcards with similar information to the public notice were mailed via U.S. Postal Service to approximately 100 individual, agency, and organization stakeholders. Draft EIS public meetings were held on April 25, 2022, in Hilo, Hawaiʻi and on April 26, 2022, in Waimea, Hawaiʻi; a telephone line was established for oral comments for those unable to attend in-person from 12:01 AM on April 24, 2022, through 11:59 PM on April 26, 2022.

During the public meetings, 46 oral comments were received in person and 12 oral comments were received via telephone recording. During the public comment period, 669 written submissions were received. The EIS team identified 369 substantive comments covering 21 topics in the written submittals. Most of the substantive comments fell under the following topics: the Proposed Action; land use; biological resources; cultural practices; cultural and historic resources and cultural practices; and hazardous substances and hazardous wastes.

The Second Draft EIS public review period was initiated through publication of a NOA in the FR, and in ~~the Environmental Review Program's bulletin~~ *The Environmental Notice*. In accordance with 32 CFR Part 651, a public notice was published in local newspapers. Additionally, postcards with similar information to the public notice were mailed via U.S. Postal Service to approximately 100 individual, agency, and organization stakeholders. Per NEPA and HEPA, publication of the NOA in federal and state bulletins initiated the Second Draft EIS public review period, which is 45 days. The Second Draft EIS NOA was published in the FR on April 19, 2024, and in *The Environmental Notice* on April 23, 2024. This initiated a 45-day public comment period that ended on June 7, 2024. Second Draft EIS public meetings were held on May 6, 2024, in Waimea, Hawaiʻi and on May 7, 2024, in Hilo, Hawaiʻi; a telephone line was established for oral comments for those unable to attend in-person from 12:01 AM on May 6, 2024, through 11:59 PM on May 7, 2024. Second Draft EIS public meetings were conducted to provide information to the public and agencies and to facilitate oral and written comments. Written comments were requested within 45 days of publication of the Second Draft EIS NOA. Substantive written and oral comments on the Second Draft EIS were considered during the preparation of the Final EIS.

During the Second Draft EIS public meetings, 49 oral comments were received in person and 13 oral comments were received via telephone recording. During the public comment period, 882 written submissions were received. The EIS team identified 566 substantive comments covering 39 topics in the written submittals. Most of the substantive comments fell under the following topics: the Proposed Action; land use; biological resources; cultural practices; cultural and historic resources; and hazardous substances and hazardous wastes.

The Final EIS has taken into consideration comments received on the Second Draft EIS, identified substantive comments, and provided responses commensurate to the comments. The Final EIS has been refined to address substantive comments and to clarify information. Like the Draft and Second Draft EISs, availability of the Final EIS will be published in the FR and in *The Environmental Notice*. DLNR, as the State's accepting authority for this EIS, will conduct its HEPA acceptability determination within 30 days of publication of the Final EIS in *The Environmental Notice*. DLNR's determination will be published in *The*

Environmental Notice. A public notice that the Final EIS has been published will also be placed in local newspapers. Comments that are received during the 30-day NEPA waiting period following release of the Final EIS will be considered in the Army's decision-making process and documented as such in the ROD.

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 3.11.4** and **Appendix M**.

ES.8 Alternatives Considered

The NEPA and HEPA processes require consideration of reasonable alternatives required to satisfy the purpose and need for the Proposed Action and meet identified screening criteria. The Army developed three action alternatives for the Proposed Action. The action alternatives carried forth for analysis in this EIS are a practical representation of the range of reasonable alternatives regarding the extent (e.g., maximum, modified, and minimum) and location of retention of the State-owned land. Additionally, this EIS considered the No Action Alternative in accordance with NEPA and HEPA regulations.

ES.8.1 Alternative 1: Maximum Retention

Under Alternative 1, the Army would retain approximately 22,750 acres (does not include the approximately 250 acres of State-owned land administered by the DHHL) of the State-owned land at PTA, including all U.S. Government-owned facilities, utilities, and infrastructure within the State-owned land retained. Additionally, the Army would retain all U.S. Government-owned utilities and associated access throughout the State-owned land not retained to enable continued safe operation of U.S. Government-owned land and State-owned land retained at PTA. The Army would continue to manage and use all the State-owned land retained; have unrestrained access among the three U.S. Government-owned parcels at PTA; and conduct Army ongoing activities. The Army also would continue to permit and coordinate ongoing activities on all the retained State-owned land by other PTA users.

ES.8.2 Alternative 2: Modified Retention

Under Alternative 2, the Army would retain approximately 19,700 acres (86 percent) of State-owned land at PTA, including all U.S. Government-owned facilities, utilities, and infrastructure within the State-owned land retained. Additionally, the Army would retain all U.S. Government-owned utilities and associated access throughout the State-owned land to enable continued safe operation of the U.S. Government-owned land and retained State-owned land at PTA.

ES.8.3 Alternative 3: Minimum Retention and Access

Under Alternative 3, the Army would retain approximately 10,100 acres (44 percent) of the State-owned land and 11 miles of select roads and training trails within the State-owned land not retained. ~~, including~~ Additionally, the Army would retain all U.S. Government-owned utilities and associated access throughout the State-owned land not retained ~~(i.e., potable water and fire protection water systems)~~; firebreaks/fuel breaks and associated access along most of the 11 miles of select roads and training trails proposed for retention; and land use rights to enable the firing of indirect-fire weapons from firing points on U.S. Government-owned portions of PTA northwest of the State-owned land into the impact area.

ES.8.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any of the State-owned land at PTA after lease expiration. Due to the lack of access within the State-owned land, the Army would have no land access to the impact area and training ranges south of the State-owned land, which would cease or severely limit Army activities in those areas. Additionally, the Army would have no access to U.S. Government-owned utilities and infrastructure within the State-owned land, including ~~the potable water facility,~~ the electrical substation, communication infrastructure, roads, training trails, and firebreaks/fuel breaks, which would impact training, range operations, range and emergency services communication, use of the Cantonment, emergency service access, and wildfire protection and firefighting activities. This alternative also would create the greatest potential for encroachment and accidental or intentional trespass among the alternatives considered because all three of the U.S. Government-owned parcels would be surrounded by adjoining parcels not controlled by the Army.

ES.9 Environmental Impacts

The Army identified 15 environmental resource areas that could be impacted by the Proposed Action. Resource areas include land use, biological resources, historic and cultural resources and cultural practices, hazardous substances and hazardous wastes, air quality and greenhouse gases, noise, geology / topography / soils, water resources, socioeconomics, environmental justice, transportation and traffic, airspace, electromagnetic spectrum, utilities, and human health and safety. For each resource area, a detailed definition, regulatory framework, region of influence, existing conditions, methodology and significance criteria, and environmental analysis of potential direct and indirect, short- and long-term, and adverse and beneficial impacts and cumulative impacts that could result from each alternative were evaluated. Each resource area is analyzed for potential lease (land retained), fee simple title (land retained), and land not retained impacts.

Environmental impacts that could result from implementation of an alternative are summarized in **Table ES-3**, which is a graphical interpretation of the text summary of impacts in **Table 3-38~~34~~** of **Section 3.17.1**. 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), biological resources, cultural practices, and environmental justice; significant, adverse impacts that could be reduced to less than significant for land use (land tenure)~~ and biological resources~~; and significant, beneficial impacts on land use and environmental justice (land not retained). Significant, adverse impacts on biological resources, socioeconomics, and utilities; and significant, beneficial impacts on land use, cultural practices, and environmental justice could occur under the No Action Alternative. All other resource areas would experience less than significant impacts.

With the exception of utilities, which does not include a separate analysis of land not retained because impacts would extend beyond the State-owned land, significance impacts for the action alternatives are presented for lease, fee simple title, and land not retained impacts (presented as lease impact/fee simple title impact/land not retained impact).

Table ES-3: Potential Environmental Impacts				
Resource	**Alternative 1**	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Land Use	⊗⃠/⊗/+	⊗⃠/⊗/+	⊗⃠/⊗/+	+
Biological Resources	~~⊗/⊗/⊗⃠/⊗⃠/⊗⃠~~	~~⊗/⊗/⊗⃠/⊗⃠/⊗⃠~~	~~⊗/⊗/⊗⃠/⊗⃠/⊗⃠~~	⊗
Historic and Cultural Resources and 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	⊙/⊙/⊙	⊙/⊙/⊙	⊙/⊙/⊙	⊙
Airspace	⊙/⊙/⊙	⊙/⊙/⊙	⊙/⊙/⊙	⊙
Electromagnetic Spectrum	⊙/⊙/⊙	⊙/⊙/⊙	⊙/⊙/⊙	⊙
Utilities	⊙/⊙	⊙/⊙	⊙/⊙	⊗
Human Health and Safety	⊙/⊙/⊙	⊙/⊙/⊙	⊙/⊙/⊙	⊙

LEGEND
⊗ = significant, adverse impact
⃠ = significant, adverse impact but could be reduced to less than significant
⊙ = less than significant impact
\+ = significant, beneficial impact

ES.10 Cumulative Impacts

This EIS identifies potential cumulative impacts from implementation of the Proposed Action (including all three action alternatives) and lease compliance actions when combined with past, present, and reasonably foreseeable future actions, which include military, public, and private actions. Past actions are actions from the beginning of military activity at PTA to the present time and are captured in the existing conditions analysis of each resource area. The duration for land retention is not identified because it would be negotiated with the State following completion of this EIS. ~~For most resources, the impacts of past actions are a part of existing conditions; therefore,~~ Consequently, the timeframe for potential cumulative impact contributions from present and reasonably foreseeable actions addressed in this analysis begins in the present and has no defined end date.

Cumulative impacts for all resource areas, except for land use, biological resources, historic and cultural resources and cultural practices, and environmental justice, were found to be less than significant. Land use would have significant, adverse, cumulative impacts on multiple aspects of land tenure, including the continuation to affect multiple generations of Native Hawaiians who cite historical trauma due to historic and current military actions associated with military presence and lack of access for Native Hawaiians. Biological resources would have significant, adverse, cumulative impacts on the Hawaiian hoary bat and protected and native species from potential training-related wildfires. Historic and cultural resources and cultural practices were analyzed to have significant, adverse, cumulative impacts on cultural practices based on continued limited access and potential training-related wildland fires. Environmental justice would have significant, adverse, cumulative impacts from disproportionate and significant adverse impacts on cultural practices and land use.

Cumulative impacts, by resource area, are analyzed in **Chapter 4**.

ES.11 Existing Management Measures and ~~Potential~~ Mitigation Measures

The Army would continue to implement existing management measures to address impacts from ongoing activities at PTA, and also proposes ~~potential~~ mitigation measures to reduce the severity of adverse impacts from the Proposed Action. The existing management measures are presented in each resource area in **Chapter 3** and in **Appendix E** of this EIS. The Army has identified mitigation measures to reduce the severity of adverse impacts from the Proposed Action and will include these mitigation measures and mitigation monitoring plans in the ROD. As prescribed in HAR Section 11-200.1-24(p), the mitigation measures include, where possible, specific reference to the timing of each step proposed to be taken, as well as other provisions to ensure that the mitigation measures will be conducted. These ~~potential~~ mitigation measures are summarized ~~below~~ in **Table ES-4**, in each applicable resource section, and in **Table 3-39~~35~~** in **Section 3.17.2** of this EIS.

Table ES-4: Mitigation Measures to Reduce Adverse Impacts

Mitigation Measure	Timing	Resource(s)
The Army will conduct a multi-year research project to identify possible biological controls in the native range of *C. setaceus*. This project will include establishing an experimental population for non-target testing at a controlled facility, conducting non-target testing, and deploying the biological control if one is identified to be successful during testing.	To begin no later than October 2028.	Biological Resources
The Army will conduct an installation invertebrate study to identify the presence and types of invertebrates located within PTA. The Army proposes to sample three locations within five different habitat types for fifteen locations and develop a report of findings.	Study to begin no later than October 2028.	Biological Resources
The Army will conduct a study to assess ungulates' impact on the health of the vegetation community at PTA.	Study to begin no later than October 2028 and identify an implementation plan, if needed,	Biological Resources

Table ES-4: Mitigation Measures to Reduce Adverse Impacts		
Mitigation Measure	**Timing**	**Resource(s)**
	dependent on the results of the assessment.	
The Army will develop a formalized access plan for quarterly access for Native Hawaiian organizations, individuals, and consulting parties, ʻohana, lineal descendants, and cultural practitioners.	Consultation will begin no later than October 2028.	Historic and Cultural Resources and Cultural Practices Environmental Justice
The Army proposes to install interpretive panels at the Gilbert Kahele Recreation Area to illustrate the historical and cultural importance of the Saddle Region. The interpretive panels will be accessible to community members and visitors of the park.	Consultation will begin no later than October 2028.	Historic and Cultural Resources and Cultural Practices Environmental Justice
The Army will negotiate an agreement with the State to monitor wildfires on land not retained and an agreement document will be developed with the State. The agreement will be implemented once all parties sign the agreement document or when the land retention estate document (e.g., lease or deed) is executed, whichever is later.	Negotiations to begin no later than October 2028.	Historic and Cultural Resources and Cultural Practices Biological Resources Environmental Justice Human Health and Safety
In addition to the current thermal technology at PTA, the Army will add advanced technology which will include additional thermal technology equipment. The additional thermal technology equipment would enable firefighting personnel to locate and eliminate hot spots where a fire persists. The Army will install approximately six to eight infrared cameras that provide adequate coverage across the training area for wildfire heat signature monitoring—three cameras in the Keamuku Maneuver Area, three cameras in the Pōhakuloa Training Area, and one or two additional mobile cameras.	Contracting and installation to begin no later than October 2028.	Historic and Cultural Resources and Cultural Practices Biological Resources Environmental Justice Human Health and Safety

The Army will monitor the mitigation measures to ensure their implementation and effectiveness and 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.

~~Land Use: The Army would consider adding non-barbed wire fencing and signage to minimize encroachment and accidental or intentional trespass from adjacent State-owned land not retained (Alternatives 1, 2, and 3).~~

~~**Historic and Cultural Resources and Cultural Practices**: The Army would consider the following mitigation measures to further reduce potential adverse impacts on cultural practices: (1) through consultation with~~

~~Native Hawaiians and cultural practitioners, the Army would formalize a cultural access request process to enable Native Hawaiians and cultural practitioners opportunities to promote and preserve cultural practices, beliefs, and resources; and (2) the Army would explore options to provide unlimited cultural access to specific locations to be determined in consultation with Native Hawaiians and cultural practitioners (Alternatives 1, 2, and 3).~~

~~**Environmental Justice:** Through consultation with Native Hawaiians and cultural practitioners, the Army would formalize a cultural access request process to enable Native Hawaiians and cultural practitioners opportunities to promote and preserve cultural practices, beliefs, and resources. In addition, the Army would explore options to provide unlimited cultural access to specific locations to be determined in consultation with Native Hawaiians and cultural practitioners (Alternatives 1, 2, and 3).~~

ES.12 Incomplete Information / Unresolved Issues

In accordance with 32 CFR Section 651.44 and 40 CFR Section 1502.21, 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 11-200.1-24(q). This section presents issues to be resolved following the EIS process.

Land Retention Estate(s) and Method(s): 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 are described in **Section 2.3**. Additionally, negotiation is required with the State to determine what estate(s) and method(s) would be considered. This negotiation would follow issuance of the Army ROD. Land exchange between the Army and the State 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. While the estate(s) and method(s) are not known at this time, the impact analysis conducted for each alternative in this EIS is based on land retention via fee simple title and lease.

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 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 analyses, 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; however, the Army and the State would agree on the conditions prior to implementing the Proposed Action.

Lease Compliance Actions and Cleanup and Restoration Activities: Following expiration of the current lease and in accordance with the lease or otherwise negotiated with the State, the Army would ~~conduct various lease compliance actions~~ comply with lease conditions that would be applicable after expiration of the lease (e.g., reforestation)~~, to the extent feasible,~~ within the State-owned land not retained. **Appendix F** includes a copy of the 1964 lease and 2010 amendment. The current lease compliance actions

are not part of the Proposed Action but would be triggered by expiration of the current lease for the State-owned land not retained under the various alternatives. The parameters for these lease compliance actions are subject to the conditions of the current lease and n~~N~~egotiation ~~of the current lease compliance actions~~ with the State, which cannot commence until this EIS process is completed and an alternative has been selected for implementation; therefore, the parameters for ~~the current~~these lease compliance actions within the State-owned land not retained would be defined and determined after completion of this EIS.

The conditions in a new lease or easement are unknown but are assumed to be similar to those in the current lease except for necessary updates (see **Section 2.3**) and may be subject to negotiation between the Army and the State. It is assumed the Army would conduct the lease compliance actions during a new lease or easement (due to the conditions in a new lease or easement) under various applicable DoD programs and that the lease compliance actions 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. ~~Lease compliance actions for a new lease or easement are unknown but are assumed to be the same as the current lease, except for lease compliance actions that are no longer relevant, and assumed Army obligations based on State requirements in the Court Ordered Management Plan, and may be subject to future negotiation.~~

~~Furthermore, the extent of any State-owned land not retained after expiration of a new lease or easement is unknown.~~

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); therefore, after expiration of the current 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 process, which is outside this EIS process. The cleanup and restoration activities for State-owned land not retained would be triggered by and conducted after expiration of the current lease and therefore are not part of the Proposed Action. These activities would be completed in accordance with applicable future cleanup and restoration requirements and standard processes (i.e., requirements and standard processes at the time the activities are initiated). These future cleanup and restoration requirements, standard processes, and associated costs 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 2.1, 2.2**, **2.3**, and **3.1.3** to characterize the potential impacts, but the lease compliance actions may require further evaluation to determine if additional NEPA ~~compliance~~and HEPA analyses, as applicable, are required.

Greenhouse Gas Emissions: This EIS qualitatively addresses direct and indirect greenhouse gas (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 land as well as from indirect activities such as manufacturing and shipping equipment and materiel and

troop movements to and from PTA) and their associated social costs has not been performed because there are no data inputs reasonably available to support such calculations for a real estate transaction such as the Proposed Action. In this context, reasonably available means the Army does not have GHG emission data specifically for ongoing activities on the State-owned land 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 all applicable federal and state land use plans and policies. Federal regulations include: 10 U.S.C. Section 2852, Military Construction Projects: Waiver of Certain Restrictions; 10 U.S.C. Section 2661, Miscellaneous Administrative Provisions Relating to Real Property; 10 U.S.C. Section 2663, Land Acquisition Authorities; 10 U.S.C. Section 2802, Military Construction Projects*;* The Sikes Act, as amended, (16 U.S.C. Section 670a–670o); Coastal Zone Management Act, as amended (16 U.S.C. Section 1451); Endangered Species Act (ESA) of 1973 (16 U.S.C. Section 1531 *et seq*.); Clean Water Act of 1972, 33 U.S.C. Sections 1251 to 1387 *et seq.*; Clean Air Act, 42 U.S.C. Section 85; Emergency Planning and Community Right-to-Know Act, 42 U.S.C. Section 11001 *et seq*.; National Flood Insurance Act of 1968, 42 U.S.C. Section 4001 *et seq*.; Resource Conservation and Recovery Act, 42 U.S.C. Section 6901 *et seq.;* and National Historic Preservation Act, 54 U.S.C. Section 300101 *et seq*. The State land use plans and policies include: Historic Preservation, HRS Chapter 6E; Hawaiʻi State Plan, HRS Chapter 226; State Land Use Law, HRS Chapter 205, which sets rules related to the Conservation District; and State Environmental Policy, HRS Chapter 344. No County of Hawaiʻi permits, licenses, authorizations, or approvals are anticipated.

The Proposed Action is a real estate action (i.e., administrative action) that would enable continuation of ongoing activities on the retained State-owned land. **Chapter 3** of this EIS lists the regulatory environment and BMPs, SOPs, management measures, and mitigation measures employed by the Army by resource area. The project's consistency with regulations, land use plans, policies, and controls is provided in more depth in **Section 5.3**.

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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 Hawaiʻi (State), U.S. Army Hawaii (USARHAW) conducts training on the islands of Oʻahu and Hawaiʻi. Pōhakuloa Training Area (PTA) on the island of Hawaiʻi (**Figure 1-1**) is the largest contiguous military live-fire range and maneuver training area in the State and is a premier military training center in the Pacific region (USAG-PTA, 2021a). It is the only training area in Hawaiʻi where USARHAW units can complete all mission essential tasks, and it is the only training area in Hawaiʻi that can accommodate larger than company-sized units (i.e., battalion and brigade[1]) for live-fire and maneuver exercises (USAG-HI & USARPAC, 2013).

Training offered at PTA supports the Army's fulfillment of its role in the defense of the United States. Users of PTA rely on the installation to meet their agency-specific mission and readiness requirements, and include the Army, including Army Reserve and Hawaii Army National Guard (HIARNG); U.S. Marine Corps (USMC); U.S. Navy (USN); U.S. Air Force (USAF); state and county first responders and firefighters; Hawaiʻi Civil Defense Agency; Hawaiʻi Emergency Management Agency; State Office of Homeland Security; and Hawaiʻi Police Department.

The U.S. Government leases approximately 23,000 acres of land at PTA from the State, which is referred to as "State-owned land" in this Environmental Impact Statement (EIS). The 65-year lease of the State-owned land expires on August 16, 2029. Over the past six decades, the State-owned land has been the keystone of PTA and an important portion of the approximately 132,000-acre training area (**Figure 1-2**). The State-owned land provides access among the U.S. Government-owned portions of PTA and supports numerous training facilities and capabilities that are essential to USARHAW and other military services and local agencies.

The State-owned land contains some key training facilities not available elsewhere in Hawaiʻi, and the contiguous maneuver area that accommodates exercises at larger than company size also is not available anywhere in the State. State-owned land at PTA represents the largest contiguous area of land with soil on PTA, which is essential for training, as opposed to the bare lava surface that dominates much of PTA. Loss of this land would substantially impact the ability of USARHAW, as well as other military services and local agencies, to meet their training requirements and mission readiness. Therefore, U.S. Army Garrison-Hawaii (USAG-HI), the Army entity responsible for management of PTA, proposes to retain up to

[1] **Section 1.2.3** defines unit size.

approximately 22,750 acres of the 23,000 acres of the State-owned land at PTA in support of continued military training.

This ~~Second Draft~~ Final EIS presents a refined Proposed Action from that published in the PTA Draft EIS (April 2022). Rather than seek to retain up to 23,000 acres, the full acreage currently leased by the U.S. Government at PTA, the acreage has been reduced by approximately 250 acres of State-owned land administered by the Department of Hawaiian Home Lands (DHHL). Based on comments on the Draft EIS from agencies and the public, the Army is no longer considering retention of these 250 acres. The Proposed Action and alternatives are fully described in **Chapter 2**.

Pursuant to the National Environmental Policy Act (NEPA) of 1969 [42 United States Code (U.S.C.) Section 4321 *et seq.*], USAG-HI has initiated this EIS process to analyze the potential environmental impacts of the Army's Proposed Action.

Because the Army's Proposed Action involves retention of State-owned land, this EIS also must fulfill the Hawaiʻi EIS statute and implementing rule, codified in Hawaiʻi Revised Statutes (HRS) Chapter 343 and Hawaiʻi Administrative Rules (HAR) Chapter 11-200.1. Collectively, the Hawaiʻi statute and rule are referred to as the Hawaiʻi Environmental Policy Act (HEPA). Both NEPA and HEPA require government agencies to fully consider the environmental impacts of a proposed major action and to take appropriate steps, where necessary, to mitigate potential adverse effects.

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

PTA encompasses approximately 132,000 acres between the mountains of Mauna Loa, Mauna Kea, and Hualālai on the island of Hawaiʻi (**Figure 1-1**). The primary access to PTA's base camp, referred to as the Cantonment, is from State Route 200, also known as the Daniel K. Inouye (DKI) Highway. The DKI Highway right-of-way crosses State- and U.S. Government-owned land at PTA (**Figure 1-2**). The Cantonment serves as temporary quarters for troops and as permanent office space for USAG-HI personnel. The Cantonment is approximately 35 miles from the county seat in Hilo and approximately 50 miles from the town of Kailua-Kona. Waimea is the nearest town and is approximately 30 miles away.

The State-owned land connects all three U.S. Government-owned parcels at PTA, and it entirely surrounds the 758-acre U.S. Government-owned parcel that houses the Cantonment and Bradshaw Army Airfield (BAAF). The U.S. Government-owned land south of the State-owned land includes approximately 84,050 acres and contains the approximately 51,000-acre impact area as well as various training ranges. The U.S. Government-owned land north of the State-owned land totals approximately 25,025 acres and is known as the Keʻāmuku parcel (**Figure 1-2**). Most of the U.S. Government-owned land to the north consists of the approximately 23,685-acre Keamuku Maneuver Area. **Chapter 3** provides additional details on parcels, ownership, zoning, and relevant land use.

Figure 1-1: Location of Pōhakuloa Training Area, Island of Hawai'i

Figure 1-2: U.S. Government-Owned and State-Owned Land at Pōhakuloa Training Area

1.1.2 History of State-Owned Land at PTA

Prior to and following European contact in 1778, the Pōhakuloa area was used for bird hunting, resource gathering, and other cultural purposes by Native Hawaiians (USACE-POH & USAG-HI, 2017a). While the Pōhakuloa area did not support permanent settlement due to elevation, climate, and lack of water, numerous archaeological resources associated with Native Hawaiian use of the area have been identified (USACE-POH, 2017). In 1859, the land was leased for sheep and cattle ranching by Francis Spencer. In the 1870s, John Parker of Parker Ranch began acquiring leases in the area. **Section 3.4** provides a cultural and historical overview of the lands at PTA.

The PTA area was first used for U.S. military training during World War II by USMC as an artillery live-fire training area. After the war, PTA fell under the control of the Hawaiʻi Territorial Guard, and in the mid-1950s, the Army took over PTA (USAG-HI, 2020a). In 1956, the Governor of the Territory of Hawaiʻi signed Executive Order (EO) 1719[2] for approximately 758 acres at PTA for ". . . uses and purposes of the United States of America, to be under the control and management of the Department of the Army." The 758 acres encompass the Cantonment and BAAF.

Later in 1956, PTA was permanently established as a training site through a formal Maneuver Agreement between the Territory of Hawaiʻi and the United States. The Maneuver Agreement granted exclusive use of 99,200 acres to the U.S. Government for military training. In 1964, President Lyndon B. Johnson issued EO 11167[3] and authorized the fee simple acquisition (i.e., owned completely without any limitations or conditions) of 84,057 acres of the 99,200-acre training area for use by the United States (USACE-POH, 2016). This 84,057-acre area encompasses the U.S. Government-owned land south of the State-owned land, including the impact area and training ranges.

The State-owned land, which is approximately 23,000 acres, was leased by the U.S. Government from the State in August 1964 (i.e., State General Lease No. S-3849 and U.S. Lease Contract No. DA-94-626-ENG-80) (**Figure 1-2**). The term of the lease is 65 years. Three parcels are defined in the lease as:

- Tract A-105-1 (Parcel A), approximately 15,420 acres
- Tract A-105-2 (Parcel B), approximately 1,944 acres
- Tract A-105-3 (Parcel C), approximately 5,607 acres (DLNR, 1964; USACE-POH & USAG-HI, 2019a)

Chapter 3 further describes the State-owned land leased by the Army based on federal, state, and county laws and classifications of land tenure.

[2] *Setting Aside Land for Public Purposes*.

[3] *Setting Aside for the Use of the United States Certain Public Lands and Other Public Property Located at the Pohakuloa Training Area, Hawaii*.

1.1.3 Planning for Retention of State-Owned Land at PTA

In anticipation of the lease expiring in 2029, the Army initiated several planning efforts that preceded this EIS. USAG-HI obtained preliminary title reports and completed a metes and bounds survey for the State-owned land, completed ~~an~~ Phase I and Phase II Environmental Condition of Property (ECOP) documents and an Analysis of Alternatives Study, and obtained a Major Land Acquisition Waiver from the Under Secretary of Defense for Acquisition and Sustainment. The Phase I and Phase II ECOPs facilitate informed decisions about potential human and ecological health risks associated with potential contamination and is discussed in **Section 3.5**. The Analysis of Alternatives Study and Major Land Acquisition Waiver processes are described in the following paragraphs.

Analysis of Alternatives Study. An Analysis of Alternatives Study was prepared in 2017 per Army Regulation (AR) 350-19, *The Army Sustainable Range Program*, to create a preliminary list of alternatives to land retention; evaluate the economic feasibility, mission impact, and environmental impact of each alternative; and identify a preferred alternative (USACE-POH, 2017). The alternatives evaluated included no action, use of other lands (including U.S. Government-owned land at PTA, other land in Hawai‘i not under military or State control, and other military installations), computer-based simulation training, re-stationing the 25th Infantry Division (ID), and retention of the State-owned land.

The No Action Alternative was determined to result in significant adverse impacts on the PTA mission (defined in **Section 1.2.4**) and a financial cost potentially more than the estimated land value of the State-owned land. The alternative of using land other than the State-owned land was considered but eliminated due to mission impact, environmental impact, and financial 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 and financial cost. Retention of the State-owned land was selected as the preferred alternative due to low environmental impact, low to high financial cost, and low to no impact on mission as noted in the *Analysis of Alternatives Study: Pōhakuloa Training Area State-Owned Lands* (USACE-POH, 2017).

In summary, the Analysis of Alternatives Study analyzed the potential impacts of alternatives to retention of the State-owned land but determined that land retention is the preferred alternative. Consequently, this EIS analyzes alternatives for retention of substantial portions of the State-owned land.

Major Land Acquisition Waiver. On September 13, 1990, the Department of Defense (DoD) established a moratorium on major land acquisitions to ensure that land is acquired only when a need is clearly demonstrated. The Army submitted a Major Land Acquisition Proposal to DoD in 2017 to request an exception (waiver) to the moratorium for acquisition of the State-owned land at PTA. The proposal summarized the alternatives considered, current and projected force structure and training load, public and political sensitivity, potential environmental impacts, proposed future use of the State-owned land, future viability of PTA, benefits of land retention, and impacts of not retaining the land (USARHAW, 2017a). The Under Secretary of Defense for Acquisition and Sustainment approved the Major Land Acquisition Waiver Request on June 4, 2018, allowing the Army to pursue land retention options and to initiate an environmental analysis process in accordance with NEPA. This EIS is a key step in the process to define and analyze various land retention alternatives to meet USARHAW’s ongoing training needs.

1.2 Background

1.2.1 National Defense Policies

National defense policies inform the vision, strategy, and mission requirements across the DoD service branches. This section provides an overview of key national defense policy documents and their applicability to the Army and the Indo-Pacific region.

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), National Defense Strategy (NDS), National Military Strategy (NMS), and Army Strategy. As the nation's primary land-based military force, the Army is organized, trained, and equipped to support the nation's global security and defense interests.

USARHAW's mission and training requirements are based on national and Army security and defense strategies. Training at installations such as PTA supports the Army's fulfillment of its role in the nation's defense. Joint users of PTA, including USMC, USN, and USAF, also rely on PTA to fill their agency-specific mission and readiness requirements. **Section 1.2.6** describes joint agency and community use of PTA.

National Security Strategy

The ~~2017~~ 2022 NSS establishes the U.S. security strategy through the implementation of four pillars and specific regional strategies. ~~The third pillar seeks to preserve peace through strength by rebuilding the U.S. military so that it remains pre-eminent, deters its adversaries, and, if necessary, is able to fight and win.~~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. The NSS also provides a strategy for each region of the world to protect U.S. national 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 ~~2017~~ 2022 NSS states, "~~We will maintain a forward military presence capable of deterring and, if necessary, defeating any adversary~~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, ~~2017~~2022).

National Defense Strategy

Consistent with the ~~2017~~ 2022 NSS, the ~~2018~~ 2022 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. The U.S. defense challenge is the reemergence of long-term strategic competition by authoritarian powers (i.e., Russia and China) and rogue regimes (i.e., North Korea and Iran). Authoritarian powers and rogue regimes are competing across all dimensions of power: air, land, sea, space, and cyberspace. Notably, three of the four authoritarian powers and rogue regimes are within the Indo-Pacific region. The ~~2018~~ 2022 NDS prioritizes military preparedness in three key regions, one of which is the Indo-Pacific region, and expanding security relationships with Indo-Pacific alliances and partnerships (DoD, 2022~~18a~~).

National Military Strategy

The ~~2018~~ 2022 NMS provides the Joint Force a framework for protecting and advancing U.S. national interests. It is an overarching military strategic framework implementing the policy and strategy established in the 2022~~2017~~ NSS, ~~2018~~ 2022 NDS, and other documents such as the Defense Planning Guidance (The Joint Staff, ~~2018~~2022).

The 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, 2018a).

1.2.2 Strategic Importance of Hawai'i to National Defense

U.S. military objectives in the Indo-Pacific region are the responsibility of the U.S. Indo-Pacific Command (USINDOPACOM), which is one of six of the DoD's geographic combatant commands and is headquartered in Hawai'i. USINDOPACOM integrates Army, USN, USAF, and USMC 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 waters of the U.S. west coast to the western border of India, and from Antarctica to the North Pole) in a region that is home to 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 (PACFLT), U.S. Marine Corps Forces, Pacific (MARFORPAC), and U.S. Pacific Air Forces (PACAF) (USINDOPACOM, 2021). USARHAW supports ready forces to provide the Army Contingency Response Force per USARPAC order and the Pacific Response Force per USINDOPACOM order (USARHAW, 2017a).

USARPAC is the Army's largest Service Component command and includes approximately 106,000 personnel assigned throughout the USINDOPACOM AOR. PACFLT is the world's largest fleet command with approximately 200 ships and submarines, 1,200 aircraft, and 130,000 sailors and civilians. MARFORPAC includes approximately 86,000 personnel and 640 aircraft. PACAF 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 The Army in Hawai‘i

Major Army units in Hawai‘i that require training land consist of the 25th ID, 8th Theater Sustainment Command, 29th Infantry Brigade, HIARNG, and 9th Mission Support Command of the Army Reserve.

Army Training in Hawai‘i. 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 (DA, 2018b)

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 (LTA), Major Training Areas (MTA), and Combat Training Centers:

- *Local Training Area.* Supports 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 practice maneuver tactics, techniques, and procedures. The training objectives focus on proficiency for individuals and platoons as well as maneuver operations for up to the battalion level.
- *Major Training Area.* Supports 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.
- *Combat Training Center.* Provides an enhanced maneuver training experience, a dedicated opposing force, and a robust instrumentation and formal evaluation and feedback process to brigade-sized units. Combat Training Center training allows large units to conduct their doctrinally required training and prepares them for their operational mission prior to deployment.

~~Army training lands in the State include numerous LTAs; however, o~~Only the islands of O‘ahu and Hawai‘i have Army training lands, including LTAs, and there is limited collective training capability and capacity on the island of O‘ahu. In the State, only PTA on the island of Hawai‘i is classified as an MTA. No Combat Training Centers are present in the State (USAG-HI & USARPAC, 2013).

Army training facilities in the State provide a range of environments, from tropical climates to the remote and austere high-altitude environment on the island of Hawai‘i. This unique combination of environments cannot be replicated in training areas located in the continental United States or Alaska. Army training lands in Hawai‘i total approximately 187,781 acres, are located on the islands of Hawai‘i and O‘ahu, and contain U.S. Government-owned, U.S. Government-controlled, and State-owned land. At approximately 132,000 acres, PTA provides approximately 70 percent of all Army training land in Hawai‘i.

1.2.4 PTA's Role

PTA is the primary ground maneuver tactical training area that provides the USINDOPACOM Commander with capabilities to support home-station training, joint training with other U.S. military units, and multinational training with ~~other~~ Indo-Pacific region militaries (USARHAW, 2015). PTA also supports USARPAC's Joint Pacific Multinational Readiness Capability to create a high-fidelity, joint and multinational maneuver and live-fire training venue with robust after-action reviews that increase interoperability and enable Army units to achieve their full readiness potential, with the eventual goal of supporting joint combined multinational training events (USARHAW, 2015).

The PTA Mission

PTA provides a quality joint/ combined arms facility that ~~provides~~ includes logistics, public works, airfield support, and environmental and cultural stewardship in support of the USARPAC training strategy while maintaining an enduring partnership with the Hawai'i Island community.

As noted in **Section 1.1**, PTA is the largest contiguous live-fire range and maneuver training area in Hawai'i and is the only training area in the Pacific region where USARHAW units can use weapons systems at maximum capabilities and complete all of their training requirements. PTA also is the only DoD Pacific training facility that can accommodate larger than company-sized units for live-fire and maneuver exercises without degradation of training quality (USAG-HI & USARPAC, 2013).

Army Training and Doctrine Command Regulation 350-6 prescribes that training shall occur in an austere field environment (DA, 2019a). PTA fulfills the requirement to train in an austere field environment, which contains challenging environmental hazards (e.g., heat, cold, altitude) 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, cold, and altitude with only standard issue equipment. PTA replicates an austere location where an intermediate staging base can be established. To comply with the training regulation, PTA must be able to continue to support the following:

1. three battalion-level units physically on site
2. two battalions conducting training simultaneously with one battalion in support
3. one battalion conducting collective maneuver and live-fire training at company level or higher
4. one battalion conducting collective maneuver and live-fire training at crew through platoon levels, and situational training exercise lanes (USARHAW, 2015)

1.2.5 PTA Features

PTA's mission includes providing modern training features and facilities for USARPAC and other USINDOPACOM units that train at PTA. These units require a full suite of ranges and maneuver areas that support live-fire and non-live-fire training requirements. Each soldier and weapon system crew is assigned an annual or semiannual live-fire training and qualification requirement (USAG-HI & USARPAC, 2013). Facilities at PTA support U.S. military units by providing doctrinally required training to achieve required readiness training prior to deployment. This training requires use of features on the U.S. Government-owned land and State-owned land at PTA. **Sections 2.1.1**, **2.1.2**, and **2.1.3~~2~~** provide information specific to facilities and training on the State-owned land at PTA.

PTA is available for scheduling year-round; priorities are scheduled six months in advance. Training is episodic. During a~~A~~pproximately 50 percent of the available training days, PTA is at full capacity. Training activities occur at a lower level of intensity when large unit training is not executed. The Army's training mission at PTA is supported by a variety of training features. These include the Cantonment and BAAF, impact area, maneuver area, special use airspace (SUA), training areas (TA) and ranges, a transportation network, and utilities. The following summarizes the primary training and support features available at PTA. Training features specific to the State-owned land are covered in **Sections 2.1.1** and **2.1.2**.

***Cantonment and BAAF*:** The Cantonment is an area of U.S. Government-owned land sited within the 758-acre parcel that established PTA in 1964. The Cantonment consists of approximately 150 buildings used for training support facilities, including administration offices, troop billeting, and support services. Many of the buildings are Quonset huts that were relocated to PTA and erected between 1955 and 1961. BAAF, directly west of the Cantonment, includes a 3,700-foot-long runway at an elevation of approximately 6,200 feet. It is the highest elevation airfield in consistent use in Hawai'i ~~the Hawaiian Islands~~ (USACE-POH & USAG-HI, 2019a). BAAF supports helicopter and limited fixed-wing operations.

***Impact Area*:** The impact area is approximately 51,000 acres extending from central PTA to the southern boundary of the installation on U.S. Government-owned land. Select types of live-fire training require an impact area for munitions detonation. The impact area at PTA supports live-fire ranges, firing points (FP), and aviation live-fire training.

***Maneuver Area*:** Maneuver training is a primary military tactical training and includes battlefield movement by vehicle and on foot. A majority of PTA consists of unsuitable or restricted maneuver area due to physical, operational, and environmental constraints such as large lava flows that are inaccessible even on foot, and areas set aside for conservation of cultural and natural resources. Unrestricted maneuver area is suitable for light infantry maneuver training due to lack of physical constraints such as steep slopes, dense vegetation, and large lava flows (USACE-POH, 2017). PTA includes approximately 37,513 acres of restricted maneuver area, 51,000 acres of impact area, 565 acres of range area, and the 758-acre area containing BAAF and the Cantonment. The remaining 42,164 acres are unrestricted maneuver area, over half of which are on the State-owned land. State-owned land at PTA represents the largest contiguous area of land with soil on PTA, which is essential for training, as opposed to the bare lava surface that dominates much of PTA. Total unrestricted maneuver area for USARHAW in Hawai'i is 57,438 acres, including the State-owned land at PTA (USACE-POH, 2017).

***Special Use Airspace*:** A type of SUA that allows certain military training activities to occur within that designated airspace is a restricted area. Restricted area R-3103 overlies PTA, extends from the ground surface to 30,000 feet, and is used intermittently (i.e., activated when needed due to military training that requires use of the restricted airspace). Civilian aircraft are prohibited from entering R-3103 airspace during activation. PTA Range Control and the Federal Aviation Administration (FAA) Honolulu Control Facility manage this airspace. Airspace is further described in **Section 3.13**.

***Training Areas and Ranges*:** PTA has 24 TAs, including 23 individual TAs and the Ke'āmuku parcel, which together have 31 direct-fire ranges, 118 FPs, and a variety of other ground and aviation training and training support facilities (**Figure 1-3**). Military training has taken place within most of these TAs since PTA was established in 1956. TAs support a variety of training types with realistic conditions and facilities such as FPs, landing zones, drop zones, small arms ranges, the Battle Area Complex (BAX), forward arming and refueling points (FARP), and Cooper Air Strip (unmanned aerial system airfield) (**Figure 1-3**). TAs include

"no go" areas where training is not allowed; these are generally management areas to protect threatened or endangered plants and animals, critical habitat, and historic and cultural resources. **Figure 1-3** depicts the TAs, ranges, training facilities, and the impact area. Most of the training facilities are on State-owned land. Approximately 1.7 million rounds of military munitions are fired at PTA annually. Approximately 95 percent of the military munitions expended at PTA are small arms (9 millimeter or less), of which 10 percent are blanks. For larger munitions, (n=66,677), 79 percent (n=52,627) are inert (i.e., have no explosive component).

***Transportation Network*:** PTA contains a network of interior roads and training trails that provides access for training, conservation, emergency services, and administrative purposes throughout the installation. Equipment and supplies are transported between PTA and the U.S. Government-owned Kawaihae Military Reservation, an Army port facility on the northwest side of the island of Hawai'i at Kawaihae Harbor. As part of deployment training, military vehicle convoys are used to move personnel and equipment on the public roads between Kawaihae and PTA, including Mamalahoa Highway and DKI Highway (DA, 2018b). Transportation is further described in **Section 3.12**.

***Utilities*:** Most utility infrastructure on PTA supports operations in the Cantonment; power lines, communication lines, and water pipes cross some of the TAs. Utilities are further described in **Section 3.15**.

1.2.6 PTA Joint Agency and Community Use

Joint Agency Use of PTA

The Army's primary user of PTA is the 25th ID; however, there is considerable use of the installation by other Army units, Service Components (primarily USMC), DoD agencies, international partners, and local agencies. Other PTA users include the Army Reserve, HIARNG, USN, USAF, and several multinational users. All current training and other activities at PTA are covered by appropriate NEPA documentation.

U.S. Marine Corps. USMC is the second largest user of PTA after the 25th ID. Marine Corps Base Hawaii relies on PTA to fulfill a large portion of its training requirements. USMC training exercises at PTA include live-fire training on ranges, military operations on urban terrain (MOUT) training, and non-live-fire training.

PTA also supports training for USMC units that are part of the Fleet Marine Forces afloat on transports in the Pacific and includes transiting Marine Expeditionary Units from the U.S. west coast to participate in training at the installation. These units conduct combined arms live-fire training, maneuver training, and close air support (CAS) training at PTA.

U.S. Navy. USN uses PTA to accomplish its multinational, sea control / power projection exercises biennially. Several types of USN training events that occur at PTA, or use PTA assets, include Command and Control activities, air support exercises including CAS and Strike Warfare, live-fire exercises, Special Warfare Operations, Aircraft Operations Support, and Air-to-Surface Missile exercises.

U.S. Air Force. USAF trains at PTA to practice CAS and strategic air support with its fighter and strategic aircraft for squadrons deployed to theater and uses PTA for Visual Flight Rules (VFR) training. USAF trains regularly at PTA in conjunction with other military exercises such as the USN's Rim of the Pacific Exercise.

Joint Training and Multinational Exercises. The Pacific Training Complex strategy integrates regional training centers in Hawaiʻi, Alaska, Japan, and South Korea and enables Army, Joint Force, and multinational training. PTA is strategically located within the Pacific Training Complex to serve as a regional training center. PTA's training capabilities develop and train USARHAW units and support joint and multinational training requirements. Additionally, PTA is used to leverage USARPAC's Joint Pacific Multinational Readiness Capability to create a high-fidelity, joint and multinational maneuver and live-fire training complex.

In addition to PTA's role as the primary ground maneuver tactical training area for USINDOPACOM joint and multinational training capabilities, the remote location of PTA is ideally suited for emergency deployment readiness services; regional Joint Reception, Staging, Onward Movement, and Integration training; and multinational exercises in support of Theater Security Cooperation Programs and shaping phase operations (security cooperation activities performed by the Army to deter potential adversaries and solidify relationships with allies and partners) (CALL, 2016). PTA also supports joint training requirements such as PACAF / Hawaii Air National Guard Dual Row Airdrop Systems operations, PACFLT/MARFORPAC opportunity training for transiting forces, urban operations, CAS, and joint live-fire training (USARHAW, 2015).

Community Use of PTA

PTA is used for training by state and county agencies, including the Hawaiʻi Emergency First Responders, Hawaiʻi Civil Defense Agency, Hawaiʻi Emergency Management Agency, State Office of Homeland Security, and Hawaiʻi Police Department. PTA is also used by non-profit organizations, including the Red Cross, Boy Scouts, Girl Scouts, and Youth Challenge.

The State-owned land at PTA is periodically opened to public recreation activities, provided such activities are consistent with use of the land and do not conflict with the military mission. Requests for use are made through the Deputy Garrison Commander / Commander at PTA, who coordinates requests with Range Control and others who may be affected. Appropriate access control procedures are established for each approved outdoor recreation activity. Public recreation activities that have been conducted at PTA include archery in TAs 5 and 6; guided hikes; and hunting for birds, pigs, sheep, and goats within specific areas.

Multiple community and regional initiatives are supported by the installation and include the Dryland Forest Working Group, Hawaiʻi Rare Plant Restoration Group (which fosters initiatives to restore rare plants), and the Big Island Invasive Species Committee. USAG-HI, Environmental Division and PTA personnel cooperate and coordinate with approximately two dozen groups and agencies, including the Palila (finch-billed Hawaiian honeycreeper) Working Group, Hawaiian Hoary Bat Working Group, and Nēnē (Hawaiian goose) Recovery Action Group.

Figure 1-3: Pōhakuloa Training Area Training Areas and Features

1.3 Purpose and Need

1.3.1 Proposed Action

The Army proposes to retain up to approximately 22,750 acres of the 23,000 acres of State-owned land at PTA in support of continued military training. The Proposed Action is fully described in **Section 2.1**.

1.3.2 Purpose

The purpose of the Proposed Action is to enable USARHAW to continue to conduct military training on the State-owned land within PTA to meet its ongoing training and operational requirements.

1.3.3 Need

The Proposed Action is needed to preserve limited maneuver area, provide austere environment training, enable access among major parcels of U.S. Government-owned land in PTA, retain substantial infrastructure investments, allow for future facility and infrastructure modernization, and maximize use of the impact area in support of USARHAW-coordinated training. The following paragraphs further describe the Army's need to retain the State-owned land at PTA.

Retention of maneuver area on State-owned land at PTA is important for maneuver, live-fire, and non-live-fire training, and to accommodate larger than company-sized units for training exercises. Despite the availability of land at PTA, land suitable for maneuver area is limited. A majority of PTA consists of the impact area and land unsuitable or restricted due to physical constraints. Approximately 54 percent of PTA's unrestricted maneuver area is located on the State-owned land (**Section 1.2.5**).

The landscape at PTA provides an austere, real-world training environment (**Section 1.2.4**). The State-owned land provides essential connections for maneuvering throughout PTA. The State-owned land is necessary to access the TAs and training facilities on the State-owned land, as well as the ranges, TAs, and the impact area located on U.S. Government-owned land to the south. The State-owned land is also necessary to provide access among the three U.S. Government-owned portions of PTA (i.e., Cantonment and BAAF, impact area and training ranges, and Keʻāmuku parcel).

Critical facilities (e.g., BAX, ammunition storage locations), utilities (e.g., electricity, potable water, communications), and infrastructure (e.g., roads, firebreaks/fuel breaks) are located on the State-owned land. **Sections 2.1.1** and **2.1.2** provide additional detail. Federal directives, such as 10 U.S.C. Section 2852, Military Construction Projects: Waiver of Certain Restrictions, and 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 years remaining on the lease of State-owned land, these directives limit the Army's ability to invest in improvements at PTA. USARHAW is unable to modernize existing facilities on the State-owned land without a long-term land retention agreement in place.

No other training area in Hawaiʻi can accommodate collective training at larger than company size. As currently configured, PTA provides the maneuver area, SUA, training features, and facilities needed to meet USARHAW training requirements for Hawaiʻi-based units. PTA provides the longest distance for indirect-fire weapons (i.e., artillery and mortars) among all training areas within 1,000 miles. FPs located

on the State-owned land, and three FPs located on U.S. Government-owned portions of PTA northwest of the State-owned land, support training with indirect-fire weapons at long-range and maximize firing capabilities into the impact area.

In addition to allowing soldiers to meet training requirements, other military units (listed in **Section 1.2.6**) use PTA to meet their training requirements. PTA is the primary ground maneuver tactical training area for USINDOPACOM and is used for joint and multinational training exercises (e.g., Rim of the Pacific Exercise).

Loss of the State-owned land would result in substantial impacts on training because the Army would no longer have access to these critical maneuver areas, facilities, utilities, and infrastructure. Several of the training features and capabilities within the State-owned land are not available elsewhere within PTA or Hawai‘i.

1.4 Scope and Content of the EIS

NEPA requires federal agencies to examine the potential environmental effects 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 are made and before actions are taken. To pursue retention of the State-owned land for continued USARHAW training, the Army has initiated this EIS in compliance with NEPA (as amended in 2023), ~~under~~ the Council on Environmental Quality (CEQ) NEPA implementing regulations in 40 Code of Federal Regulations (CFR) Parts 1500–1508, ~~and~~ Army NEPA implementing regulations in 32 CFR Part 651, and HEPA (and its implementing regulations).

On January 20, 2025, President Trump issued an EO revoking President Carter’s 1977 EO 11911, *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 *Federal Register* (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 [90 FR 10610 (February 25, 2025)]. 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 (February 25, 2025)]. 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.

The Notice of Intent (NOI) for this EIS was published in the ~~*Federal Register* (~~FR~~)~~ on September 4, 2020, which is prior to the September 14, 2020, effective date of CEQ’s 2020 update to its NEPA implementing regulations; therefore, this EIS adheres to the 1978 version, as amended, of CEQ’s NEPA implementing regulations.

The Army is aware of the November 12, 2024, decision in *Marin Audubon Society v. Federal Aviation Administration*, No. 23-1067 (D.C. Cir. Nov. 12, 2024). To the extent that a court may conclude that the CEQ regulations implementing NEPA are not judicially enforceable or binding on this agency action, the Army has nonetheless elected to follow those regulations at 40 CFR Parts 1500–1508, in addition to the

Army's NEPA procedures, to meet the agency's statutory obligations under NEPA, 42 U.S.C. §§ 4321 *et seq.*

As noted in **Section 1.1**, this EIS is also being 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, including addressing potential cultural impacts [HAR Section 11-200.1-31(4) and (5)]. HAR Chapter 11-200.1 dictates the process and content for developing environmental disclosure documents. **Appendix A** lists the EIS content requirements under the NEPA and HEPA regulations and identifies the EIS section in which that content is provided.

The scope of this EIS includes a description of the Proposed Action, alternatives considered, 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 land at PTA for continued military training. Should Army training needs and impacts change in the future, separate NEPA (and potentially HEPA) ~~compliance~~ analysis would be required.

1.4.1 Resource Analysis

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

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

- Land Use
- Biological Resources
- Historic and Cultural Resources and 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
- Airspace
- Electromagnetic Spectrum
- Utilities
- 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, potential environmental consequences, and ~~potential~~ mitigation measures. **Chapter 4** addresses cumulative impacts. **Chapter 5** identifies incomplete information, unresolved issues, land use consistency, and unavoidable and irreversible impacts. **Chapters 6**, **7**, and **8** contain lists of references, document preparers, and public notification and input methods used throughout the EIS process, respectively. **Chapter 9** contains the glossary.

1.4.2 Regulatory Compliance Associated with Ongoing Army Activities

NEPA and HEPA require the action's relationship to environmental reviews, laws, and ~~Executive Orders~~EOs be integrated into this EIS to the extent practicable. This section highlights regulations, reviews, and approvals relevant to 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**.

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 those impacts and represent the primary federal historic preservation law 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 Section 106 of the NHPA, the Army executed a PA with the State Historic Preservation Officer and the Advisory Council on Historic Preservation in 2018 (DA, 2018b). The 2018 Section 106 PA for PTA resolves adverse effects on historic properties that may result from ongoing routine military training actions and related activities at PTA, including those activities on State-owned land. The potential adverse effects are mitigated through programmatic treatments and procedures specified in the 2018 Section 106 PA for PTA. The PA is a 15-year agreement that will remain in effect until at least 2033 and includes a process to extend the life of the agreement. The Army conducts Section 106 consultation for other activities that are not covered under the PA.

Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 U.S.C. Section 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 done at PTA, and no separate ESA consultation is anticipated for this real estate action.

Activities at PTA are covered under previous NEPA documents and associated consultations (**Appendix E**), including three USFWS-issued Biological Opinions (BO)~~s~~ that guide conservation work and include conservation measures for 1 mammal species, 3 bird species, 15 plant species, and Palila critical habitat. The Army is moving toward a programmatic approach to ESA consultations for Army training areas in Hawai‘i with federal resource agencies. A draft Programmatic Biological Assessment for Army training on PTA is currently being prepared in consultation with USFWS. Although the draft Programmatic Biological Assessment is broader in scope than the Proposed Action, it will address training and natural resource management activities on U.S. Government- and State-owned land, thus addressing any adverse effects on federally listed species from ongoing Army activities.

Hawai‘i Revised Statutes Chapter 6E, 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 the State Department of Land and Natural Resources (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 documents known historic and cultural resources on the State-owned land 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 by a state agency (e.g., lease, transfer of title). Thus, compliance with Chapter 6E would follow the EIS process. SHPD was notified of the intent to prepare an EIS and of the Draft EIS and Second Draft EIS availability, although it has no regulatory review responsibility for the EIS.

Hawai‘i Administrative Rules 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, and conservation. Boundaries of the conservation district were established in 1964 and went into effect with enactment of the conservation district statute (HRS Chapter 183C). The conservation district was established to conserve, protect, and preserve important natural resources and historic and cultural resources of the State through appropriate management and use to promote their long-term sustainability and public health, safety, and welfare.

The region including and surrounding PTA was included in the conservation district. Military use of State-owned land was authorized by the lease term in August 1964, prior to the enactment of HRS Chapter 183C. Per the statute and its enacting rule, HAR Chapter 13-5, Conservation District, lawful use of land prior to October 1, 1964, is considered nonconforming. PTA falls primarily in the resource subzone, one of the four defined subzones, which is intended for uses such as park land, lands for growing and harvesting commercial forest products, and outdoor recreation. Military use is not included as an allowable use for any conservation district subzone.

If a proposed land use is not present, 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 proposed use added to the identified land uses. HAR Chapter 13-5 provides for a rule amendment to create a new subzone with certain identified land uses. The amendment process allowed in HAR Section 13-5-16 requires a decision by the State Board of Land and Natural Resources (BLNR) with public input. **Section 5.3.2** 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 would follow the NEPA/HEPA process and determination of the land retention estate(s) and method(s) (**Section 2.3**).

Hawai'i Revised Statute Chapter 195D, Conservation of Aquatic Life, Wildlife, and Land Plants

The State provides protection for threatened species, endangered species, and species of concern under HRS Chapter 195D and its implementing rules. Under the rules, the Army holds permits that authorize collection of threatened and endangered plants for scientific purposes, possession of salvaged bird carcasses from PTA, and off-site mitigation with threatened or endangered plants (**Sections 3.3.4** and **3.3.6**).

Hawai'i Revised Statutes Chapter 205A, Coastal Zone Management

Hawai'i Coastal Zone Management (CZM), HRS Chapter 205A, describes the State's objectives, policies, laws, standards, and procedures to guide and regulate public and private uses through its coastal zone management program. Ten over-arching resources are addressed through the objectives and policies of Chapter 205A. Virtually all of the resources relate to potential development impacts on the shoreline, near shore, and ocean area environments. Under the State CZM program, each county designates and regulates Special Management Areas (SMA) within the State's coastal areas. The Proposed Action alternatives represent a real estate action (i.e., administrative action) that would allow continuation of ongoing activities on the retained State-owned land. The Army initiated a CZM consistency review process for the Proposed Action with the State; the initial application was rescinded. The Army has re-initiated 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 Record of Decision (ROD). The project's consistency with the CZM objectives and policies is described in **Sections 5.3.1** and **5.3.2**.~~The Army initiated the federal consistency assessment process for the Proposed Action. Its initial application was rescinded; the Army will resubmit a timely application for CZM Consistency Review in accordance with the regulations in 15 CFR Section 930.36(b)(1) and after public and government agency comments are received on the Second Draft EIS.~~

Hawai'i Revised Statute Chapter 342E, Nonpoint Source Pollution Management and Control

The Army obtains National Pollutant Discharge Elimination System (NPDES) permits from the State when required, including for industrial activities at Ahi Quarry on State-owned land (**Section 3.9.4.6**). The Proposed Action and ongoing activities would comply with the state water pollution regulations.

Hawai'i Administrative Rules Chapter 11-62, Wastewater Systems

The U.S. Environmental Protection Agency (USEPA) and the Hawai'i Department of Health (DOH), as its agent, administer the enforcement of the Safe Drinking Water Act through 40 CFR Parts 141–149. HAR

Section 11-62 includes state regulations for wastewater systems. Use of portable toilets with permanent structures requires approval by the Hawai‘i DOH Director.

1.4.3 List of Considered and Potential Permits, Licenses, Authorizations, and Approvals for the Proposed Action and Ongoing Activities

A list of all considered and 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 Section 107(a)(2)(D, E); 32 CFR Part 651, Appendix E (b)(2); 40 CFR Section 1502.25; and HAR Section 11-200.1-24(k). **Table 1-1** 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 1-1 also includes permits, licenses, authorizations, or approvals 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**. No County of Hawai‘i permits, licenses, authorizations, or approvals are anticipated.

As required by 32 CFR Part 651, Appendix E (b)(7)(iii); 40 CFR Section 1502.16(c); and HAR Section 11-200.1-24(j); **Section 5.3** discusses consistency with land use plans, policies, and controls applicable to the Proposed Action and the Army’s ongoing activities.

Table 1-1: Considered and Potential Permits, Licenses, Authorizations, and Approvals for the Proposed Action and Ongoing Activities

Permit, License, Authorization, or Approval ~~for Proposed Action~~	Agency	Status
Federal Requirements Considered for the Proposed Action		
NHPA, Section 106 *36 CFR Part 800*	State Historic Preservation Office / State DLNR SHPD	Consultation not required for Proposed Action (EIS **Sections 1.4.2** and **5.3.1**).
ESA *16 U.S.C. Section 1531 et seq*.	USFWS	Consultation not required for Proposed Action (EIS **Section 3.3.4.1**).
Native Endangered & Threatened Species Recovery Endangered & Threatened Plants (TE40123A-3)	USFWS	Issued (EIS **Section 3.3.4**)
Federal Fish and Wildlife Permit—Scientific Collection with Import / Export (MB95880B)	USFWS	Issued (EIS **Section 3.3.4**)
National Wildlife Refuge System Research and Monitoring Special Use Permits (121516-21020-G, 12516-22023-R, and 12516-23020-R)	USFWS	Issued (EIS **Section 3.3.4**)

Table 1-1: Considered and Potential Permits, Licenses, Authorizations, and Approvals for the Proposed Action and Ongoing Activities		
Permit, License, Authorization, or Approval ~~for Proposed Action~~	**Agency**	**Status**
State Requirements Considered for the Proposed Action		
Coastal Zone Management *HRS Chapter 205A*	State Office of Planning and Sustainable Development	~~Army will apply for consistency review after publication of this Second Draft EIS~~To be completed prior to the ROD (EIS **Sections 1.4.2** and **5.3.2**).
Hawai'i Historic Preservation Review *HRS ~~Chapter~~ Section 6E-~~42~~8* and *HAR Chapter 13-~~275~~284*	State DLNR SHPD	Compliance with HRS Chapter 6E would follow the EIS process (EIS **Sections 1.4.2** and **5.3.2**).
Conservation District *HRS Chapter 183C* and *HAR Chapter 13-5*	State DLNR Office of Conservation and Coastal Lands	Compliance with HRS Chapter 183C and HAR Chapter 13-5 would follow identification of the land retention estate(s) and method(s) (EIS **Sections 1.4.2** and **5.3.2**).
Existing and Potential State Permits for Ongoing Activities		
Conservation of Aquatic Life, Wildlife, and Land Plants *HRS Chapter 195D* and *HAR Chapters 13-107 and 13-124*	State DLNR Division of Forestry and Wildlife	Army holds permit(s) that authorize collection of threatened and endangered plants for scientific purposes, possession of salvaged bird carcasses from PTA, and off-site mitigation with threatened or endangered plants (EIS **Section 3.3.4**).
Protected Wildlife Permit–Scientific Collection (Upland Gamebirds: WL21-11)	State DLNR Division of Forestry and Wildlife	Issued (EIS **Section 3.3.4**)
Protected Wildlife Permit—Scientific Collection (WL19-42 and WL21-15)—Band-rumped Storm Petrel (*Hydrobates castro*)	State DLNR Division of Forestry and Wildlife	Issued (EIS **Section 3.3.4**)
Permit for Threatened and Endangered Plant Species (I2942 and I5287)	State DLNR Division of Forestry and Wildlife	Issued (EIS **Section 3.3.4**)
Hawai'i Experimental Tropical Forest Research Permit	State DLNR Division of Forestry and Wildlife	Issued (EIS **Section 3.3.4**)
Mauna Loa Forest Reserve Permit for Access and Research, Pu'u Huluhulu Native Plant Sanctuary	State DLNR Division of Forestry and Wildlife	Issued (EIS **Section 3.3.4**)
Wildlife Control Permit (WHI-PTA1)	State DLNR Division of Forestry and Wildlife	Issued (EIS **Section 3.3.4**)

Table 1-1: Considered and Potential Permits, Licenses, Authorizations, and Approvals for the Proposed Action and Ongoing Activities		
Permit, License, Authorization, or Approval ~~for Proposed Action~~	**Agency**	**Status**
Nonpoint Source Pollution Management and Control *HRS Chapter 342E*	State Department of Health	Army obtains ~~National Pollutant Discharge Elimination System~~NPDES permits when needed (e.g., for industrial activities at Ahi Quarry) (EIS **Section 3.9.4.6**).
Wastewater Systems *HAR Section 11-62*	State Department of Health	Portable toilets for permanent structure on State-owned land require approval by the Hawai'i DOH Director (EIS **Section 3.15**).

1.5 Decisions To Be Made

1.5.1 Army Decision

The Army's decision will determine which part of the State-owned land it will seek to retain. This ~~Second Draft~~Final EIS presents the Army's Preferred Alternative (**Section 2.4**) after taking into consideration which alternative best meets the purpose of and need for the Proposed Action, public comments on the Draft EIS published in April 2022~~,~~ and the Second Draft EIS published in April 2024, and the environmental analysis associated with each alternative. Following issuance of this Final EIS (**Section 1.6.5**), the Army's final decision and rationale for selection of an alternative for implementation will be presented in a ROD. The ROD will document the decision made, provide supporting explanation, and identify mitigation measures the Army will implement. The Army would develop and implement a mitigation monitoring plan for mitigation measures selected in the ROD if deemed necessary. The ROD 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 Notice of Availability (NOA) in the FR to announce the availability of the ROD for public review.

1.5.2 State Reviews

Decisions to be made by state agencies related to this Final EIS would be made by the BLNR. Under HRS Chapter 343, the agency with the greatest responsibility for approving the action as a whole is the accepting authority. The State-owned land is 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 all identifiable impacts, and satisfactorily responds to comments provided during public review of both the Draft EIS published in April 2022 and the Second Draft EIS published in April 2024.

Once the EIS acceptability determination is made (by the State) and the ROD is issued (by the Army), action to pursue the alternative selected in the ROD can begin. Depending on the alternative selected, possible decisions that may need to be made by state agencies, following acceptance of this EIS, include the following:

- Whether to allow Army retention of the State-owned land.
- What estate(s) and method(s) would be used to allow Army retention of the State-owned land, and what terms would be associated with the selected estate(s) and method(s).
- What military uses and management actions would be allowable under a rule change to HAR Section 13-5-5 to establish a special subzone in the State's conservation district.

1.6 Public Participation

Public participation is a key component of the NEPA and HEPA processes. Public input is formalized in a public scoping process and in prescribed public review/comment periods. **Figure 1-4** illustrates stages of public involvement in NEPA/HEPA environmental processes, with public input opportunities shown in green. NEPA and HEPA public participation 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 Army Training Land Retention program and other activities as identified in **Section 3.11.4** and **Appendix M**.

Figure 1-4: NEPA/HEPA Public Participation Process

1.6.1 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 1506.6. Publication of an NOI in the FR alerts the public of an agency's intent to prepare an EIS and initiates the NEPA 30-day public scoping period. The NOI for this EIS was published on September 4, 2020 (85 FR 55263). An amendment to the NOI was published on September 23, 2020 (85 FR 59753), to notify the public of the cancellation of in-person comment stations associated with the EIS Scoping Virtual Open House (SVOH) due to the COVID-19 pandemic. **Section 1.6.2** provides further details. The NOI notices are provided in **Appendix B**, and the SVOH meeting materials are provided in **Appendix C**.

In accordance with HAR Section 11-200.1-23, publication of the HEPA EIS Preparation Notice (EISPN) in the State Office of Environmental Quality Control (now 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. Notice of the HEPA EISPN availability was published in *The Environmental Notice* on September 8, 2020. The State EISPN notice is provided in **Appendix B**.

1.6.2 Scoping

The purpose 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 stakeholders can help identify reasonable alternatives and potential impacts and can provide input regarding key issues of concern 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 during the scoping process for this EIS included notification of the scoping period and events, publication of project information, and invitations to participate in scoping. The NEPA public scoping period began September 4, 2020, with publication of the NOI, and the HEPA public comment period began September 8, 2020, with publication of the EISPN. The Army voluntarily chose to extend the NEPA and HEPA scoping periods beyond the required 30 days; the NEPA and HEPA scoping periods ran concurrently, and the joint 40-day scoping period ended on October 14, 2020.

A public notice in local newspapers, published in multiple newspapers on multiple days, was also used to notify the public of the Army's intent to develop an EIS and to provide information regarding the Proposed Action and alternatives. The public notice was published in the *West Hawaii Today, Hawaii Tribune Herald*, and *Honolulu Star-Advertiser* on three separate dates (September 6, 14, and 20, 2020). Affidavits of publication are provided in **Appendix B**. Additionally, postcards with similar information were mailed via U.S. Postal Service to approximately 100 individual, agency, and organization stakeholders on September 4, 2020 (**Chapter 8, Table 8-1**). Stakeholders consist of individuals and organizations from contact lists maintained by USAG-HI for issues related to PTA, agencies with a regulatory role, and elected officials whose jurisdiction includes PTA. The scoping direct mail postcard is shown in **Appendix C**.

The Army invited federal, state, and local agencies; Native Hawaiian organizations; and the public to participate in the scoping process. Written comments were accepted throughout the 40-day public scoping period using three methods: a comment form accessed via the project EIS website (~~https://home.army.mil/hawaii/index.php/PTAEIS~~https://home.army.mil/hawaii/index.php/PTAEIS), a letter via U.S. Postal Service mail, and a message to the Army email address (usarmy.hawaii.nepa@mail.mil).

National and local orders and proclamations were issued in response to the COVID–19 pandemic, including *Interim Army Procedures for NEPA* (issued in March and June 2020), the County of Hawaiʻi *COVID–19 Emergency Rule No. 11* (dated August 25, 2020), and the State's *Twelfth Proclamation Related to the COVID–19 Emergency* (dated August 20, 2020). The Army, therefore, shifted to host "virtual" agency and public scoping events. To facilitate the receipt of public comments and distribution of project information, two "in-person comment stations" were initially planned to be held in two communities on the island of Hawaiʻi near PTA as part of the SVOH event. The comment stations were conceptualized to (1) accept written comments, (2) provide a telephone for those who wanted to record oral comments, and (3) provide printed project materials for those without computer access. In line with COVID-19 guidance to avoid large group gatherings, no project presentations or questions and answers were planned at the in-person stations. The State and county orders and proclamations issued in August limited the number of people allowed to gather in a single location. Out of an abundance of caution regarding COVID-19, the Army decided to cancel the in-person comment stations.

Two scoping events were held via online platforms: a Virtual Agency Scoping Meeting for agencies and an SVOH event for the public. The Virtual Agency Scoping Meeting was held on September 21, 2020, from 1:30 p.m. to 3:00 p.m. Hawaiʻi Standard Time. Thirty-six relevant federal, state, and county agencies and divisions received invitations; 25 individuals representing 19 different agency divisions attended. The meeting was conducted through 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 and identified the resource areas proposed for analysis in this EIS.

The SVOH event was held on September 23, 2020, from 4:00 p.m. to 9:00 p.m. Hawai‘i Standard Time. An SVOH webpage was activated on the EIS website at the start of the SVOH event and remained available to the public for the rest of the scoping period (i.e., until October 14, 2020). During the SVOH event, the public was invited to view and listen to prerecorded presentations (narrated posters), review project documents (e.g., NOI, EISPN, fact sheet, questions and answers, and flyer) and submit written and oral comments. The scoping meeting materials are provided in **Appendix C**. Oral comments were accepted via telephone by calling a specific telephone number during the 5-hour SVOH event to fulfill HEPA requirements and allow oral comments during a portion of the SVOH [HAR Section 11-200.1-23(d)]. The SVOH was designed to replicate an in-person, open house style event. Written comments were accepted throughout the scoping period.

During the 5-hour SVOH event, 36 oral comments were received by fewer than 36 individuals as some commentors called more than once. Roughly one-third of the 36 comments expressed preference that the Army’s Proposed Action—retention of State-owned land—does not occur. Several commenters asked that the EIS address impacts on training if the State-owned land is not retained. Support for training and for the Army was expressed by several callers; one specifically elaborated on programs undertaken by the Army and the staff at PTA that have benefited the community. Three commenters asked that the outcome of a lawsuit against the State “Ching versus DLNR” be implemented and progress on cleanup of the State-owned land be documented in the EIS. Six callers conveyed an expectation that the SVOH would be a “town hall” type setting that would include face-to-face video interaction. These callers expressed disappointment they could not ask questions directly. Per HAR Section 11-200.1-23(d), the original recordings have been submitted as audio files with the Draft EIS to the ERP and are available from its online EA/EIS library. Transcripts of the oral comments are provided in **Appendix N~~D~~**; a list of those who provided comments during scoping is included in (**Chapter 8, Table 8-1**).

A total of 240 written submissions were received during the 40-day scoping period. Nearly all submittals were provided by individuals, agencies, and organizations within the State. The EIS development team reviewed all submissions for substantive content and assigned a topic to substantive statements; each substantive statement assigned a topic is considered one “comment.” In determining whether a comment is substantive, the EIS development team considered “ . . . 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., historic and cultural resources and cultural practices, 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.

The team identified 417 substantive comments and 24 topics in the written submittals. Most of the substantive comments fell under the following topics: biological resources, historic and cultural resources and cultural practices, hazardous substances and hazardous wastes, land use and lease issues, and noise. **Appendix ~~D~~N** includes all scoping comments received; **Appendix D** ~~and~~ provides responses to the substantive comments.

1.6.3 Draft EIS

Notice of Availability / Draft EIS

The availability of the *Army Training Land Retention at Pōhakuloa Training Area (PTA) Draft Environmental Impact Statement* was published in the FR and in *The Environmental Notice* on April 8, 2022. A 60-day public comment period was initiated on that date and ended on June 7, 2022. In accordance with 32 CFR Part 651, a public notice was published in local newspapers. Postcards with similar information were mailed via U.S. Postal Service to approximately 100 individual, agency, and organization stakeholders; names of elected officials were updated between the scoping and Draft EIS notifications to reflect the outcome of November 2020 elections (**Chapter 8, Table 8-1**). In accordance with NEPA and HEPA, publication in the FR and in ~~the State~~*The Environmental Notice*~~*Bulletin*~~ initiated a 45-day Draft EIS public review period. The review period for the ~~PTA~~ Draft EIS was extended to 60 days. Draft EIS public meetings were scheduled to provide information to the public and agencies and to facilitate oral and written comments.

During the public meetings, 46 oral comments were received in-person and 12 oral comments were received via telephone recording. During the public comment period, 669 written submissions were received. The EIS team identified 369 substantive comments covering 21 topics in the written submittals. Most of the substantive comments fell under the following topics: the Proposed Action; land use; biological resources; cultural practices; cultural and historic resources; 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 N~~D~~**. Responses to written and oral comments on the Draft EIS were considered during the preparation of the Second Draft EIS and are provided in **Appendix D**.

Draft EIS Public Review

The NOA provided three options for the public to submit oral comments. A public in-person meeting was held on April 25, 2022, in Hilo, Hawaiʻi. A second public in-person meeting was held on April 26, 2022, in Waimea, Hawaiʻi. Additionally, a telephone line was established for oral comments for those unable to attend in person from 12:01 a.m. on April 24, 2022, through 11:59 p.m. on April 26, 2022.

Approximately 70 people attended the two public meetings. At the Monday, April 25 meeting in Hilo, 21 people presented oral comments, and three people spoke twice for a total of 24 comments. At the Tuesday, April 26 meeting in Waimea, 19 people presented oral comments, and three people spoke twice for a total of 22 comments. Twelve oral comments were recorded through the telephone service during the 48-hour period over the two days of public meetings. Not all callers identified themselves; however, it is estimated that 10 of the recordings were from individuals who did not comment at an in-person public meeting. Testimony at both meetings included some support and largely opposition for retention of ~~training lands~~the State-owned land at PTA. General statements did not address elements of the Draft EIS, but rather focused on governance authority, diplomatic solutions to end war, and opposition to the Army's continued presence. Oral comments from both public meetings and the telephone line were transcribed by a professional court reporter. Transcriptions of all comments and additional information on the public meetings are provided in **Appendix N~~D~~**.

1.6.4 Second Draft EIS

Substantive comments received on the Draft EIS included a request that Army training impacts, referenced from separate documents in the Draft EIS, be included in a Second Draft EIS. Because this represented~~s~~ substantial additional information, the Army agreed with a comment from the State DLNR that a Second Draft EIS should be made available for public review. **Appendix D** includes responses commensurate to all agency and public comments on the Second Draft EIS.

Notice of Availability / Second Draft EIS

Like the Draft EIS, availability of the Second Draft EIS ~~has been~~was published in the FR and in *The Environmental Notice.* In accordance with 32 CFR Part 651, a public notice was published in local newspapers. Postcards with similar information were mailed via U.S. Postal Service to approximately 100 individual, agency, and organization stakeholders; names of elected officials were updated between the Draft EIS and Second Draft EIS notifications to reflect the outcome of November 2022 elections (**Chapter 8, Table 8-1**). In accordance with NEPA and HEPA, publication in the FR and in ~~the State~~*The Environmental Notice*~~*Bulletin*~~ initiated a 45-day Second Draft EIS public review period from April 19 through June 7, 2024. Second Draft EIS public meetings ~~have been scheduled to~~were held to provide information to the public and agencies and to facilitate oral and written comments.

During the public meetings, 49 oral comments were received in-person and 13 oral comments were received via telephone recording. During the public comment period, 882 written submissions were received. The EIS team identified 566 substantive comments covering 39 topics in the written submittals. Most of the substantive comments fell under the following topics: Proposed Action; land use; biological resources; cultural practices; cultural and historic resources; and hazardous substances and hazardous wastes.

Written comments received or postmarked within 45 days of publication of the Second Draft EIS NOA are included in **Appendix N**. Responses to written and oral comments on the Second Draft EIS were considered during the preparation of this Final EIS and are provided in **Appendix D**. In addition to comments received and considered for analysis in the Second Draft EIS, information detailing ATLR community engagement activities are described in **Section 3.11.4** and **Appendix M**. 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 **Appendix M**.

~~Substantive written comments received or postmarked within 45 days of publication of the Second Draft EIS NOA will be considered during the preparation of the Final EIS.~~

Second Draft EIS Public Review

~~The NOA and ERP bulletin published three options for the public to submit oral comments. Two in-person public meetings will be held on the island of Hawai'i. Additionally, a telephone line will be established over a 48-hour period to record oral comments from those unable to attend in-person. Transcripts of all oral comments and additional information about the public meetings will be provided in the Final EIS.~~The NOA and publication in *The Environmental Notice* provided three options for the public to submit oral comments. A public, in-person meeting was held on May 6, 2024, in Waimea, Hawai'i. A second public, in-person meeting was held on May 7, 2024, in Hilo, Hawai'i. Additionally, a telephone line was established

for oral comments for those unable to attend in person from 12:01 a.m. on May 6, 2024, through 11:59 p.m. on May 7, 2024.

Approximately 100 people attended the two public meetings. At the Monday, May 6 meeting in Waimea, 13 people presented oral comments, and 4 people spoke twice, for a total of 17 oral comments. At the Tuesday, May 7 meeting in Hilo, 33 people presented oral comments. Thirteen oral comments were recorded through the telephone service during the 48-hour period over the two days of public meetings. It is estimated that 11 of the recordings were from individuals who did not comment at an in-person public meeting.

Testimony at both public meetings for the Second Draft EIS included some support and largely opposition for retention of the State-owned land at PTA. General statements did not address elements of the Second Draft EIS, but rather focused on governance authority, diplomatic solutions to end war, and opposition to the Army's continued presence. Oral comments from both public meetings and the telephone line were transcribed by a professional court reporter. Transcriptions of all comments and additional information on the public meetings are provided in **Appendix N~~M~~.**

1.6.5 Final EIS

The Final EIS ~~will~~ has taken into consideration comments received on the Second Draft EIS, identified~~y~~ substantive comments, and provided responses commensurate to the comments. The Final EIS ~~may be~~has been refined to address substantive comments and to clarify information. Like the Draft and Second Draft EISs, availability of the Final EIS will be published in the FR and in ~~the ERP bulletin~~*The Environmental Notice*. DLNR, as the State's accepting authority for this EIS, will conduct its HEPA acceptability determination within 30 days of publication of the Final EIS in *The Environmental Notice*. DLNR's determination will be published in *The Environmental Notice.* A public notice that the Final EIS has been published will also be placed in local newspapers. Comments that are received during the 30-day NEPA waiting period following release of the Final EIS will be considered in the Army's decision-making process and documented as such in the ROD.

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Chapter 2

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

As noted in **Section 1.1**, ~~this Second Draft EIS has a refined~~ the Proposed Action has been refined from that published in the Draft EIS (April 2022). Based on comments on the Draft EIS from agencies and the public, the Army is no longer considering retention of the approximately 250 acres of State-owned land administered by DHHL and is considering retention of only the remaining approximately 22,750 acres of State-owned land.

The Army proposes to retain up to approximately 22,750 acres of the 23,000 acres of State-owned land at PTA in support of continued military training. Retention of all or part of the approximately 22,750 acres of State-owned land would occur through attainment of a land interest that would allow continued use of the land (see **Section 2.3**). The Army would arrange for retention and continued use of the State-owned land prior to expiration of the 1964 lease (on August 16, 2029) to ensure training is not interrupted. Following arrangement for retention of the State-owned land, the Army would continue to conduct ongoing Army activities (i.e., military training; facility, utility, and infrastructure maintenance and repair activities; resource management actions; and associated activities such as emergency services) on the State-owned land retained. The Army also would continue to permit and coordinate ongoing activities (training and other activities such as public use programs) by other PTA users, including DoD agencies, international partners, local agencies, and the community, on the State-owned land retained by the Army.

> 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.

The Proposed Action is a real estate action (i.e., administrative action) that would enable continuation of ongoing activities on the State-owned land retained by the Army. It does not include construction, modernization, or changes in ongoing activities in the State-owned land retained. Additionally, the Proposed Action does not include changes to the use, size, or configuration of the SUA overlying the State-owned land. Any such changes would be subject to separate NEPA ~~analysis~~and HEPA analysis, 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. As noted in **Section 1.3.3**, the Army must acquire a long-term interest (i.e., at least 25 years) in the State-owned land to conduct military improvements or modernization efforts on it.

This EIS assumes that ongoing activities within the State-owned land, including current training and resource management actions, would continue under a new real estate agreement if there were one. The impacts from continuation of these ongoing activities are discussed in this EIS. After the end of the proposed real estate agreement, the Army could end or seek to continue ongoing activities (not currently planned), but neither future action is part of the Proposed Action and both would require separate, future NEPA and HEPA ~~compliance~~analysis.

Current activities within the State-owned land were previously analyzed in separate NEPA documents, as applicable. **Appendix E** lists the NEPA documents completed for previous and ongoing actions on the State-owned land [per HAR Section 11-200.1-24(d)(7)], as well as best management practices (BMP), standard operating procedures (SOP), management measures, and mitigation measures the Army uses to implement ongoing environmental monitoring and conservation efforts within the State-owned land. The Army would continue to execute these BMPs, SOPs, management measures, and mitigation measures under the Proposed Action. The Army would continue to conduct ongoing activities within all of the approximately 23,000 acres of the State-owned land until a new real estate agreement is in place for the up to 22,750 acres the Army is proposing to retain (does not include the 250 acres of land administered by DHHL) or the 1964 lease expires, whichever occurs first. Continuation of ongoing activities until a new real estate agreement is in place or the 1964 lease expires is not part of the Proposed Action because the Proposed Action is a real estate action and ongoing activities were previously analyzed in separate NEPA documents and would occur during the current lease.

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

The Army will continue to comply with lease conditions that are applicable during the current lease (e.g., avoid damaging cultural/historic resources). Following expiration of the current lease and in accordance with the lease or otherwise negotiated with the State, the Army would comply with lease conditions ~~conduct actions to meet the conditions in the lease (hereafter referred to as "lease compliance actions")~~ that would be applicable after expiration of the lease (e.g., reforestation)~~, to the extent feasible,~~ within the State-owned land not retained. **Appendix F** includes a copy of the 1964 lease and 2010 amendment. The current lease compliance actions are not part of the Proposed Action but would be triggered by expiration of the current lease for the State-owned land not retained under the various alternatives (see **Section 2.2**). ~~As such, these lease compliance actions are considered connected actions (40 CFR Section 1508.25, 1978 version of CEQ regulations, as amended).~~ Lease compliance actions that would be applicable and would occur after expiration of the current lease within the State-owned land not retained include actions such as reforestation, removing signs, removing or abandoning structures, and removing "weapons and shells" (e.g., bullet casings, mortar shells, artillery shells, rifle shells). The parameters for these lease compliance actions ~~in the current lease~~ are subject to the terms/conditions of the current lease and negotiation with the State, which cannot commence until this EIS is completed 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.

~~Lease compliance actions for~~The conditions in a new lease or easement are unknown but are assumed to be similar to those in the current lease except for necessary updates (see **Section 2.3**~~ for additional details~~) and may be subject to ~~future~~ negotiation between the Army and the State. It is assumed the Army would

conduct the lease compliance actions during a new lease or easement (due to the conditions in a new lease or easement) under various applicable DoD programs and that the lease compliance actions may be subject to future negotiation with the State; therefore, the lease compliance actions during 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.

~~Secondly, i~~In accordance with the lease and under the provisions of existing law, the Army retains responsibility for cleanup ~~and restoration of former training areas~~of closed ranges (i.e., State-owned land not retained). Consequently, after expiration of the current lease~~, and if deemed necessary,~~ the Army would follow ~~Army~~ federal law and 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 would occur under 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 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. ~~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.~~The cleanup and restoration activities for State-owned land not retained would be triggered by and conducted after expiration of the current lease and, therefore, are not part of the Proposed Action. These activities would be completed in accordance with applicable future cleanup and restoration requirements and standard processes (i.e., requirements and standard processes at the time the activities are initiated). These future cleanup and restoration requirements, standard processes, and associated costs are unknown. ~~The Army would coordinate cleanup and restoration activities with DLNR and the DOH Hazard Evaluation and Emergency Response Office.~~The Army will coordinate its cleanup actions with the State of Hawai'i throughout the CERCLA process.

This EIS includes assumptions to characterize potential impacts, but the lease compliance actions ~~and cleanup and restoration activities~~ may require future evaluation to determine if additional NEPA ~~compliance~~ and HEPA analysis is required. Based on the methodology used in this EIS, lease compliance actions apply to all action alternatives (State-owned land not retained and State-owned land retained via lease or easement) and the No Action Alternative but do not apply to State-owned land retained via fee simple title, and cleanup and restoration activities only apply to State-owned land not retained.

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, lease compliance actions and cleanup and restoration of former training areas (i.e., State-owned land not retained) are connected actions but~~ Lease compliance actions 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 to be treated as a single action and analyzed together in the same EIS. The timing of the three elements of the combined single action is as follows:

- An arrangement for land retention would occur prior to expiration of the current lease to ensure training is not interrupted. For analysis purposes, it is assumed this would occur in 2029.
- Continuation of ongoing activities within the State-owned land retained would occur simultaneously with the land retention. If the Army were to retain the State-owned land via lease or easement, then the Army would ~~conduct applicable lease compliance actions~~comply with lease

conditions (e.g., avoid damaging cultural/historic resources) during the new lease or easement. For analysis purposes, it is assumed this would start in 2029 and last the length of the land retention arrangement (see **Section 2.3**). The duration for land retention is not identified because it would be negotiated with the State following completion of this EIS.

- For any State-owned land not retained, lease compliance actions associated with termination of the current lease (e.g., reforestation) ~~and cleanup and restoration activities~~ would start upon expiration of the current lease and continue until completed or regulatory standards are met, respectively. For analysis purposes, it is assumed this would start in 2029 and continue until completed or regulatory standards are met~~, respectively~~.

Section 2.1.1 describes the TAs, facilities, utilities, and infrastructure within the State-owned land. **Section 2.1.2** provides details on the primary features and associated military training conducted on the State-owned land. **Section 2.1.3** summarizes the training procedures and requirements on the State-owned land. **Section 2.1.4** lists the screening criteria the Army used to assess the alternatives for implementing the Proposed Action.

2.1.1 State-Owned Land Training Areas, Facilities, Utilities, and Infrastructure

The State-owned land includes TAs 1–15, 18, 19, and 20, and portions of TAs 16, 17, 21, and 22 (including the northern portion of TA 22B), which accounts for 22 of the 24 TAs at PTA (**Figure 2-1**). The TAs are used for maneuver and weapons training and include a variety of training and support facilities, utilities, and infrastructure. U.S. Government-owned facilities within the State-owned land include live-fire and non-live-fire FPs; ranges for mounted, dismounted, and aviation training; and support facilities such as ammunition storage areas and helicopter and tilt-rotor aircraft landing zones. U.S. Government-owned utilities within the State-owned land include electricity [exterior lighting, manholes, utility poles, electrical distribution lines (aboveground and underground), transformers, and the installation's only electrical substation] and communications equipment [speaker, antennas, manholes, utility poles, and distribution lines (aboveground and underground)]. U.S. Government-owned infrastructure within the State-owned land includes roads (65 miles), training trails (94 miles), and firebreaks/fuel breaks. The State-owned land supports larger than company-sized units (i.e., battalion and brigade) for live-fire and maneuver exercises.

Table 2-1 summarizes the facilities within the State-owned land. Facilities on the State-owned land have been roughly valued at more than $200 million (~~USACE~~ac-POH, 2017). **Figure 2-1** presents the TAs, U.S. Government-owned facilities, and U.S. Government-owned utilities (only electricity and communication utilities) on the State-owned land. For security reasons, the figures in this EIS do not show the ammunition supply point (ASP), ammunition holding areas (AHA), and Cooper Air Strip, which is an unmanned aerial vehicle (UAV) airfield. Additionally, the figures in this EIS do not show wastewater, liquid fuel, and renewable energy utilities on the State-owned land due to lack of geographic information system (GIS) data for these utilities. For ease of viewing, **Figure 2-1** does not show the U.S. Government-owned infrastructure (roads, training trails, and firebreaks/fuel breaks) on the State-owned land.

Figure 2-1: Training Areas, Facilities, and Utilities on State-Owned Land

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The State-owned land also includes utilities not owned by the U.S. Government. These utilities include a Hawaiian Telcom communications line; a Hawaiian Electric Light Company (HELCO) substation and electrical line; and the Pural Water Specialty Company potable water storage, treatment, and distribution system and fire protection water storage and distribution system at PTA. These non-U.S. Government-owned utilities have easements between 25 and 50 feet on either side of the centerline. The Proposed Action would not impact the ownership of these utilities. If the Army retains State-owned land containing utilities not owned by the U.S. Government, the Army would allow those utility easements to remain regardless of the land retention estate selected for implementation.

The State-owned land also includes portions of DKI Highway. The U.S. Government conveyed a roadway easement to the Hawai'i Department of Transportation (HDOT) for DKI Highway. If the Army retains State-owned land containing the DKI Highway, the Army would allow the roadway easement to remain regardless of the land retention estate selected for implementation.

Table 2-1: Facilities Within the State-Owned Land

Facility	Description	Number in State-Owned Land versus all of PTA
Battle Area Complex	Digital live-fire range for mounted, dismounted, and aviation training	1 of 1
Military Operations on Urban Terrain	Range with several buildings to simulate a village for practicing military operations in an urban setting	1 of 1
Ammunition Supply Point	Facility where ammunition is securely stored for issue to and return by military units	1 of 1
Ammunition Holding Area	Area where ammunition is temporarily stored while a military unit is training	2 of 5
Cooper Air Strip	UAV airfield with storage buildings	1 of 1
Firing Point	Location used for live-fire and non-live-fire training by indirect-fire weapons (i.e., artillery, mortars, and rockets)	107 of 118
Portion of Range 14	Multi-purpose live-fire range	1 of 1
Landing Zone	Cleared area for landing and takeoff of helicopters and tilt-rotor aircraft	6 of 27
Drop Zone	Cleared area used to drop equipment and personnel via parachute from aircraft	1 of 4
Forward Arming and Refueling Point	Cleared area with concrete pads for providing fuel and ordnance to helicopters and tilt-rotor aircraft	2 of 3
Forward Operating Base	Entry-controlled position used to support a strategic goal or objective (e.g., medical facilities, airfields, and maintenance support facilities)	3 of 3
Helicopter Dip Tank	Surface water feature where helicopters can fill buckets with water during firefighting operations	~~4 of 10~~7 of 13

Source: DA, 2018b; USARHAW, 2021; USAG-PTA, 2021~~eg~~

2.1.2 Features and Associated Training on State-Owned Land

PTA is used for training by a variety of DoD agencies, international partners, and local agencies. Much of this training is conducted on the State-owned land, as described in the following paragraphs.

Battle Area Complex. The BAX is a digital live-fire range used for mounted, dismounted, and aviation training. It is instrumented to capture audio, video, and automated scoring to provide feedback on performance. The BAX is a single range with multiple capabilities that include crew gunnery lanes and convoy live-fire, aerial gunnery, and move and shoot capacity for up to a company (100–200 personnel). It supports use of ball ammunition and rockets. The BAX also is integrated with Range 11-T (not on State-owned land) to provide depth to employ several weapons systems with complimentary effects and varying distances. The BAX allows for training, certification, and qualification of various combat units. It ensures units are prepared to integrate with lateral units while deployed in combat and peace-time missions. The training outcomes provided at the BAX are the Army standard benchmark, focusing on the Army's Integrated Weapons Training Strategy, which builds proficiency from individual weapons to Combined-Arms Live-Fire Exercises. The BAX is the only digital live-fire military range in Hawai'i and is potentially the most important range facility in USARHAW's training strategy. It also is used by the USMC, USAF, and USN. ~~In fiscal year 2019, 7,926 personnel were trained at the BAX, and 12,000 personnel were trained across PTA (USAG-PTA, 2020a; USARHAW, 2019a). Therefore, 66 percent of all personnel trained at PTA in fiscal year 2019 used the BAX.~~In fiscal year 2024, 4,643 personnel were trained at the BAX (USARHAW, 2024).

Maneuver Areas. TAs 1 through 20 within the State-owned land represent the largest contiguous area of land with soil on PTA, as opposed to the bare lava surface that dominates much of the rest of PTA. This soil area allows cross-country maneuver on foot and vehicle as well as the ability to dig and excavate survivability positions for personnel and their equipment; therefore, all of the State-owned land (approximately 23,000 acres) meets the Army Training and Evaluation Program standards for unrestricted maneuver area. The State-owned land represents approximately 54 percent of PTA's unrestricted maneuver area (approximately 42,833 acres).

Firing Points. Approximately 91 percent of the FPs on PTA are on the State-owned land (USARHAW, 2021). The FPs are used by indirect-fire weapons (i.e., artillery, mortar, and rocket systems). Artillery units conduct up to battalion-level training at PTA. This training cannot be conducted anywhere else in Hawai'i due to the distances required to fire artillery for this size unit. The State-owned land allows artillery and mortar units to maneuver by using broad areas to engage and then conduct survivability moves multiple times per training event. Survivability moves are required because an enemy can determine the source of artillery and mortar fire and target those locations. Artillery and mortar units must practice relocating to new FPs to avoid being targeted by enemy forces. During collective training, the indirect-fire weapons are integrated to provide variable ranges of fire support to simulate real world situations. The High Mobility Artillery Rocket System is used to deliver rocket fire from FPs located within State-owned land onto the impact area located on U.S. Government-owned land. Training on this system occurs no more than four times per year at PTA (USAG-HI, 2019).

Long-Range Firing. Indirect-fire weapons require long-range firing capabilities. Based on the geometry of PTA, the longest indirect-fire distances are from north to south. The Ke'āmuku parcel and other PTA areas north of DKI Highway are not suitable for indirect-fire weapons because of safety restrictions that prohibit firing over DKI Highway into the impact area. Therefore, FPs on the State-owned land provide the longest firing distance on PTA and are essential for training. These FPs offer distances that are approximately four times longer than other military facilities in Hawai'i.

Aviation. Aircraft training requires a series of increasingly complex and larger collective qualifications for annual certification. UAVs require their own qualification and support collective training events. Aircraft training locations within the State-owned land includes the FARPs, drop zone, landing zones, and Cooper Air Strip.

Cooper Air Strip is dedicated to UAV operations and provides safe separation from the manned aircraft operations at BAAF. It underlies restricted area R-3103, so the UAVs can be operated without conflicts with general aviation traffic. Cooper Air Strip is used for approximately 8,500 operations annually (USAG-PTA, 2020b).

Ammunition Management. Ammunition within the State-owned land is managed at the ASP, AHAs, and FARPs. The ASP is a safe and secure storage facility that receives, stores, issues, and maintains accountability of ammunition at PTA. It is licensed by the DoD Explosive Safety Board and was sited and built to meet regulatory requirements for net explosive weight, compatibility, and explosive safety quantity-distance (ESQD) for ammunition storage and operations. The ASP is critical to support training operations at PTA. AHAs are temporary sites close to a range or TA where ammunition is issued and turned-in by the individual or crew that will use the ammunition. AHAs are licensed and must comply with regulatory requirements. FARPs are used to arm and fuel helicopters and tilt-rotor aircraft during training operations. There are two AHAs and two FARPs on the State-owned land.

2.1.3 Training Procedures and Requirements on State-Owned Land

Training on PTA, including the State-owned land, adheres to procedures and requirements in USARHAW Regulation No. 350-19, *Ranges and Training Areas*; *U.S. Army Garrison, Pōhakuloa (USAG-PTA) External Standard Operating Procedures* (USAG-PTA, 2018a); *Pōhakuloa Training Area Range Operations Standing Operating Procedures* (USARHAW, 2022); and the 1964 lease (e.g., only small arms ammunition is permitted to be fired into Parcel A of the State-owned land). The USAG-PTA *External Standard Operating Procedures* identifies cultural and biological resources restricted areas, general restrictions, vehicle restrictions, ~~excavation restrictions,~~ digging and mechanical equipment excavation restrictions, emergency discovery procedures, area specific restrictions (e.g., Palila critical habitat, conservation fence units), restrictions for endangered wildlife protection, and special restrictions for invasive species prevention (USAG-PTA, 2018a). The State-owned land includes approximately 5,095 acres of critical habitat for Palila (see **Appendix E** for training restrictions) and approximately 8,500 acres of conservation fence units for protecting federally listed plant species from ungulates (i.e., sheep, goats, and pigs). *Pōhakuloa Training Area Range Operations Standing Operating Procedures* supersedes Appendix A in the USAG-PTA *External Standard Operating Procedures* and includes the regulations, general precautions, responsibilities, and instructions for using range facilities and maneuver areas at PTA (USARHAW, 2022). Refer to applicable portions of **Chapter 3** and **Appendix E** for other BMPs, management measures, and mitigation measures the Army uses to reduce impacts within the State-owned land.

The USAG-PTA *External Standard Operating Procedures* (USAG-PTA, 2018a) and *Pōhakuloa Training Area Range Operations Standing Operating Procedures* (USARHAW, 2022) include several restrictions for digging and excavation, such as digging survivability positions (approximately 3 feet wide and 4 feet deep) is only permitted in previously used areas and only with hand tools (i.e., shovels and picks); do not disturb, remove rocks from, or walk on rocky outcroppings; do not cut/remove plants or trees; built-up survivability positions must be constructed of sandbags or other foreign materials (not on-site lava rock); survivability positions must be restored to original condition after training; DoD personnel are to contact PTA Range Operations to determine if an excavation permit is required; and mechanical excavation is only permitted at one FP on State-owned land and requires a dig plan.

2.1.4 Screening Criteria

The Army established screening criteria to identify the range of potential alternatives that support the purpose of and need for the Proposed Action. The Army used the screening criteria to assess whether each alternative was reasonable and would be carried forward for evaluation in this EIS. **Table 2-2** compares the potential action alternatives against the following screening criteria:

1. Allow for long-term use, maintenance, repair, and future modernization (future modernization is not currently planned and would require separate, future NEPA and HEPA ~~compliance~~analysis, as applicable) of vital ranges, facilities, U.S. Government-owned utilities, and infrastructure on the State-owned land in support of ongoing USARHAW training and operational requirements.
2. Include long-term use of contiguous unrestricted maneuver area to accommodate continuation of collective training, including live-fire and maneuver exercises at larger than company size.
3. Include long-term access in the State-owned land to permit continuation of ongoing activities (training, maintenance and repair activities, resource management actions, emergency services, public use programs) in the State-owned land and U.S. Government-owned land.
4. Enable continued full use of the impact area, including long-range use of indirect-fire weapons.
5. Be cost effective, fiscally allowable by the federal government, and meet the parameters of DoD's approved Major Land Acquisition Waiver Request.

Table 2-2: Comparison of Alternatives to Screening Criteria

Alternatives	Screening Criterion 1	Screening Criterion 2	Screening Criterion 3	Screening Criterion 4	Screening Criterion 5
Alternative 1: Maximum Retention					
Alternative 2: Modified Retention					
Alternative 3: Minimum Retention and Access					
Alternative 4: Retention of Access, Utilities, and Infrastructure					
Alternative 5: Retention with Training and Modernization Limitations					
Alternative 6: Short-Term Retention					
Alternative 7: Computer-Based Simulation Training					
Alternative 8: Use a Different Location and/or Use Diplomacy					

Key: green = fully meets screening criteria,
yellow = partially meets screening criteria,
red = does not meet screening criteria

As illustrated in **Table 2-2**, only Alternatives 1, 2, and 3 (see **Sections 2.2.1** through **2.2.3** for detailed descriptions) adequately meet all the screening criteria and are carried forward for detailed analysis. **Sections 2.2.5** and **2.2.6** provide~~s~~ descriptions of Alternatives 4, 5, ~~and~~ 6, 7, and 8, which do not adequately meet one or more of the screening criteria and are not carried forward for detailed analysis.

2.2 Alternatives Considered

The NEPA process includes consideration of reasonable alternatives for the Proposed Action. Reasonable alternatives must satisfy the purpose of and need for the Proposed Action, as defined in **Section 1.3**, and meet the screening criteria specified in **Section 2.1.4**. The alternatives carried forth for detailed analysis in this EIS are presented in **Sections 2.2.1** through **2.2.3** and are a practical representation of the range of reasonable alternatives regarding the extent (e.g., maximum, modified, and minimum) and location of retention of the State-owned land. This EIS analyzes the potential impacts associated with these alternatives. Additionally, NEPA and HEPA regulations require the inclusion of a No Action Alternative (**Section 2.2.4**) for EISs. While the No Action Alternative would not satisfy the purpose of or need for the Proposed Action, it is analyzed in detail in this EIS. **Sections 2.2.5** and **2.2.6** address~~es~~ the alternatives considered and eliminated from detailed analysis.

2.2.1 Alternative 1: Maximum Retention

Under Alternative 1, the Army would retain approximately 22,750 acres (99 percent) of the State-owned land at PTA, including all U.S. Government-owned facilities, utilities, and infrastructure within the State-owned land retained. Additionally, the Army would retain all U.S. Government-owned utilities and associated access throughout the State-owned land not retained (i.e., aboveground electrical and communication systems in TA 2) via a real estate agreement to enable continued safe operation of U.S. Government-owned land and State-owned land retained at PTA. The Army would cooperate with the State to provide physical security for the U.S. Government-owned utilities proposed for retention in the State-owned land not retained. **Figure 2-2** shows the principal retention area (approximately 22,750 acres) and the U.S. Government-owned utilities and associated access (within the State-owned land not retained) that the Army would retain under Alternative 1.

Alternative 1 includes the following potential Army actions and responsibilities:

- Continue to conduct ongoing Army activities (training, maintenance and repair activities, resource management actions, and associated activities such as emergency services) on the State-owned land retained (approximately 22,750 acres).
- Continue to permit and coordinate other PTA users' ongoing activities (training and other activities such as public use programs) on the State-owned land retained.
- Continue to use, maintain, and repair U.S. Government-owned utilities on the State-owned land not retained to ensure their operability for U.S. Government-owned land and State-owned land retained.

The following potential Army actions and responsibilities are not part of Alternative 1 but would be triggered by lease expiration for the State-owned land not retained~~. As such, these actions and responsibilities are considered connected actions because implementation of Alternative 1 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~~, to the extent feasible,~~ within the State-owned land not retained.
- 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, CERCLA, and the terms of the lease~~, and if deemed necessary, the Army would follow Army 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~~. The Army will coordinate its cleanup actions with the State of Hawai'i throughout the CERCLA process.~~The Army would coordinate these actions with DLNR and the DOH Hazard Evaluation and Emergency Response Office.~~

Lease compliance actions, and cleanup and restoration for hazardous substances and ~~hazardous wastes, including~~ MEC, within the State-owned land not retained would occur under the same parameters identified in **Section 2.1**.

Alternative 1 includes the following State actions and responsibilities:

- Assume full control and management of the State-owned land not retained.
- Be solely responsible for the funding and management of resource management actions, physical security (except the Army would cooperate with the State to provide physical security for the U.S. Government-owned utilities proposed for retention in the State-owned land not retained), and public use programs on the State-owned land not retained.

Under Alternative 1, the Army would no longer have access to approximately 250 acres of maneuver area as well as a road and training trail in the State-owned land not retained. Most of this area is critical habitat designated by USFWS for Palila. The State-owned land that would not be retained has no U.S. Government-owned facilities and limited U.S. Government-owned infrastructure (i.e., roads and training trails), has Palila critical habitat training restrictions (see **Appendix E**), is partially north of DKI Highway (which limits training in this area due to its physical separation from the majority of the State-owned land and the impact area and training ranges), and has cinder cones in the portion that is south of DKI Highway (which limits training). Consequently, Alternative 1 would have a negligible impact on the ongoing activities conducted on the State-owned land. Alternative 1 would allow the Army to continue to manage and use approximately 22,750 acres of the State-owned land; maintain unrestrained access among the Cantonment and BAAF, impact area and training ranges, and Keʻāmuku parcel; conduct ongoing military training, maintenance and repair activities, resource management actions, and associated activities; retain almost all of its investment in facilities, utilities, 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 ~~compliance~~ and HEPA analysis, as applicable) of the retained facilities, utilities, and infrastructure within the State-owned land. The Army also would continue to permit and coordinate ongoing training and other activities by other PTA users on the State-owned land retained. This alternative would have negligible potential for encroachment (i.e., outside actions that inhibit normal military training and operations) and accidental or intentional trespass on U.S. Government-owned land at PTA from adjacent properties because the Army would continue to control access to most of the State-owned land. This alternative also maximizes military training noise buffer areas.

2.2.2 Alternative 2: Modified Retention

Under Alternative 2, the Army would retain approximately 19,700 acres (86 percent) of the State-owned land at PTA, including all U.S. Government-owned facilities, utilities, and infrastructure within the State-owned land retained. Additionally, the Army would retain all U.S. Government-owned utilities and associated access throughout the State-owned land not retained (i.e., aboveground electrical and communication systems in TAs 2, 10, 11, 15, and 16) via a real estate agreement to enable continued safe operation of U.S. Government-owned land and State-owned land retained at PTA. The Army would cooperate with the State to provide physical security for the U.S. Government-owned utilities proposed for retention in the State-owned land not retained. **Figure 2-3** depicts the principal retention area (approximately 19,700 acres) and the U.S. Government-owned utilities and associated access (within the State-owned land not retained) that the Army would retain under Alternative 2.

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Figure 2-2: Alternative 1 - Maximum Retention

Figure 2-3: Alternative 2 - Modified Retention

Alternative 2 includes the following potential Army actions and responsibilities:

- Continue to conduct ongoing Army activities (training, maintenance and repair activities, resource management actions, and associated activities such as emergency services) on the State-owned land retained (approximately 19,700 acres).
- Continue to permit and coordinate other PTA users' ongoing activities (training and other activities such as public use programs) on the State-owned land retained.
- Continue to use, maintain, and repair U.S. Government-owned utilities on the State-owned land not retained to ensure their operability for U.S. Government-owned land and State-owned land retained.

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 (approximately 3,300 acres)~~. 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~~, to the extent feasible,~~ within the State-owned land not retained.
- 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, CERCLA, and the terms of the lease. The Army would coordinate its cleanup actions with the State of Hawai'i throughout the CERCLA process~~, and if deemed necessary, the Army would follow Army 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. The Army would coordinate these actions with DLNR and the DOH Hazard Evaluation and Emergency Response Office~~.

Lease compliance actions, and cleanup and restoration for hazardous substances and ~~hazardous wastes, including~~ MEC, within the State-owned land not retained would occur under the same parameters identified in **Section 2.1**.

Alternative 2 includes the following State actions and responsibilities:

- Assume full control and management of the State-owned land not retained.
- Add State-owned land not retained north of DKI Highway (except for the DHHL-administered land) to the Mauna Kea Forest Reserve and Kaohe Game Management Area, as applicable.
- Be solely responsible for the funding and management of resource management actions, physical security (except the Army would cooperate with the State to provide physical security for the U.S. Government-owned utilities proposed for retention in the State-owned land not retained), and public use programs on the State-owned land not retained.

Under Alternative 2, the Army would no longer have access to approximately 3,300 acres of maneuver area, facilities, and roads and training trails in the State-owned land not retained. Most of this area is critical habitat designated by USFWS for Palila. The State-owned land that would not be retained has limited facilities and infrastructure, has Palila critical habitat training restrictions, is mostly physically separated from the rest of the State-owned land by DKI Highway, and has cinder cones in the portion that

is south of DKI Highway. Consequently, Alternative 2 would have a negligible impact on the ongoing activities conducted in the State-owned land.

Alternative 2 would allow the Army to continue to manage and use approximately 19,700 acres of the State-owned land; maintain access among the Cantonment and BAAF, impact area and training ranges, and Keʻāmuku parcel; conduct ongoing military training, maintenance and repair activities, resource management actions, and associated activities; retain much of its substantial investment in facilities, utilities, 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 ~~compliance~~ and HEPA analysis, as applicable) of the retained facilities, utilities, and infrastructure within the State-owned land. The Army also would continue to permit and coordinate ongoing training and other activities by other PTA users on the State-owned land retained. This alternative would have negligible potential for encroachment and accidental or intentional trespass on U.S. Government-owned land at PTA from adjacent properties because the Army would continue to control access to most of the State-owned land.

2.2.3 Alternative 3: Minimum Retention and Access

Under Alternative 3, the Army would retain approximately 10,100 acres (44 percent) of the State-owned land, including all U.S. Government-owned facilities, utilities, and infrastructure within the State-owned land retained, and 11 miles of select roads and training trails within the State-owned land not retained via a real estate agreement at PTA. The approximately 10,100 acres contain vital training and support facilities and associated maneuver areas necessary for USARHAW to continue to meet its ongoing training requirements on the State-owned land (see purpose and need statements in **Section 1.3** and screening criteria in **Section 2.1.4**). Additionally, the Army would retain all U.S. Government-owned utilities and associated access throughout the State-owned land not retained (i.e., aboveground electrical and communication systems in TAs 2, 10, 11, 15, 16, 19, and 22B) via a real estate agreement; firebreaks/fuel breaks and associated access along most of the 11 miles of select roads and training trails proposed for retention within the State-owned land not retained via a real estate agreement; and land use rights to enable the firing of indirect-fire weapons from three FPs on U.S. Government-owned portions of PTA northwest of the State-owned land into the impact area. The Army would cooperate with the State to provide physical security for the U.S. Government-owned utilities and 11 miles of select roads and training trails proposed for retention in the State-owned land not retained. **Figure 2-4** depicts the principal retention area (approximately 10,100 acres), select roads and training trails (approximately 11 miles), and the U.S. Government-owned utilities and associated access that the Army would retain under Alternative 3. The firebreaks/fuel breaks proposed for retention are approximately 60 feet wide (USAG-PTA, 2021~~eg~~); therefore, they are included in the depiction of the select roads and training trails proposed for retention and are not shown separately on **Figure 2-4** due to scale. Access to vital training and support facilities (and associated maneuver areas), U.S. Government-owned utilities, and infrastructure within the State-owned land is necessary to enable continuation of larger unit collective live-fire and maneuver exercises at PTA; range and emergency services communication at PTA; and facility, utility, and infrastructure maintenance and repair within the State-owned land. Access to the 11 miles of select roads and training trails (and associated firebreaks/fuel breaks) is necessary to ensure continuance of wildfire protection and firefighting activities along vital areas within the State-owned land not retained, as well as training, range operations, repair and maintenance activities, resource management actions, wildfire protection and firefighting activities, and emergency services on U.S. Government-owned land (impact area and training ranges south of the State-owned land). The three FPs on U.S. Government-owned land northwest of the

State-owned land (see TAs 16 and 17 in **Figure 2-1**) are among the farthest from the impact area, allowing for long distance firing by indirect-fire weapons, and are therefore essential for training. Land use rights associated with firing over State-owned land not retained from these three FPs would consider appropriate safety requirements.

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Figure 2-4: Alternative 3 – Minimum Retention and Access

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Alternative 3 includes the following potential Army actions and responsibilities:

- Continue to conduct ongoing Army activities (training, maintenance and repair activities, resource management actions, and associated activities such as emergency services) on the State-owned land retained (approximately 10,100 acres).
- Continue to permit and coordinate other PTA users' ongoing activities (training and other activities such as public use programs) on the State-owned land retained.
- Continue to use, maintain, and repair U.S. Government-owned utilities on the State-owned land not retained to ensure their operability for U.S. Government-owned land and State-owned land retained.
- Continue to use, maintain, and repair the 11 miles of select roads and training trails proposed for retention in the State-owned land not retained.
- Continue to maintain and repair and conduct firefighting activities within the firebreaks/fuel breaks along most of the 11 miles of select roads and training trails proposed for retention.
- Meet ongoing biological resources mitigation requirements (e.g., conservation fence units) in the State-owned land not retained via reforestation of portions of the State-owned land not retained or some other arrangement negotiated with USFWS and the State, as applicable.

The following potential Army actions and responsibilities are not part of Alternative 3 but would be triggered by lease expiration for the State-owned land not retained (approximately 12,900 acres)~~. 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 would conduct various lease compliance actions~~, to the extent feasible,~~ within the State-owned land not retained.
- 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, CERCLA, and the terms of the lease. The Army would coordinate its cleanup actions with the State of Hawai'i throughout the CERCLA process~~, and if deemed necessary, the Army would follow Army 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. The Army would coordinate these actions with DLNR and the DOH Hazard Evaluation and Emergency Response Office~~.

Lease compliance actions, and cleanup and restoration for hazardous substances and ~~hazardous wastes, including~~ MEC, within the State-owned land not retained would occur under the same parameters identified in **Section 2.1**.

Alternative 3 includes the following State actions and responsibilities:

- Assume full control and management of the State-owned land not retained.
- Add State-owned land not retained north of DKI Highway (except for the DHHL-administered land) to the Mauna Kea Forest Reserve and Kaohe Game Management Area, as applicable.

- Be solely responsible for the funding and management of resource management actions (except for any biological resources mitigation requirements the Army negotiates with USFWS and the State that require Army action in the State-owned land not retained), physical security (except the Army would cooperate with the State to provide physical security for the U.S. Government-owned utilities and 11 miles of select roads and training trails proposed for retention in the State-owned land not retained), and public use programs on the State-owned land not retained.

Alternative 3 would allow the Army to continue to manage and use approximately 10,100 acres of the State-owned land that contain vital training and support facilities and associated maneuver areas; maintain necessary access among the Cantonment and BAAF, impact area and training ranges, and Keʻāmuku parcel; conduct necessary levels and types of military training, maintenance and repair activities, resource management actions, and associated activities; permit the Army to access firebreaks/fuel breaks along the 11 miles of roads and training trails proposed for retention for wildfire protection and firefighting activities; enable future modernization (~~which is~~ not currently planned and would require separate, future NEPA ~~compliance~~ and HEPA analysis, as applicable) of the retained facilities, utilities and infrastructure within the State-owned land; and fire indirect-fire weapons from three FPs on U.S. Government-owned portions of PTA northwest of the State-owned land into the impact area. Access among the Cantonment and BAAF, impact area and training ranges, and Keʻāmuku parcel is vital to enable the Army to continue military training, maintenance and repair activities, resource management actions, and associated activities within U.S. Government-owned land at PTA. The Army also would continue to permit and coordinate training and other activities by other PTA users on the State-owned land retained, but at reduced levels (no activities in State-owned land not retained but same level of activities in State-owned land retained) due to the minimum retention.

Under Alternative 3, the Army would no longer have access to the training and support facilities (i.e., one AHA, two landing zones, approximately 30 FPs), non-selected roads and training trails, and maneuver areas on the State-owned land not retained. The Army would lose access to approximately 12,900 acres of unrestricted maneuver areas, which is approximately 30 percent and 56 percent of the unrestricted maneuver areas on PTA and the State-owned land, respectively. The areas proposed to be retained include the majority of the training and support facilities, the majority of the commonly used roads and training trails, and all U.S. Government-owned utilities in the State-owned land; therefore, training capabilities and ongoing activities at PTA would be moderately reduced (reduced by approximately 15 to 30 percent) under Alternative 3. Loss of training and decreased training options would affect combat readiness of USARHAW and all military units that use PTA, as well as readiness of state and county government agencies that use PTA. Alternative 3 would increase the potential for encroachment and accidental or intentional trespass on U.S. Government-owned land at PTA from adjacent properties because the Army would control access of less than half of the State-owned land; however, it is assumed the State would continue to manage the majority of the State-owned land not retained as conservation areas (i.e., Palila critical habitat and conservation fence units), which would limit the potential for encroachment and accidental or intentional trespass.

Alternative 3 does not include but could result in the Army accommodating lost training in other ways such as increasing training tempo and replicating some of the facilities that no longer would be accessible under Alternative 3; however, not all of the lost facilities could be replicated within available land at PTA, new facilities would not be available for several years, and construction of new facilities would reduce available funds for training and other necessities. Should the Army pursue those options in the future, it would require separate NEPA ~~compliance~~ and HEPA analysis, as applicable.

2.2.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any of the State-owned land at PTA after lease expiration.

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

- No longer fund or manage resource management actions and public use programs in the State-owned land after lease expiration.
- Meet ongoing biological resources mitigation requirements (e.g., conservation fence units) in the State-owned land via reforestation of portions of the State-owned land or some other arrangement negotiated with the USFWS and State, as applicable.
- Conduct various lease compliance actions~~, to the extent feasible,~~ within the State-owned land (following lease expiration and in accordance with the lease or otherwise negotiated with the State).
- 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, CERCLA, and the terms of the lease. The Army would coordinate its cleanup actions with the State of Hawai'i throughout the CERCLA process~~, and if deemed necessary, the Army would follow Army regulations to determine how and when cleanup and restoration activities for any hazardous substances and hazardous wastes, including MEC, within the State-owned land would occur under the CERCLA process. The Army would coordinate these actions with DLNR and the DOH Hazard Evaluation and Emergency Response Office~~.

Lease compliance actions, and cleanup and restoration of hazardous substances and ~~hazardous wastes, including~~ MEC, within the State-owned land would occur under the same parameters identified in **Section 2.1**.

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

- Assume full control and management of the State-owned land after lease expiration.
- Add State-owned land north of DKI Highway (except for the DHHL-administered land) to the Mauna Kea Forest Reserve and Kaohe Game Management Area, as applicable.
- Be solely responsible for the funding and management of resource management actions (except for any biological resources mitigation requirements the Army negotiates with the USFWS and State that require Army action in the State-owned land), physical security, and public use programs on the State-owned land after lease expiration.

The Army would continue to have land access to the Cantonment, BAAF, and Keʻāmuku parcel via DKI Highway but would have no land access to the impact area and training ranges south of the State-owned land, which would cease or severely limit Army training, maintenance and repair activities, resource management actions, wildfire protection and firefighting activities, emergency services, and biological resources mitigation requirements (e.g., conservation fence units) in the impact area and training ranges south of the State-owned land. Additionally, the Army would have no access to U.S. Government-owned utilities and infrastructure within the State-owned land, including the electrical substation for the

installation, communication equipment, roads, training trails, and firebreaks/fuel breaks, which would impact training, range operations, range and emergency services communication, use of the Cantonment, emergency service access, and wildfire protection and firefighting activities. This alternative would result in the loss of approximately 54 percent of the unrestricted maneuver areas on PTA (USACE-POH, 2017).

Under the No Action Alternative, the Army would have (1) no ability to train in or access the State-owned land, (2) limited to no ability to train in or access the impact area and training ranges south of the State-owned land, (3) limited use of the Cantonment and BAAF due to loss of the electrical substation for the installation, (4) no ability to operate, maintain, or repair utilities and infrastructure in the State-owned land that serve the U.S. Government-owned land at PTA, and (5) no ability to fire indirect-fire weapons from three FPs within U.S. Government-owned portions of PTA northwest of the State-owned land into the impact area. Without land access, the impact area and training ranges south of the State-owned land might have to be abandoned. The Army would lose access to the ASP and three AHAs (two in the State-owned land and one in the training ranges to the south), leaving access to only two AHAs, which would severely reduce ammunition storage capabilities. The No Action Alternative would eliminate ongoing activities within the State-owned land and substantially reduce ongoing training and resource management actions on U.S. Government-owned land at PTA due to lack of access to the impact area and training ranges south of the State-owned land. This alternative also would create the greatest potential for encroachment and accidental or intentional trespass on U.S. Government-owned land because all three of the U.S. Government-owned areas at PTA would be surrounded by adjoining parcels not controlled by the Army.

The No Action Alternative would compromise the integrity of PTA and reduce USARHAW's collective live-fire and maneuver training capabilities at PTA from above the company level (i.e., battalion and brigade level) to the platoon level for infantry, artillery, and aviation units (USARHAW, 2017b). Due to lack of some required training, USARHAW would not be able to support ready forces to provide the Pacific Response Force per USINDOPACOM order or the Army Contingency Response Force per USARPAC order (USARHAW, 2017a). USARHAW (includes the 25th ID), 3rd Marine Regiment, and many other military units and state and county government agencies would be unable to train at PTA effectively. Loss of training would affect combat readiness of USARHAW and all military units that use PTA, as well as the readiness of state and county government agencies that use PTA. Reduced training and limited utilities, including at the Cantonment, would result in reduced personnel, equipment, and funding. Therefore, the Army no longer would be able to provide community services, such as local firefighting support, local emergency services, and community relation events (e.g., parades, festivals, educational outreach venues, local self-help projects) to areas outside the U.S. Government-owned portions of PTA.

The No Action Alternative does not include but could result in the need to restation USARHAW (includes the 25th ID) and 3rd Marine Regiment, which would reduce military readiness, have considerable economic costs, and negatively impact the mission requirements of the Army, Army National Guard, and USMC. Army expenditures supported 75,920 employees (i.e., military personnel, civilians, contractors) in the State, 1,962 of which were in the County of Hawaiʻi. Army expenditures also accounted for approximately $4.4B in labor income (i.e., military personnel, civilians, and contractors) in the State, $92M of which was in the County of Hawaiʻi (USACE-POH, 2019). Several of the training and support facilities and features within the State-owned land cannot be replicated within the U.S. Government-owned portions of PTA due to operational, safety, and environmental constraints (e.g., ASP, BAX, and long-range FPs) and are not available elsewhere in Hawaiʻi (e.g., BAX, long-range FPs, large and contiguous unrestricted maneuver area). Consequently, the Army would not be able to increase training tempo within

PTA or elsewhere in Hawai'i to make up for the loss of training and operational features and capabilities associated with the No Action Alternative. Military units that rely on these facilities and areas of PTA to meet training requirements would be required to conduct training outside of Hawai'i, which could necessitate restationing due to the cost and time constraints of constantly traveling to the continental U.S. to train. Restationing of USARHAW (includes the 25th ID) or 3rd Marine Regiment and replacement of facilities, utilities, and infrastructure would require separate NEPA ~~compliance~~ and HEPA analysis, as applicable.

2.2.5 Alternatives Considered and Eliminated from Detailed Study

The following alternatives were considered but not carried forward for detailed analysis because they do not meet elements of the purpose and need statements for the Proposed Action and do not adequately meet one or more of the screening criteria presented in **Section 2.1.4**.

Alternative 4: Retention of Only Access, Utilities, and Infrastructure

Under this alternative, the Army would retain the following on State-owned land: select roads and training trails (and associated firebreaks/fuel breaks); all U.S. Government-owned utilities and associated access; and land use rights to enable the firing of indirect-fire weapons from U.S. Government-owned portions of PTA northwest of the State-owned land into the impact area. No facilities or maneuver areas within the State-owned land would be retained. This alternative would result in the loss of approximately 54 percent of the unrestricted maneuver area on PTA (USACE-POH, 2017). Therefore, training capabilities at PTA would be considerably reduced. This alternative does not meet the following elements of the purpose and need statements of **Section 1.3**: (1) enable USARHAW to continue to conduct military training on State-owned land to meet ongoing training and operational requirements, (2) retain substantial Army investments, (3) allow for future facility and infrastructure modernization, (4) preserve limited maneuver area, and (5) maximize use of the impact area. Therefore, this alternative does not fully meet screening criteria 1, 2, 4, and 5 (see **Table 2-2**) and is not carried forth for detailed analysis.

Alternative 5: Retention with Limits on the Types of Training and Future Modernization

Under this alternative, the Army would retain the State-owned land but would be subject to restrictions on the types of training and future modernization (~~which is~~ not currently planned and would require separate, future NEPA ~~compliance~~ and HEPA analysis, as applicable) that would be permitted by the State. This alternative does not meet the following elements of the purpose and need statements of **Section 1.3**: (1) enable USARHAW to continue to conduct military training on State-owned land to meet ongoing training and operational requirements, (2) allow for future facility and infrastructure modernization, and (3) maximize use of the impact area. Therefore, this alternative does not meet screening criterion 1 and only partially meets screening criteria 2, 4, and 5 (see **Table 2-2**) and is not carried forth for detailed analysis.

Alternative 6: Short-Term Retention

Under this alternative, the Army would retain the State-owned land for a short duration, such as a 10-year lease. This alternative would not meet the Proposed Action purpose of securing the long-term military use of the State-owned land to meet USARHAW's ongoing training and operational requirements. Per 10 U.S.C. Section 2852, Military Construction Projects: Waiver of Certain Restrictions, the 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 analysis, as applicable). ~~The Army must have at least a 25-year lease to permit permanent construction.~~ Therefore, this alternative does not meet screening criteria 1, 2, and 3 and only partially meets screening criterion 5 (see **Table 2-2**) and is not carried forth for detailed analysis.

2.2.6 Additional Alternatives Considered and Eliminated from Detailed Study

The following alternatives were proposed by the public during the Second Draft EIS public review period or previously considered in the Analysis of Alternatives Study (USACE-POH, 2017). These alternatives were considered but not carried forward for detailed analysis because they do not meet elements of the purpose and need statements for the Proposed Action and do not adequately meet one or more of the screening criteria presented in **Section 2.1.4**.

Alternative 7: Computer-Based Simulation Training

Under this alternative, the Army would use computer-based simulation training (e.g., virtual reality) rather than retain the State-owned land. This alternative does not meet the following elements of the purpose and need statements of **Section 1.3**: (1) enable USARHAW to continue to conduct military training on State-owned land to meet ongoing training and operational requirements, (2) preserve limited maneuver area, (3) provide austere environment training, (4) enable access among major parcels of U.S. Government-owned land, (5) allow for future facility and infrastructure modernization, and (6) maximize use of the impact area. Therefore, this alternative does not meet screening criteria 1, 2, 3, 4, and 5 (see **Table 2-2**) and is not carried forth for detailed analysis.

Alternative 8: 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 land would transfer to another location outside of Hawai‘i and/or use diplomacy to keep the peace in the Pacific region. This alternative does not meet the following elements of the purpose and need statements of **Section 1.3**: (1) enable USARHAW to continue to conduct military training on State-owned land to meet ongoing training and operational requirements, (2) preserve limited maneuver area, (3) provide austere environment training, (4) enable access among major parcels of U.S. Government-owned land, (5) allow for future facility and infrastructure modernization, and (6) maximize use of the impact area. Therefore, this alternative does not meet screening criteria 1, 2, 3, 4, and 5 (see **Table 2-2**).

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 strategic location for national defense and rapid deployment of military forces.” In addition to not meeting the purpose and need statements for the Proposed Action and not meeting screening criteria 1, 2, 3, 4, and 5, this alternative does not meet national security priorities; therefore, it is not carried forth for detailed analysis.

2.3 Land Retention

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. The Army may consider one or more land retention estates and methods.

The U.S. Government's authority to acquire real property interests includes, but is not limited to, 10 U.S.C. Sections 2661, 2663, 2802, and 2869. As implemented by AR 405-10, authorized estates for Army acquisition or retention of non-federal government-owned land include title, lease, easement, and license, 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 (HRS Section 171-36). Therefore, a new lease could 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 of another. An easement represents an interest of limited use in land, and it may be temporary or permanent, exclusive or non-exclusive.
- ***License***: A license is permission to use the land of another that generally can be revoked at any time and may contain restrictions or constraints. License is not analyzed as a land retention estate in this EIS because it is for minimal permission to occupy real property for a short duration. It would not allow for predictable long-term use by the Army; would not enable future facility and infrastructure modernization (which is not currently planned and would require separate, future NEPA ~~compliance~~ and HEPA analysis, as applicable); and would not necessarily allow exclusion of other users from some U.S. Government-owned facilities, utilities, and infrastructure. Consequently, it does not meet the following elements of the purpose and need statements: (1) provide a long-term interest, (2) allow for future facility and infrastructure modernization, and (3) provide an austere, real-world training environment.

The Army understands that the State would update the lease conditions in a new lease. 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 and conservation uses of the State-owned land retained by the Army (see **Section 1.4.2**).
- 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, lease, ~~or~~ easement).

- A new lease or easement for the State-owned land would include ~~the same~~similar conditions as the current lease, except for removal of conditions that are no longer relevant (e.g., lease paragraphs 11 and 12), inclusion of the State's standard conditions and references to state and federal regulations in existence at development of a new lease or easement, and inclusion of assumed Army obligations based on State requirements in the Court-Ordered Management Plan (COMP) for the DLNR to inspect Army compliance with the lease.
- A new lease or easement would be at least 25 years.
- The Army would adhere to applicable State processes~~–~~/~~–~~administrative requirements (e.g., administrative rule changes to establish a new subzone with military uses in the conservation district rules per HAR Chapter 13-5; see **Sections 1.4.2** and **3.2**) under a new lease or easement.
- Ongoing activities, lease/easement conditions, assumed Army obligations based on State requirements in the COMP, and applicable State processes~~-~~/~~-~~administrative requirements would be the same under lease and easement.

Consequently, the only difference between retention via fee simple title and retention via a new lease or easement is that under a new lease or easement the Army would adhere to lease/easement conditions, assumed Army obligations due to State requirements in the COMP, and applicable State processes/administrative requirements. Because ongoing activities, lease/easement conditions, assumed Army obligations due to State requirements in the COMP, and applicable State processes/administrative requirements would be the same under lease and easement, the impacts for lease and easement would be the same; therefore, this EIS analyzes only fee simple title and lease. **Appendix F** includes a copy of the 1964 lease and 2010 amendment, **Appendix G** includes a copy of the COMP, and **Appendix H** contains an explanation of the assumed differences between retention via fee simple title and a new lease based on the above assumptions, assumed conditions in a new lease or easement, assumed Army obligations based on State requirements in the COMP, and existing Army policies and requirements.

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. 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/fuel breaks) within the State-owned land not retained likely would be retained via easement, but retention could also occur via fee simple title or lease. Regardless of the land retention estate, the Army's actions within these areas would not differ. The easement width for the utilities, roads, and training trails would be 25 to 50 feet on either side of the centerline, depending on the easement requirements, to allow for performing maintenance and repair activities. The easement width for the firebreaks/fuel breaks would be at least 60 feet wide due to the combined width of the firebreaks/fuel breaks.

The Army acknowledges the comments received on the Draft EIS and the Second 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 would be arduous because the processes for a rule amendment and

for lease execution are contestable and could remain unresolved well past 2029, when the current lease for the State-owned land expires. Several commenters stated that continued military use of land within the conservation district is contrary to the purposes and policies of the conservation district. Commenters also stated that continued military use of the State-owned land, which is public trust land, 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, this 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 land and because it would meet the purpose and need for the Proposed Action.

2.4 Preferred Alternative

The Army's Preferred Alternative is Alternative 2. This alternative would allow the Army to continue to manage and use the majority of the land and all of the U.S. Government-owned utilities in the State-owned land; maintain access among the Cantonment and BAAF, impact area and training ranges, and Keʻāmuku parcel; conduct ongoing military training, maintenance and repair activities, resource management actions, and associated activities; retain much of its substantial investment in facilities, utilities, 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 ~~compliance~~ and HEPA analysis, as applicable) of the retained facilities, utilities, and infrastructure within the State-owned land. This alternative would have negligible potential for encroachment and accidental or intentional trespass on U.S. Government-owned land at PTA from adjacent properties because the Army would continue to control access to most of the State-owned land. Additionally, this 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 and Palila critical habitat without interference from military training.

Following issuance of this~~a~~ Final EIS (**Section 1.6.5**), 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

3.1 Introduction

Chapter 3 describes the affected environment (existing conditions) for resources evaluated in this EIS and discloses the potential environmental consequences of each of the three action alternatives and the No Action Alternative (**Section 2.2**). Identification of the existing conditions and evaluation of the potential environmental consequences adhere to the 1978 version of the CEQ NEPA Regulations, as amended (40 CFR Parts 1500–1508), the Army's NEPA Regulation (32 CFR Part 651), and HEPA (HRS Chapter 343 and HAR Chapter 11-200.1). **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 **3.16** discuss individual resource areas. **Section 3.17** summarizes potential environmental consequences and ~~potential~~ mitigation measures.

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 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 include aspects of the natural, cultural, and human environment. Environmental analysis is conducted for resource areas that could be affected by the action alternatives or the No Action Alternative. This EIS considers the potential for impacts on the following resource areas:

- Land Use
- Biological Resources
- Historic and Cultural Resources and 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
- Airspace
- Electromagnetic Spectrum
- Utilities
- Human Health and Safety

3.1.2 Existing Conditions

According to Army NEPA regulations [32 CFR Part 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 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 HEPA, HAR ~~Chapter~~ Section 11-200.1-24(i) 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 action and no action alternatives. Each resource area section includes a discussion of existing conditions, which describes the current condition of the affected environment. Existing conditions are based on all ongoing activities to date, including current activities and existing management measures. Existing management measures include BMPs, SOPs, management measures, and mitigation measures the Army uses to implement ongoing environmental monitoring and conservation efforts within the State-owned land. Existing management measures are described within each resource area and summarized in **Appendix E**.

3.1.3 Environmental Consequences

Implementation of the alternatives described in **Chapter 2** could result in impacts on the human, cultural, and natural environment. This chapter describes the potential environmental consequences (or environmental impacts) associated with each resource area and the methodology used to conduct the analysis. The analysis includes discussions of possible conflicts with government land use plans, policies, and regulations; environmental impacts associated with the action alternatives and No Action Alternative and their significance including differences between impacts for land retained (under lease and fee simple title) and land not retained; and ~~potential~~ means to mitigate adverse environmental impacts.

3.1.3.1 Assumptions Applied to the Impact Analysis

Section 2.3 lists the primary assumptions for this EIS. Some assumptions are discussed here to clarify how they are applied in **Chapter 3**. Each of the action alternatives proposes to retain a portion of the State-

owned land at PTA. For the land retained under each alternative, it is assumed that ongoing activities would continue, and continued impacts from ongoing activities are discussed in the alternatives analysis. For the land not retained, the Army's ongoing activities would either cease or be resumed by the State (e.g., resource management programs). The Army would conduct applicable lease compliance actions and~~, if deemed necessary, would~~ follow ~~Army~~ federal law and regulations to determine how and when cleanup and restoration activities would be conducted. Cleanup and restoration activities are separate from lease compliance actions; both actions would occur on State-owned land not retained. This chapter therefore describes new impacts~~, generally~~ associated with the land retained and the land not retained, as well as continued impacts from ongoing activities associated with the land retained.

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. Viable retention estates shall meet the ~~following~~ elements of the purpose and need statements~~: (1) provide a long-term interest, (2) allow for future facility and infrastructure modernization, and (3) provide an austere, real-world training environment~~. These estates, as well as other land retention estates not pursued due to not meeting these elements, are defined in **Section 2.3**. For each resource area in this chapter, potential impacts from lease and fee simple title are presented. For the purposes of future impact analysis in this EIS, it is assumed that any future lease would include ~~the same~~ conditions ~~as~~ similar to the current lease, except for ~~conditions no longer relevant~~necessary updates (see **Section 2.3**). If leases are pursued, however, any future lease terms would be negotiated between the State and the Army during future lease negotiations. Impacts from any easement retention estate would be expected to be the same as impacts from lease retention. **Appendix H** contains an explanation of the assumed differences between the land retention estates used in this analysis.

As described in **Chapter 2**, Alternatives 1, 2, and 3 and the No Action Alternative include State-owned land that would not be retained. For all alternatives, including the No Action Alternative, the approximately 250 acres of DHHL-administered land would not be retained. For the land not retained in Alternatives 1, 2, and 3 and the No Action Alternative, Army use of maneuver areas and associated training facilities would end upon expiration of the lease; however, the Army would retain all U.S. Government-owned utilities and associated access (in Alternatives 1, 2, and 3), 11 miles of select roads and training trails (Alternative 3 only), and firebreaks/fuel breaks and associated access along most of the 11 miles of select roads and training trails (Alternative 3 only) throughout the State-owned land not retained. The Army could consider relocation of training and/or training features to make up for the land not retained; however, these potential actions are not part of the Proposed Action. Consequently, impacts due to relocation of training and/or training features are not analyzed in this EIS and may require separate future NEPA and HEPA analyses, as applicable~~compliance~~.

For the State-owned land 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 establish recreation, hunting, and resource management programs. Additional discussion is provided in **Section 3.2**.

Expiration of the lease will trigger various Army actions and responsibilities on the State-owned land not retained. As described in **Section 2.1**, these actions are not associated with the action alternatives or No Action Alternative but would follow expiration of the lease. Due to the proximate timeframe of these actions and responsibilities with the potential implementation of one of the action alternatives or the No

Action Alternative, they are discussed in the impact analysis associated with State-owned land not retained.

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.

Definition

In this section, a description of the resource area is provided.

Regulatory Framework

In this section, the specific relevant federal, state, and county regulations for the resource area are provided.

Region of Influence

In this section, the region of influence (ROI) for the resource area is provided. The ROI is defined as the geographic area 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. The ROI for the Proposed Action typically is the extent of the State-owned land; however, depending on the resource area, the geographic extent of the affected environment may vary. For example, the Proposed Action may have impacts on soils within the confines of the State-owned land; however, potential impacts within the ROI in the Cultural Impact Assessment (CIA) (**Appendix I**) considers a greater geographic extent, specifically the area of the Saddle Region, as part of its ROI.

Existing Conditions

This section describes the affected environment (existing conditions that have the potential to be affected by the Proposed Action) for each resource analyzed in this EIS.

Methodology and Significance Criteria

In this section, the methodology for the environmental analysis and significance criteria are provided. Methodology can include the scientific or analytic basis for drawing impact conclusions and comparisons among the alternatives.

In accordance with Army NEPA regulations, significant impacts are "determined by examining both the context and intensity of the proposed action" [32 CFR Section 651.39(b)]. Significance is defined for NEPA in 40 CFR Section 1508.27 as follows: "Significantly as used in NEPA requires consideration of both the context and intensity." Context is associated with the location or ROI for the Proposed Action, which varies among resource areas. Intensity refers to the severity of the impact.

HRS Chapter 343 and HAR Section 11-200.1-2 define "significant effect" or "significant impact" as meaning "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."

Each resource section defines and outlines methodology and significance criteria applied within the framework and context of NEPA and HEPA guidelines. These provide standards or thresholds by which a conclusion can be drawn as to whether significant impacts would be likely to occur. Note that the significance criteria are only for determination of significance, not determination of other levels of impact, which are based on their definitions in *Environmental Analysis*.

When determining significance, both the context and intensity of the Proposed Action are considered. Context is associated with the location or ROI for the Proposed Action, which varies among resource areas as described previously. Intensity refers to the severity of the potential impact.

~~In each resource section, the summary of potential impacts is separated into sub-topics. This is done because impacts differ based on: (1) the type of land retention method (lease or fee simple title), (2) the land retained and not retained under the various alternatives, including the No Action Alternative, and (3) implementation of potential mitigation measures, where applicable.~~

Environmental Analysis

In this section, the potential impacts are presented for each resource. In each resource section, the potential impacts are separated into sub-topics because they differ based on: (1) the land retained and not retained under the various alternatives, including the No Action Alternative, (2) the type of land retention method (i.e., lease or fee simple title), and (3) implementation of mitigation measures, where applicable. Therefore, potential impacts are presented separately by land retained (i.e., lease and fee simple title) and land not retained for each alternative under each resource. The impact determination comprises several separate assessments: (1) whether the impact is considered a short- or long-term impact, (2) whether the impact is considered direct or indirect, (3) the level of significance of the impact, and (4) whether the impact is considered beneficial or adverse. As discussed in **Section 1.4**, this EIS uses the definitions from the 1978 version of the CEQ regulation, as amended.

Short-term and Long-term Impacts

Short-term impacts are characterized by a limited duration, such as during implementation of lease compliance actions. Long-term impacts are those that continue beyond a specific action or may be permanent in nature following an action, such as changes in noise in State-owned land not retained following lease expiration. Long-term impacts can also result from repeated activities over an extended period. For example, ongoing, non-continuous, periodic training activities can continue to generate long-term impacts.

Direct and Indirect Impacts

Direct impacts are caused by the Proposed Action and would occur at the same time and place as the action (e.g., decreased local spending due to less activities at PTA). Indirect impacts are those related to the Proposed Action but would occur later in time or be farther removed in distance (e.g., changes in population density due to change in the pattern of land use).

In this EIS, most impacts are considered direct impacts. In the environmental analysis, direct impacts are assumed and are not identified as direct. If an indirect impact is identified in the analysis, the text specifically identifies the impact as "indirect" and explains the rationale for identifying it as such.

Level of Impacts

The intensity (or severity) of potential environmental impacts is expressed in level of significance. The following descriptions are used to classify the intensity of impacts:

- None: Impacts are not present.
- Negligible: Impacts are not measurable, are barely perceptible, and are discountable.
- Minor: Measurable impacts, but these impacts would be slight.
- Moderate: Impacts that would not reach the resource's threshold of significance but would have a noticeable effect on a resource perceptible to an observer.
- Significant: Impacts on a resource would reach or surpass a significance threshold; impacts would be obvious, serious, and easily noticed by an observer.
- Significant but reduced to less than significant: Impacts would be significant but could be reduced to less than significant (i.e., none, negligible, minor, or moderate).

Each environmental analysis section 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, or (4) Significant but reduced to less than significant.

Beneficial or Adverse Impacts

Implementation of alternatives can result in adverse or beneficial impacts, or both. Adverse impacts would cause a decline in the condition of a resource, whereas beneficial impacts would improve the condition of a resource. Significant impacts could occur with both beneficial and adverse impacts.

The environmental analysis section presents potential impacts for Alternatives 1, 2, and 3 as well as the No Action Alternative for each resource area. Under each alternative, potential impacts are presented for State-owned land retained (lease and fee simple title) and State-owned land not retained. Potential impacts from retention of U.S. Government-owned utilities and associated access (Alternatives 1, 2, and 3), 11 miles of select roads and training trails (Alternative 3), and firebreaks/fuel breaks and associated access (Alternative 3) within the State-owned land not retained are presented in the State-owned land retained analysis for lease and fee simple title because the Army would retain these areas/features.

Analysis of Army Actions at the End of the Current Lease

This EIS analyzes lease compliance actions and cleanup and restoration activities that may occur within State-owned land not retained after expiration of the current lease. The extent of lease compliance actions and cleanup and restoration activities would depend on the acreage and location of State-owned land not retained. Each of the action alternatives, as well as the No Action Alternative, includes State-owned land not retained.

~~Potential~~ Mitigation Measures

In this section, ~~potential~~ mitigation measures are identified. ~~Potential m~~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 1508.20~~)~~]. Under HEPA, an EIS is to include "mitigation measures proposed to avoid, minimize, rectify, or reduce impacts" [HAR Section 11-200.1-24(p)]. The ~~Potential~~ Mitigation Measures section therefore points to the existing management measures described within the Existing Conditions section for each resource, as well as new mitigation measures, timing, and effectiveness provisions. The Army would continue to execute ~~these~~ existing management measures (i.e., BMPs, SOPs, management measures, and mitigation measures) under the Proposed Action (**Section 2.1**). Some ~~potential~~ mitigation measures may apply to multiple resource areas~~ and show up several times throughout the analysis~~.

Level of Significance

In this section, the level of significance for the land retention estates analyzed (i.e., lease and fee simple title) and land not retained is presented for each alternative under each resource area.

3.2 Land Use

3.2.1 Definition

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

For the purposes of this EIS, land use topics relevant to the Proposed Action include land tenure, recreation, encroachment management, and vistas. 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 is the primary recreational use of State-owned land at PTA. Encroachment management maintains Army-controlled lands necessary for training and allows restricted public access while maintaining safety; and includes public and adjacent land holder coordination to minimize potential encroachment issues. Vistas are natural or human-made features that form the overall impression that an observer receives.

3.2.2 Regulatory Framework

Federal and state policies and regulations, and county-level guidance and zoning, create the regulatory framework for land use. Land owned by the U.S. Government is regulated under federal law; under the supremacy clause in the U.S. Constitution (Clause 2, Article VI), federal land is not subject to state or county regulation.

The impetus for this EIS is the proposed real estate action to retain the State-owned land at PTA in support of continued military training (**Section 2.1**). Per 10 U.S.C. Section 2852, Military Construction Projects: Waiver of Certain Restrictions, the DoD must hold long-term (i.e., at least 25 years~~ or more~~) federal interest in a property to make improvements or undertake modernization efforts. Therefore, lack of long-term federal interest in a property limits the DoD's use of that property. Land use planning in the Army is guided by AR 405-10, *Acquisition of Real Property and Interests Therein*. This regulation sets forth the responsibilities, authority, policy, and procedures of acquisition of real property and interests by the Army for military purposes.

The U.S. Government's authority to acquire real property interests includes 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. **Section 5.3.1** covers the Proposed Action's consistency with relevant sections of U.S.C. Title 10, Armed Forces.

The Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. Section 1451), as amended, applies to all coastal states and those that border the Great Lakes. Federal agencies are required 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. In Hawai'i, the CZM area includes all of Hawai'i (DBEDT-OP, 2020). Each county is responsible for designating and regulating Special Management Areas (SMAs) within the State's coastal areas. The Hawai'i CZM program and SMAs are further described in **Sections 5.3.2** and **5.3.3**.

Section 307 of the federal CZMA requires federal agency activities and development projects affecting any coastal use or resource to be undertaken in a manner consistent, to the maximum extent practicable, with a state's CZM program. The Army ~~will continue coordination with the State for a CZM consistency determination after publication of this Second Draft EIS~~has re-initiated the 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 **Section~~s~~ 5.3.1** and **5.3.2**.

The Sikes Act (16 U.S.C. Sections 670a-670o), as amended, requires DoD installation Integrated Natural Resources Management Plans (INRMP) to reflect mutual agreements with federal and state agencies (e.g., USFWS) for conservation, protection, and management of fish and wildlife resources. The Sikes Act notes that land uses are subject to military security and safety requirements while allowing compatible public access to military installations that do not interfere with military training or operations. Department of Defense Instruction (DoDI) 4715.03, *Natural Resources Conservation Program*, establishes "The principal purpose of DoD lands and waters is to support mission-related activities. Those lands and waters shall be made available to the public for educational or recreational use of natural and cultural resources when such access is compatible with military mission activities, ecosystem sustainability, and other considerations such as security, safety, and fiscal soundness. Opportunities for such access shall be equitably and impartially allocated" (DoD, 2018a~~b~~; DoD, 2018b~~c~~). The PTA 2019–2023 INRMP allows for recreational activities consistent with use of the land and subject to military training schedules to occur on PTA; this includes hunting game animals and game birds (USAG-PTA, 2020c).

HRS 171-95 permits BLNR disposition (e.g., sale, lease, license, easement) of public lands to cities, counties, and other governmental agencies, including the U.S. Government. Hawai'i has a unique system of classifying and managing lands in which both state and county agencies hold distinct responsibilities.

HRS Chapter 205, referred to as the State Land Use Law, was adopted in 1961 and established a framework of land use management and regulation in which all lands in the State are classified into one of four land use districts. Further detail regarding the State Land Use Law is in **Section 5.3.2**. The conservation district was one of the four land use districts established, largely encompassing forest and water reserve zones that had been identified in 1957. Laws specific to the conservation district (HRS Chapter 183C) were established and went into effect in 1964; the relevance to PTA is discussed under Land Tenure (**Section 3.2.4.1**).

3.2.3 Region of Influence

The ROI for land use includes the State-owned land and U.S. Government-owned land at PTA, land surrounding and adjacent to PTA, and public recreational activities directly or indirectly linked to PTA.

3.2.4 Existing Conditions

The State-owned land at PTA connects all three U.S. Government-owned parcels at PTA and surrounds the U.S. Government-owned parcel that houses the Cantonment and BAAF (**Section 1.1.1** and **Figure 3-1**). The history and establishment of PTA for military use are described in **Section 1.1.2**. A variety of DoD agencies, international partners, and local emergency responders and law enforcement agencies use PTA to fulfill essential training requirements. Facilities within and use of the State-owned land are described in **Sections 2.1.1** and **2.1.2**.

The State-owned land leased by the U.S. Government within the installation is bordered by additional U.S. Government-owned land to the north and south, and lands owned by the State to the north, west, and east. The county-managed Gilbert Kahele Recreation Area is roughly 1 mile southeast of the main entrance to PTA (**Figure 3-1**). Most of the land surrounding PTA is undeveloped and used for forest reserves, game management, and cattle grazing. The closest residential area is Waikiʻi Ranch, approximately 13 miles northwest of the PTA main gate along Old Saddle Road, and 4 miles north of State-owned land, with homes on 10- to 20-acre lots zoned for agricultural use.

The residentially developed areas of Waikoloa Village, Waimea, and Hilo are each approximately 25 miles from the PTA main gate. According to 2010 U.S. Census data, population density surrounding most of PTA is low, with 0 to 49 individuals per square mile (USCB, 2010). The only exception is a population segment of 50 to 99 individuals within Waikiʻi Ranch along the east section of Keʻāmuku parcel (**Figure 3-1**).

3.2.4.1 Land Tenure

Ownership

The tenure of the State-owned land is based on federal, state, and county laws and regulatory classifications. State-owned land is land that was transferred to the State through the 1959 admission of Hawaiʻi into the United States or one of the provisions therein [Section 5(b) or 5(e) of Public Law (P.L.) 86-3, 73 Statute 4 (1959)]. This EIS analysis is premised on legal precedents from court rulings and public records affirming State rights to these lands.

Tax Map Key (TMK) numbers are used in Hawaiʻi to identify real property ownership, including the island, zone, section, plat, and parcel. Information obtained from the County of Hawaiʻi Real Property Tax Office contains no warranties for accuracy. At this time, the U.S. Government's best information as to ownership

of the TMK parcels comprising the State-owned land is as follows, from west to east: TMKs (3) 7-1-004:007, (3) 4-4-015:008, and (3) 4-4-016:005 are owned by the State; the two easternmost TMKs, (3) 3-8-001:013 and (3) 3-8-001:022, are owned by the State and managed and administered by the Department of Hawaiian Home Lands (DHHL) (**Figure 3-1**). These two easternmost parcels are referred to as "DHHL-administered" in this EIS. The TMKs do not correlate with the boundaries of the TAs or Parcels A, B, and C. A boundary survey was conducted for State-owned land at PTA to validate the precise boundaries, including the DHHL-administered land.

Ceded Land

Ceded land was either Crown or government land until 1893, when the Hawaiian Kingdom was overthrown. The successor government, the Republic of Hawaiʻi, assumed ownership and control of the land and continued its public use. When the Republic of Hawaiʻi 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 of the land aside for military and other public purposes. When Hawaiʻi 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.

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 Hawaiʻi to admit Hawaiʻi 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. The State-owned land at PTA is 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. Hawaiian Home Lands is one of the five purposes provided for in the Admission Act. Land under Section 5(f) of the Admission Act, codified in HRS 171-18, is defined as follows:

The lands granted to the State of Hawaii by subsection (b) of this section and public lands retained by the United States under subsections (c) and (d) and later conveyed to the State under subsection (e), together with the proceeds from the sale or other disposition of any such lands and the income therefrom, shall be held by said State as a public trust for the support of the public schools and other public educational institutions, for the betterment of the conditions of native Hawaiians, as defined in the Hawaiian Homes Commission Act, 1920, as amended, for the development of farm and home ownership on as widespread a basis as possible for the making of public improvements, and for the provision of lands for public use. Such lands, proceeds, and income shall be managed and disposed of for one or more of the foregoing purposes in such manner as the constitution and laws of said State may provide, and their use for any other object shall constitute a breach of trust for which suit may be brought by the United States. The schools and other educational institutions supported, in whole or in part out of such public trust shall forever remain under the exclusive control of said State; and no part of the proceeds or income from the lands granted under this Act shall be used for the support of any sectarian or denominational school, college, or university.

Figure 3-1: Land Ownership of Pōhakuloa Training Area and Surrounding Land

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 these lands 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. The Admission Act (i.e., 1963 revised conveyance procedures) also 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.

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 Hawaii* ("Apology Resolution"). In January 2008, the Hawaiʻi Supreme Court reviewed a case between the Office of Hawaiian Affairs (OHA) and the Hawaii Housing Finance Development Corporation [~~Office of Hawaiian Affairs~~ OHA v. HCDCH, 177 P.3d 884, 117 Hawaiʻi 174 (2008)]. The Hawaiʻi 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 Hawaiʻi and the Hawaii Housing Finance and Development Corporation appealed the Hawaiʻi Supreme Court's decision to the U.S. Supreme Court. In March 2009, the U.S. Supreme Court unanimously reversed the Hawaiʻi Supreme Court's decision. A review of the Hawaiʻi Supreme Court decision brought to the U.S. Supreme Court in 2009 resulted in a unanimous court opinion. The U.S. Supreme Court in *Hawaii v. Office of Hawaiian Affairs, 556 U.S. 163 (2009)* stated:

> The Apology Resolution's first substantive provision uses six verbs, all of which are conciliatory or precatory. Specifically, Congress "acknowledge[d] the historical significance" of the Hawaiian monarchy's overthrow, "recognize[d] and commend[ed] efforts of reconciliation" with native Hawaiians, "apologize[d] to [n]ative Hawaiians" for the monarchy's overthrow, "expresse[d] [Congress'] commitment to acknowledge the ramifications of the overthrow," and "urge[d] the President of the United States to also acknowledge the ramifications of the overthrow . . ." § 1. Such terms are not the kind that Congress uses to create substantive rights—especially those that are enforceable against the cosovereign States. See, e.g., *Pennhurst State School and Hospital v. Halderman, 451 U.S. 1, 17-18, 101 S. Ct. 1531, 67 L. Ed. 2d 694 (1981)*.
>
> The Apology Resolution's second and final substantive provision is a disclaimer, which provides: "Nothing in this Joint Resolution is intended to serve as a settlement of any claims against the United States." § 3. By its terms, § 3 speaks only to those who may or may not have "claims against the United States." The court below, however, held that the only way to save § 3 from superfluity is to construe it as a congressional recognition—and preservation—of claims against Hawaiʻi and as "the foundation (or starting point) for reconciliation" between the State and native Hawaiians. *117 Haw. at 192, 177 P. 3d at 902*.
>
> "We must have regard to all the words used by Congress, and as far as possible give effect to them," *Louisville & Nashville R. Co. v. Mottley, 219 U.S. 467, 475, 31 S. Ct. 265, 55 L. Ed. 297 (1911*), "but that maxim is not a judicial license to turn an irrelevant statutory provision into a relevant one. And we know of no justification for turning an express disclaimer of claims against one sovereign into an affirmative recognition of claims against another." Cf. *Pacific Bell Telephone Co. v. linkLine Communications, Inc., 555 U.S. 438, 457, 129 S. Ct. 1109, 1123, 172 L.*

> *Ed. 2d 836, 851 (2009)* ("Two wrong claims do not make one that is right"). The Supreme Court of Hawaiʻi erred in reading § 3 as recognizing claims inconsistent with the title held in "absolute fee" by the United States, 30 Stat. 750, and conveyed to the State of Hawaiʻi at statehood. See *supra*, at *167-168, 173 L. Ed. 2d, at 339-340*.

A unanimous Supreme Court held that the Apology Resolution did not restrict the State'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 the State.

State General Lease No. S-3849

State General Lease No. S-3849 and U.S. Lease Contract No. DA-94-626-ENG-80 documents the agreement and boundaries for the approximately 23,000-acre area that was leased by the U.S. Government from the State in August 1964 (**Figure 1-2**). The term of the lease is 65 years. Three parcels are defined in the lease:

- Tract A-105-1 (Parcel A), approximately 15,420 acres
- Tract A-105-2 (Parcel B), approximately 1,944 acres
- Tract A-105-3 (Parcel C), approximately 5,607 acres (DLNR, 1964)

Parcel A includes TAs 5–9, 12–15, 18–20, and the portions of TAs 16, 17, 21, 22, and 22B that are in the State-owned land. Parcel B includes TAs 10 and 11. Parcel C includes TAs 1–4.

Approximately 112 acres within Parcels A and C encompass Old Saddle Road, which is excluded from the lease and not part of the Proposed Action. This segment of Old Saddle Road was closed to the public when DKI Highway was constructed; the State transferred its interest to the County of Hawaiʻi, which grants PTA exclusive use (USACE-POH & USAG-HI, 2019b). Additionally, the U.S. Government conveyed a roadway easement for approximately 232 acres to the Hawaiʻi Department of Transportation (HDOT) for portions of DKI Highway due to highway construction occurring after the lease signing. The roadway easement was granted to HDOT in consideration for construction, operation, and maintenance of DKI Highway as a public road for the benefit of the United States and the public.

The following summary of the lease content is intended to convey general lease terms and does not contain all legal conditions. The lease parties are the State, represented by its BLNR, and the United States of America (called the "Government"); the lease is granted for "Military purposes." Compensation to the State is a nominal $1.00 for the 65-year term of the lease. The lease identifies the rights of the U.S. Government to attach fixtures, erect structures, and signs. Rights conveyed to the U.S. Government include unrestricted control and use of the leased land, except as otherwise provided for in the lease, including the right to fire all combat weapons into the designated PTA impact area (on U.S. Government-owned land). **Appendix F** contains the 1964 lease, and associated amendment, for PTA.

Lease conditions stipulate the following:

- The U.S. Government is to make every reasonable effort to stockpile supplies and equipment in an orderly fashion away from established roads and trails, and to remove or deactivate all live or blank ammunition upon completion of training exercise or prior to entry by said public, whichever is sooner.

- The U.S. Government may interrupt traffic on Saddle Road (now DKI Highway) during training or passage of troops.
- Firing of live ammunition into any portion of the State-owned land is prohibited, except for artillery simulators, atomic bomb simulators and any similar devices, and explosives used in construction work, and a portion of Parcel A deemed by the U.S. Government to be safe for small arms firing.
- The U.S. Government should take every reasonable precaution to prevent the start of any fire and is to take immediate and continuing action to extinguish any fire resulting from U.S. Government training activities. Additionally, the U.S. Government is required to establish and maintain an SOP for fighting fires within or adjacent to the leased properties resulting from U.S. Government training activities.
- The State retains the right to allow public hunting access. (**Section 3.2.4.2** describes the hunting access on State-owned land at PTA.)
- Lease terms amended in April 2010 allow the U.S. Government to ". . . develop and use coral, rock and similar material occurring naturally on the premises for road projects and other specified, approved construction projects." Additionally, the right of the U.S. Government to use ground and surface waters on, in or under the State-owned land for purposes of the rights in the lease were clarified.
- The U.S. Government has 60 days after lease expiration, or within additional time that may be mutually agreed upon, to remove its signs and structures or abandon structures in place.
- Weapons and shells used in connection with training activities are to be removed to the extent that technical and economic capability exists and provided that expenditure for removal would not exceed the fair market value of the land.
- Following lease expiration and as negotiated with the State, the U.S. Government should reforest areas, as expeditiously as practicable and within a period mutually agreed upon, where it can be demonstrated that substantial forest cover, including trees, has been destroyed as a direct result of U.S. Government activities, with approval of planting by the State.

As noted in **Section 2.3**, Hawaiʻi law prohibits (except in certain special circumstances generally not applicable in this case) renewing existing leases or extending leases in excess of 65 years (HRS Section 171-36). The 2021 Hawaiʻi Legislature passed an amendment to HRS Chapter 171 to create a new section (HRS Section 171-36.5) that provides lease extensions for "government use" and defines "government" as an ". . . agency or department of the State or its political subdivision other than the University of Hawaiʻi . . . ." Therefore, HRS Section 171-36.5 does not apply to federal military leases.

~~Lawsuit Against the State~~Ching v. Case

In 2014, Native Hawaiian descendants brought a legal complaint against DLNR, charging that the agency failed reasonably to monitor or inspect the land at PTA, under the terms of the lease. Following a hearing in September 2015, the Circuit Court issued a decision on April 3, 2018. The lawsuit did not include the U.S. Government. An appeal by the State, from the Circuit Court was decided by the Hawaiʻi Supreme Court in 2019, remanding to the Circuit Court to develop a COMP for Leased Lands at Pōhakuloa. The COMP was issued on April 20, 2021. It includes periodic monitoring and inspection and designates priority areas for review to ensure the State will fulfill its trust duty to inform itself of the condition of the leased

land. The inspection reports must be made available to the public and should contain recommendations for corrective actions if any corrective actions are necessary. It is reasonable to expect that these inspection and corrective action requirements would be included in any future lease of the land, and this EIS makes that assumption. The Hawai'i Supreme Court decision emphasized that the issue of lease renewal was not properly before the Court.

Zoning

The County of Hawai'i zoning for the State-owned land is "Open" and "Forest Reserve" (**Figure 3-2**). The Open district includes areas that contribute to the general welfare, and objectives of this district include to create buffers for incompatible uses and to preserve valuable scenic vistas. The Forest Reserve district is considered non-zoned by the county and is instead regulated under State conservation district rules, which are described in the next subsection.

PTA is outside the SMA established by the County of Hawai'i under the State's CZM program (**Section 3.2.2**). **Section 5.3.3** provides further information on the SMA.

State Land Use Districts

All of PTA was classified as conservation district under the State's 1961 Land Use Law. Hawai'i conservation district statute and rules, HRS Chapter 183C and HAR Chapter 13-5, were enacted in 1964. Military use of State-owned land was authorized by the lease term in August 1964, prior to the enactment of HRS Chapter 183C. Per the statute and its enacting rule, HAR Chapter 13-5, Conservation District, lawful use of land prior to October 1, 1964, is considered nonconforming. ~~Lawful use of land, established prior to October 1, 1964, is considered nonconforming.~~ The statute and rule define nonconforming as "the lawful use of any building, premises or land for any . . . purposes which is the same as and no greater than that established prior to October 1, 1964."

The lease for military use of the approximately 23,000 acres at PTA was signed on August 16, 1964, and defines allowable military uses of the land. Military use, however, is not included as an allowable use in land classified as conservation district. If a proposed land use is not present, 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 proposed use added to the identified land uses. **Section 5.3.2** 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 (as discussed in **Section 1.4.2**).

Army management programs are consistent with the purposes of HAR Chapter 13-5 to conserve, protect, and preserve important natural resources of the State. These programs are further discussed in **Section 3.2.4.5**. The Army invests over $12M annually for biological and cultural resource management actions within Army training lands in Hawai'i (**Section 3.10.4**).

The State-owned land is included in the resource subzone of the conservation district. As noted under the preceding section on zoning, the county considers its Forest Reserve district to be non-zoned and, therefore, is regulated under State conservation district rules.

Figure 3-2: County of Hawai'i Zoning and State Hunting Areas

3.2.4.2 Recreation

PTA supports recreational uses and hunting on the State-owned land and other portions of the installation for outdoor activities that are consistent with use of the land and do not conflict with ~~the~~ PTA's mission. Activities include archery and hunting for birds, pigs, sheep, and goats within specific areas, and bird dog training (USAG-PTA, 2020c). Recreational areas near PTA include the Mauna Kea Observatories at the summit of Mauna Kea; the Gilbert Kahele Recreation Area that allows overnight stays, trail hiking and hunting opportunities; and Mauna Loa, which provides hiking and sightseeing opportunities.

Public hunting within PTA is allowed in Units A, E, and G (**Figure 3-2**) under State rules HAR Chapter 13-122 and HAR Chapter 13-123, although the schedule is subject to training schedule compatibility. PTA staff work with organizations, such as the Wildlife Conservation Association of Hawai'i, Hawai'i Island Archery Club, and Pig Hunters of Hawai'i, to collaborate on management decisions that affect hunting access and issues at PTA. Archery hunting of game mammals (e.g., feral pigs and goats, wild sheep) is allowed year-round, while buckshot is allowed for upland game bird season from November to January and wild turkey season from March to April (COH, 2019; USAG-PTA, 2020c). Hunting is subject to training schedule compatibility and a permit from the PTA Commander. PTA hunting is open to the public within ~~six~~ five designated hunting areas, located in TAs 1 through 4 and 9 through 16 (USAG-HI & USARPAC, 2013), on weekends and national holidays. The availability of units open for hunting at a particular time is based on military training schedules and is tracked through the PTA hunting program. Conservation law enforcement officers and game management support work to control ungulates at PTA and support the hunting program. The hunting program is managed through iSportsman, an interactive web-based program designed to provide a streamlined process for hunting registration, check-in/-out, providing updated hunting information, and harvest reporting. Per Department of Defense Directive (DoDD) 4724.03, funds collected from hunting activities are used for conservation and management to fund partnerships and research agreements, or to support wildlife and habitat management. Funds collected from hunting activities are managed in accordance with DoDI 4715.03, which states, "Hunting, fishing, and access permitting and fees, if collected, must be deposited and used pursuant to the Sikes Act, and should be used only on the installation where collected." All funds collected are used at PTA for conservation programs (USAG-PTA, 2020c).

In addition, the PTA Natural Resources Program (NRP) sets community education goals designed to reach out to the public. Goals include the following:

- Outdoor recreational opportunities and community activities.
- Educational materials about the natural resources of the installation.
- Development of an active volunteer program.
- Continuous review and update of PTA's hunting SOPs (USAG-PTA, 2020c).

3.2.4.3 Encroachment Management

PTA works consistently to manage encroachment issues, defined by the Army as the "cumulative result of any and all outside influences that inhibit normal military training and testing" (Santicola, 2006). Additionally, the Implementation Guidance for Army Compatible Use Buffers broadens this encroachment definition to:

> 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 [UXO], 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).

PTA's proactive approach to encroachment management helps to minimize public access restrictions while maintaining mission-essential training. The preemptive measures taken by the Army to manage encroachment also work to minimize training impacts on the neighboring lands; the buffer around the Waikiʻi Ranch is one initiative. Other encroachment management initiatives include the following:

- Maintain current real property holdings to minimize future/new encroachment issues.
- Work with adjacent land holders and users to abate conflicts at the lowest level.
- Conduct interagency consultation (e.g., ESA, critical habitat) to augment environmental stewardship of the land.
- Continually assess and analyze encroachment issues to understand where additional leverages or actions may be beneficial to the installation and community (USAG-PTA, 2020c).
- Use policy guidance from the Readiness and Environmental Protection Integration (REPI) Program and apply the framework to successfully partner with stakeholders and landowners, use stakeholder engagements for outreach, and generate mutually beneficial conservation projects and agreements that help to minimize encroachment (REPI, 2022).

3.2.4.4 Vistas

Viewsheds

PTA and Surrounding Land: PTA is generally characterized by panoramic views of the open area between Mauna Loa and Mauna Kea. Mauna Kea's gently sloping form to the north and Mauna Loa's to the south are dominant visual landscape features. PTA terrain is open and sloping, with dark lava flows creating receding areas and sporadic volcanic cinder cones (puʻu) dotting the landscape.

The lands that surround PTA are utilized for forest reserves, game management, and cattle grazing. The vegetation is generally comprised of sparse and low-growing grasses and shrubs, with few trees. Other viewsheds surrounding PTA include the Puʻu Anahulu and the Waikiʻi Paddock Game Management Areas, the Upper Waiakea Forest Reserve, the Mauna Loa Forest Reserve, and the Mauna Kea State Park. The PTA landscape provides minimal visual complexity but dramatic expansiveness that, when coupled with the panoramic views, is considered high visual quality (USAG-HI & USARPAC, 2013).

Sensitive Views: Sensitive 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. Around PTA, sensitive views include those from Gilbert Kahele Recreation Area. DKI Highway is the primary public route

for viewing PTA, particularly the State-owned land. Public traffic on this highway is generally light, with travelers typically driving by without stopping. While most public views of PTA occur from a traveling vehicle, some drivers and passengers may hike and take photographs of the views.

Some areas of PTA are visible from the Mauna Kea Observatory. While the observatory has limited public access, the rest of Mauna Kea is general access, including Pu‘u Poli‘ahu, which is on the southwestern side of Mauna Kea and has views of PTA. The public may also access Lake Waiau or hike to the Mauna Loa summit; both areas provide views of PTA (USAG-HI & USARPAC, 2013).

Mauna Kea

Mauna Kea is a high-quality landscape with its remote location and distance from large cities. This area has unusual views and exceptional stargazing observatory opportunities available in very few places in the world. Mauna Kea is one of seven National Natural Landmarks (NNL) in Hawai‘i. NNLs are administered by the National Park Service and are created and managed in cooperation with land managers, partners, and landowners to promote the natural heritage of the United States. The southern portion of the Mauna Kea NNL overlaps with the northern portion of the State-owned land (**Figure 3-3**).

With Mauna Kea’s value as an NNL and a night sky observatory and sensitivity to lights, light pollution is a consideration. The management of light pollution is listed as one of the management actions for the Mauna Kea Comprehensive Master Plan (UH, 2009). PTA follows USAG-HI’s Policy Memorandum USAG-HI-35, *Wildlife Friendly Lighting and Dark Skies*, which instructs PTA staff and contractors to take reasonable action to reduce potential effects of lighting, including the design and usage of outdoor lights that should be only low-pressure sodium or monochromatic amber light-emitting diodes (USAG-HI, 2023). Additionally, PTA adheres to state and local laws where practicable, including the County of Hawai‘i Outdoor Lighting Ordinance, and regulations to minimize operational light pollution including retrofitting lights and adherence to Unified Facilities Criteria 3-530-01, *Interior and Exterior Lighting Systems and Controls*, which provides standards for external lighting such as full shielding (louvers) or diffused lenses for external lights (DoD, 2015). Buildings on State-owned land that have external lighting include the BAX, MOUT site, and ASP.

3.2.4.5 Existing Management Measures

The Army follows various BMPs, SOPs, and management measures for land use, including the following:

- The USAG-HI Integrated Training Area Management (ITAM) 5-Year Plan stipulates (USAG-HI, ND):
  - Assess soil stability, maneuver area vegetation, fuel loads, combat trails, concentrated-use areas, and gulches and gullies.
  - Provide long-term landscape-scale monitoring.
- The USAG-PTA *External Standard Operating Procedures* establishes the following restrictions (USAG-PTA, 2018a):
  - Training area traffic is confined to well-traveled roads and areas adjacent to FPs.
  - Cross-country driving is not authorized.
  - Cinder cone driving is restricted to existing roads.

- Prior NRP authorization is required for vehicles inside the Kīpuka ʻAlalā or Kālawamauna fence units.
- All vehicles departing PTA must use the wash rack facility.
- Open fires are prohibited.
- Smoking is not permitted on active ranges.
- Rocky outcroppings are not to be moved or disturbed, and caves, lava tubes, and overhangs are off-limits.
- Digging ~~fighting~~ survivability positions can only occur using hand tools (i.e., picks and shovels) in previously utilized areas~~follow specific rules~~.
- Emergency discovery procedures for cultural or natural resources must be followed.

3.2.5 Methodology and Significance Criteria

Current land uses and controls within the ROI, as defined in regulations, objectives, and policies of relevant federal, state, and county agencies, are analyzed to evaluate the consistency and compatibility of proposed use of land under each alternative. Impacts are assessed based on whether the alternatives would limit, preclude, or conflict with the existing or planned land uses in and around the State-owned land. This analysis assumes the following:

- 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 land 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].
- The State would manage natural resources and historic and cultural resources and public use programs at current levels within the State-owned land not retained under Alternatives 1, 2, 3, and the No Action Alternative.
- Land not retained ~~under the various action alternatives~~ that is managed for public hunting would have the potential for fewer training conflicts and therefore access would be increased.
- The current legal nonconforming use of State conservation district land would cease with the lease term.
- 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 to allow military and conservation uses of the State-owned land retained by the Army (see **Section 1.4.2**).
- The State would use land not retained ~~by the U.S. Government~~ for recreation/conservation purposes, which would be compatible with adjacent land that is owned by the State.
- The State would add land not retained north of DKI Highway (except for the DHHL-administered land) to the Mauna Kea Forest Reserve and Kaʻohe Game Management Area, as applicable.

Figure 3-3: Mauna Kea National Natural Landmark

Criteria for land use should consider each topic (land tenure, encroachment, recreation, and vistas) and assess whether an alternative would result in potential significant impacts on land use including 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 land.
- Incompatibility with current laws or 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's right of access to recreation areas.

Adverse impacts on viewsheds that affect vistas, during day or night, identified in county or state plans or studies [HAR Section 11-200.1-13(b)(12)].

3.2.6 Environmental Analysis

3.2.6.1 Alternative 1: Maximum Retention

Land Retained

Lease Impacts: Under Alternative 1 via lease, there would be no new impacts on vistas because the Army's ongoing activities would remain the same under the Proposed Action. There would be new long-term, negligible, adverse impacts on encroachment management due to loss of Army control over DHHL-administered land adjacent to the State-owned land retained creating potential safety and security concerns if the public inadvertently enters State-owned land retained. There would be new long-term, significant, adverse impacts on land tenure based on incompatibility with State objectives, policies, and guidance documented in HAR Chapter 13-5, Conservation District, associated with military use of land in the conservation district, which is not an allowable use under the rules. These 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.

There would be new, long-term, moderate, beneficial impacts on land tenure 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 be 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 on land tenure due to the continued military use of the public trust land, which some believe is incompatible with the public trust purposes. Continued, long-term, significant, adverse impacts on land tenure would occur 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~~ a new lease.

Continued long-term, moderate, adverse impacts on recreation would occur due to ongoing restricted public access within the State-owned land retained.

The current PTA lease requires that the Army obtain permission from the State for "constructing any road or building of the type for which design and 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 type of construction requiring State approval and the process for obtaining that approval. This would establish when formal HEPA compliance would be required and any categories of actions that may be excluded.

Fee Simple Title Impacts: With the exception of land tenure impacts on land retained, fee simple title impacts would be similar to lease impacts, with new long-term, significant, adverse impacts on land tenure due to transfer of land control and ownership of conservation district land from the State to the U.S. Government. Under the U.S. Constitution supremacy clause (Clause 2, Article VI), federal land is not subject to land use regulation by a state or other local jurisdiction, thereby removing State land controls associated with designation of the land as a conservation district.

A new, long-term, minor, beneficial impact on land tenure would occur from the sale of land that would be negotiated at no less than an equitable, fair market value to generate revenue used by the State to fund Native Hawaiian and public programs. Although the land sale would be short-term, the impact would be long-term as the sale proceeds would be anticipated to be spent by the State over the course of time through a funding program schedule, and would be expected to be only a minor benefit because the sale proceed would be a one-time occurrence. 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 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.

The Army would not have to secure State permission for new construction or training or otherwise comply with HEPA. Nevertheless, the Army would continue to seek the State's input when considering new projects or training that has impacts outside the 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

Under Alternative 1, the Army would not retain 250 acres of DHHL-administered land. There would be no new impacts on vistas or encroachment management because this land does not contain Army facilities and Army use of this land would cease. There would be new long-term, significant, beneficial impacts on land tenure through resumption of State control of the DHHL-administered land for the use and benefit of Native Hawaiians and for the public; this land includes USFWS-designated Palila critical habitat and is subject to federal regulations. Once Army cleanup efforts (as negotiated with the State) have been completed, State control of this land would provide a new opportunity to use the land and any proceeds for the explicit purposes of HRS 171-18. There would also be new long-term, negligible, beneficial impacts on land tenure as its use would no longer be nonconforming within the State conservation district, and a new long-term, negligible, beneficial impact on recreation from reduced restrictions to public access on the land not retained.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities that could result in new short-term, negligible, adverse impacts on recreation from restricted public access.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended b~~B~~eyond the existing management measures presented in **Section 3.2.4.5**~~, the Army would consider adding non-barbed wire fencing and signage on State-owned land retained to minimize encroachment and accidental or intentional trespass from adjacent State-owned land not retained. If the Army were to select these mitigation measures, the Army would identify them in the ROD and endeavor to 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 implement to ensure their use and effectiveness~~.

Level of Significance: Alternative 1 would result in significant, adverse impacts and significant, adverse impacts that could be reduced to less than significant for lease; significant, adverse impacts for fee simple title; and significant, beneficial impacts for land not retained based on the significance criteria in **Section 3.2.5**.

3.2.6.2 Alternative 2: Modified Retention

Land Retained

The Army would retain and continue to train on approximately 19,700 acres of the State-owned land at PTA under Alternative 2.

Lease Impacts: Impacts are anticipated to be the same as under Alternative 1.

Fee Simple Title Impacts: Impacts are anticipated to be the same as under Alternative 1.

Land Not Retained

Under Alternative 2, the Army would not retain approximately 3,300 acres of State-owned land. There would be no new impacts on vistas or on encroachment management. There would be new long-term, significant, beneficial impacts on land tenure through resumption of State control of the land not retained for the use and benefit of Native Hawaiians and for the public; much of this land includes USFWS-designated Palila critical habitat and is subject to federal regulations. Once Army cleanup efforts (as negotiated with the State) have been completed, State control of this land would provide a new opportunity to use the land and any proceeds for the explicit purposes of HRS 171-18. There would also be new long-term, negligible, beneficial impacts on land tenure as its use would no longer be nonconforming within the State conservation district; and new long-term, negligible, beneficial impacts on recreation from increased public access.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities that could result in new short-term, negligible, adverse impacts on recreation due to restricted public access.

~~Potential~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures presented in **Section 3.2.4.5**~~Alternative 2 existing management measures and potential mitigation measures are the same as those identified for Alternative 1~~.

Level of Significance: Alternative 2 would result in significant, adverse impacts and significant, adverse impacts that could be reduced to less than significant for lease; significant, adverse impacts for fee simple title; and significant, beneficial impacts for land not retained based on the significance criteria in **Section 3.2.5**.

3.2.6.3 Alternative 3: Minimum Retention and Access

Land Retained

Lease Impacts: Under Alternative 3, there would be no new impacts on vistas. T~~t~~here would be new long-term, minor, adverse impacts on encroachment management due to loss of Army control over immediately adjacent State-owned land not retained. There would be new long-term, significant, adverse impacts on land tenure based on incompatibility with State objectives, policies, and guidance documented in HAR Chapter 13-5, Conservation District, associated with military use of land in the conservation district, which is not an allowable use under the rules. These 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 the State-owned land retained 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 on land tenure 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 be 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 impacts on land tenure 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.

There would be continued long-term, minor, adverse impacts on recreation due to ongoing restricted public access.

Fee Simple Title Impacts: With the exception of land tenure impacts on land retained, fee simple title impacts are anticipated to be similar to lease impacts, with new long-term, significant, adverse impacts on land tenure due to transfer of land control and ownership of conservation district land 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), federal 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. 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.

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 on land tenure because any potential future revenue generated for the public trust and the opportunity for future use of the land 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.

There would be continued long-term, minor, adverse impacts on recreation due to ongoing restricted public 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 has impacts outside the 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

Under Alternative 3, the Army would not retain approximately 12,900 acres of the State-owned land at PTA. There would be no new impacts on encroachment management because there are no Army facilities and Army use would cease on the State-owned land not retained. There would be new long-term, significant, beneficial impacts on land tenure through resumption of State control of the land not retained for the use and benefit of Native Hawaiians and for the public; some of this land includes USFWS-designated Palila critical habitat and is subject to federal regulations. Once Army cleanup efforts (as negotiated with the State) have been completed, State control of this land would provide a new opportunity to use the land and any proceeds for the explicit purposes of HRS 171-18. There would also be new long-term, moderate, beneficial impacts on land tenure as its use would no longer be nonconforming within the State conservation district. New long-term, minor, beneficial impacts on recreation would occur from increased public access.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities. There could be new, long-term, minor, beneficial impacts on vistas from negotiated lease compliance actions, and there could be new short-term, minor, adverse impacts on recreation from restricted access during lease compliance actions and cleanup and restoration activities.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures presented in **Section 3.2.4.5**~~Alternative 3 existing management measures and potential mitigation measures are the same as those identified for Alternative 1~~.

Level of Significance: Alternative 3 would result in significant, adverse impacts and significant, adverse impacts that could be reduced to less than significant for lease; significant, adverse impacts for fee simple title; and significant, beneficial impacts for land not retained based on the significance criteria in **Section 3.2.5**.

3.2.6.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at PTA after the lease expires. There would be new long-term, moderate, beneficial impacts on land tenure through State land control and compliance with conservation district use rules. There would be new long-term, significant, beneficial impacts on land tenure because the State would resume control of the State-owned land for the use and benefit of Native Hawaiians and for the public; some of this land includes USFWS-designated Palila critical habitat and is subject to federal regulations.

There could be new long-term, minor, beneficial impacts on recreation from reduced restrictions to public access and on vistas from negotiated lease compliance actions on the ~~land not retained~~ State-owned land. There could be new short-term, moderate, adverse impacts on recreation during lease compliance actions and cleanup and restoration activities. 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-owned land, creating potential safety and security concerns if the public inadvertently enters U.S. Government-owned land.

~~**Potential**~~ **Mitigation Measures:** The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended.

Level of Significance: The No Action Alternative would result in significant, beneficial impacts based on the significance criteria in **Section 3.2.5**.

3.3 Biological Resources

3.3.1 Definition

Biological resources include vegetation and wildlife, 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 associated areas, and conservation management.

Protected species and associated areas include the habitats that sustain, or are important to the survival of, a particular population. These habitats may be present, although the species of conservation interest is absent. Interactions between ecosystems are also considered.

At PTA, conservation management refers to the maintenance of natural resources to prevent harm to protected species and associated habitats, to manage wildfires, and to prevent the spread of invasive species. The Army coordinates with state and federal agencies when implementing the appropriate management efforts, protocols, and BMPs.

3.3.2 Regulatory Framework

Regulations are enacted to protect biological resources by preventing or limiting activities that may harm or reduce species populations. The Army is committed to environmental stewardship and protection and adheres to requirements including, but not limited to, DoDI 4715.03, *Natural Resources Conservation Program*, and AR 200-1, *Environmental Protection and Enhancement*.

The Endangered Species Act of 1973 (16 U.S.C. Section 1531 *et seq*.) is a federal law passed in 1973 to protect and recover imperiled species and the ecosystems they need to survive. The ESA requires federal agencies, in consultation with 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. Under the ESA, "jeopardy" occurs when an action is reasonably expected, directly or indirectly, to diminish numbers, reproduction, or distribution of a species so that the likelihood of survival and recovery in the wild is appreciably reduced. An "endangered species" is defined by the ESA as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined by the ESA as any species likely to become an endangered species in the foreseeable future. The ESA also prohibits any action that causes a "take" of any listed species. "Take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." Listed plants are not protected from incidental "take," although it is illegal to collect or maliciously harm them on federal land. In accordance with 50 CFR Section 17.71 regarding prohibitions for endangered and threatened wildlife and plants, any species listed as threatened after September 26, 2019, has a different level of protection than endangered species because a 4(d) rule will be issued with the listing specifying actions that would not be prohibited under the act for that newly listed threatened species.

The USFWS designates critical habitat when it is determined that habitat is essential to the conservation of a threatened or endangered species. Federal agencies must ensure that their activities do not adversely modify designated critical habitat to the point that it will no longer aid in the species' recovery. Areas that are owned or controlled by the DoD are exempt from a critical habitat designation if it is determined that a signed INRMP provides a benefit to the species—these plans are required under the Sikes Act.

The Sikes Act, as amended [16 U.S.C. Section 670a(a)(2)], authorizes the development of cooperative installation plans (i.e., INRMP) and reflects mutual agreements with federal and state agencies for conservation of natural resources, including recreation, while maintaining military safety and security. The Sikes Act is discussed in more depth in **Section 3.2.2**.

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. Sections 703–712), as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, require federal agencies to minimize or avoid impacts on migratory birds. Under the MBTA, it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, or kill; attempt to take, capture, or kill, or possess migratory birds or their nests or eggs at any time unless permitted by regulation. A Memorandum of Understanding (MOU) was executed in September 2014 between DoD and USFWS to promote the conservation of migratory birds. The MOU expired in 2019; however, an addendum signed on April 21, 2022, extends the MOU indefinitely or until either party determines the MOU needs to be revised (DoD & USFWS, 2022). Section 315 of the Bob Stump National Defense Authorization Act for Fiscal Year 2003 (P.L. 107-314, 116 Statute 2458) exempts military readiness activities carried out in accordance with federal migratory bird policy (at 50 CFR Section 21.15) from restrictions that would otherwise prohibit the incidental taking of

migratory birds. Military readiness activities, as defined in the Bob Stump National Defense Authorization Act and implementing regulations at 50 CFR Section 21.3, include all training and operations of the Armed Forces that relate to combat, and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use.

The Federal Noxious Weed Act (P.L. 93-629) mandates control of noxious weeds by limiting potential weed seed transport between infested and non-infested sites. EO 13112, *Invasive Species*, and EO 13571, *Safeguarding the Nation from the Impacts of Invasive Species*, require federal agencies to prevent the introduction of invasive species; provide for their control; and minimize their economic, ecological, and human health impacts.

EO 11990, *Protection of Wetlands*, requires that federal agencies take actions to minimize or avoid the destruction, loss, or degradation of wetlands and enhance and preserve the natural and beneficial values of wetlands.

The State provides protections for threatened species, endangered species, and species of concern under HRS Chapter 195D, Conservation of Aquatic Life, Wildlife, and Land Plants and its implementing rules including HAR Chapter 107, Threatened and Endangered Plants; HAR Chapter 124, Indigenous Wildlife, Endangered and Threatened Wildlife, Injurious Wildlife, Introduced Wild Birds, and Introduced Wildlife. These regulations work to conserve and protect native plants and animals and to manage non-native species. Additionally, HAR Chapter 122, Rules Regulating Game Bird Hunting, Field Trials and Commercial Shooting Preserves, and HAR Chapter 123, Rules Regulating Game Mammal Hunting, provide hunting regulations.

3.3.3 Region of Influence

The ROI for biological resources includes State-owned land leased by the Army and adjacent lands, both U.S. Government- and State-owned land at PTA, 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 land at PTA, which potentially support protected populations.

3.3.4 Existing Conditions

Throughout this section, the first introduction of a plant or wildlife species includes the scientific name, followed by the common and local names. Subsequent references to wildlife species use the common name; however, because most plant species do not have a common name, subsequent references use the shortened scientific name.

The baseline used herein for existing conditions is the state of the species and habitat within the ROI at the time of EIS publication based on the best scientific data available.

3.3.4.1 USFWS Consultations

The Army is moving toward a programmatic approach to ESA consultations for PTA with USFWS. In this approach, all current and proposed activities throughout PTA that have a “may affect” determination will be included in the Army’s programmatic biological assessment, along with specific species, activities, avoidance and minimization measures, and conservation measures. No new activities are proposed on

State-owned land. It is anticipated this consultation will be concluded by the end of 2025 with a resulting programmatic BO. The existing BOs, now applicable to activities at PTA, will be superseded by the programmatic BO issued by USFWS that covers all protected species analyzed under previous BOs, as well as *Schiedea hawaiiensis* (māʻoliʻoli), *Exocarpos menziesii* (Menzie's ballart, heau), *Festuca hawaiiensis* (Hawaiian fescue), *Portulaca villosa* (hairy purslane, ʻihi), *Sicyos macrophyllus* (Alpine bur cucumber, ʻānunu), *Hydrobates castro* (band-rumped storm petrel, ʻakēʻakē), *Hylaeus anthracinus* (anthracinan yellow-faced bee), and *Manduca blackburni* (Blackburn's sphinx moth).

The Army has engaged USFWS in formal and informal consultation when required for training ~~for all training~~ conducted at PTA. No separate ESA Section 7 consultation is anticipated at this time for the Proposed Action, which is a land retention (real estate) action that does not propose new training or activities. Activities at PTA are covered under previous NEPA documents and associated consultations, including three USFWS-issued BOs that guide conservation work and include conservation measures for the *Aeorestes semotus* (Hawaiian hoary bat, ʻōpeʻapeʻa), *Branta sandvicensis* (Hawaiian goose, nēnē), *Buteo solitarius* (Hawaiian hawk, ʻio), *Pterodroma sandwichensis* (Hawaiian petrel, ʻuaʻu), 15 plant species, and Palila critical habitat. The 2003 and 2008 BOs included incidental take statements for the Hawaiian hoary bat and the 2008 and 2013 BOs included incidental take statements for the Hawaiian goose (USFWS, 2003; USFWS, 2008; USFWS, 2013). The 2003 and 2008 BOs also included conservation measures, implementation plans, and terms and conditions for the Hawaiian hawk (USFWS, 2003; USFWS, 2008). The 2013 BO determined that military activities do not affect the Hawaiian hawk, and associated conservation measures no longer apply (USFWS, 2013). The Hawaiian hawk was removed from the Federal List of Endangered and Threatened Wildlife in 2020. Additionally, in 2020 the Army ~~initiated~~ completed informal consultation with USFWS for small mammal (e.g., rats and feral cats) predator control during breeding season at a band-rumped storm petrel colony. The USFWS concurred with the Army's determination that the proposed action for predator control may affect, but is not likely to adversely affect, the band-rumped storm petrel and the Hawaiian goose (USAG-PTA, 2024a).

The Army notified USFWS immediately on July 21, 2022, when the Leilani fire started. In compliance with the 2003 BO, the Army provided the USFWS with information about the Leilani fire impacts (discussed in **Section 3.3.4.2**) in May 2023, with additional information provided in October 2023 and April 2024 (USAG-PTA, 2024b).

On September 7, 2022, the Army ~~initiated coordination with~~requested an official species list from the Pacific Island Fish and Wildlife Office (PIFWO) for the Proposed Action. PIFWO provided a federally listed plant and wildlife species list with the potential to occur on State-owned land at PTA, on August 30, 2024~~December 27, 2023~~, the species list was updated. This list contains 34 species: 24 plants, 1 mammal, 1 reptile, and 8 birds (USFWS, 2024a).

Potential for species occurrence within PTA is considered when a habitat range or a historically reported population distribution overlaps with a specified land area. The PIFWO protected species list was cross referenced with biological surveys of PTA habitat and species that were conducted per the INRMP and BO compliance with conservation measures. There is documented suitable habitat for, and the historic or current presence of, 26 federally and State-listed species on State-owned land at PTA. This includes 20 plants, 2 invertebrates, 1 mammal, and 3 birds. Additionally, the Hawaiian hawk is listed as endangered by the State (DLNR-DOFAW, 2015; USAG-PTA, 2020c; USAG-PTA, 2022b; USFWS, 2023).

Previous USFWS consultations regarding PTA resulted in conservation measures, which are listed in **Table 3-1**.

Table 3-1: Pōhakuloa Training Area Conservation Measures

USFWS Consultation	Conservation Measures	Status
Routine Military Training and Transformation of the 2nd Brigade 25th Infantry Division (Light), Biological Opinion of the U.S. Fish and Wildlife Service (hereafter referred to as the 2003 BO) (USFWS, 2003)	Construction of fence units to minimize threats by feral animals on federally listed plants and indirectly enhance Hawaiian hoary bat habitat.	Complete
	Execute biological studies such as those on the effects of dust on federally listed plants and native habitats; surveys for species presence, abundance, and habitat use by the Hawaiian petrel, Hawaiian hawk, and Hawaiian goose; and monitoring Hawaiian hoary bat activity and habitat preference.	Ongoing
	Survey of gulches and gullies in Keamuku Maneuver Area (KMA), along with the collection of seed from federally listed species.	Ongoing
	Changes to the Integrated Wildland Fire Management Plan (IWFMP) to address the establishment of fire/fuel breaks and fuel monitoring corridors, fire suppression measures, and implementation of the fire danger rating system.	Complete
	Invasive plant and animal species control within and adjacent to landing zones, trails, and roadsides; removal of invasive species from vehicles prior to transport; and briefings to educate military personnel on the consequences of invasive species on installation properties.	Ongoing
	Management of federally protected plant species, including non-native plant control, to minimize adverse effects on habitat quality and reduce the fire threats, and management to promote natural reproduction in wild populations, maintain genetic stock (e.g., seeds) in storage, and establish plants at additional sites to increase species distribution and abundance.	Ongoing
	One or more of the NRP staff become familiar with the biology and habitat requirements of, and monitoring techniques for, the Hawaiian hoary bat.	Complete
Reinitiation of Formal Section 7 Consultation for Additional Species and New Training Actions at Pōhakuloa Training Area, Hawaii (hereafter referred to as the 2008 BO) (USFWS, 2008)	Annual reporting on Hawaiian goose research, conservation measures, and use of Range 1.	Ongoing
	Reporting on the application and success of conservation measures for *Silene hawaiiensis*, *Asplenium peruvianum var. insulare*, and *Solanum incompletum* as outlined in the 2003 and 2008 BOs and biological assessments.	Ongoing
	Developing a Hawaiian goose monitoring protocol.	Complete
	Minimizing impacts on the Hawaiian goose from training on PTA.	Ongoing
	Reporting and transferring dead Hawaiian geese and Hawaiian hoary bats.	Ongoing

Table 3-1: Pōhakuloa Training Area Conservation Measures		
USFWS Consultation	**Conservation Measures**	**Status**
	Removing barbed wire from conservation fences to protect the Hawaiian hoary bat. Visual inspection of barbed-wire security fences occurs quarterly for Hawaiian hoary bat entanglement.	Ongoing
	Fencing and removing of ungulates from TA 21 to protect *S. hawaiiensis* and *Asplenium peruvianum* var. *insulare;* and fencing to protect *S. incompletum*.	Ongoing
Informal Consultation and Formal Consultation with a Biological Opinion for the Construction, Maintenance, and Operation of an Infantry Platoon Battle Area and Installation-wide Impacts of Military Training on Hawaiian Geese (*Branta sandvicensis*) at Pōhakuloa Training Area, Hawaii (hereafter referred to as the 2013 BO) (USFWS, 2013)	Unit leaders are briefed to avoid and minimize impacts and inform troops of their responsibility to protect the Hawaiian goose on PTA, especially when driving and during live-fire exercises.	Ongoing
	In accordance with the 2013 BO, the Army benefits the Hawaiian goose by funding an off-site project at Hakalau Forest National Wildlife Refuge with a management plan that includes goose monitoring, nest monitoring, predator control, and habitat management.	Ongoing
	If a Hawaiian goose is in harm's way, a biologist from the NRP is authorized to haze the goose if necessary to encourage movement to a safe location.	Ongoing
	Drive less than 15 miles per hour (mph) unless there is a waiver associated with a legitimate training need.	Ongoing
	Provide 45- and 60-day briefs to leadership to ensure they are informed of their responsibilities to protect Hawaiian geese.	Ongoing
	Ensure soldiers are trained that Hawaiian geese will not be targeted during training activities. If a take is observed, training will cease to provide further instructions and minimize additional take.	Ongoing
	Report any Hawaiian goose take to USFWS.	Ongoing
	Avoidance and Minimization Measures:	
	Completed required genetic conservation actions for species impacted by the Infantry Platoon Battle Course construction.	Complete
	Amber, low-wattage lights, down-shielded to minimize disorientation of flying animals, is used for lighting, and lighting is used only when night training is scheduled.	Complete
	NRP staff completed ongoing studies of Hawaiian hoary bats and Hawaiian petrels in an attempt to describe each species' temporal and spatial patterns of occupancy at PTA.	Complete
	To minimize Hawaiian hoary bat impacts, tree trimming is avoided between June 1 and September 15.	Ongoing

PTA Federal and State Permits

The Army currently holds three federal and eight State permits, which are listed in **Table 3-2**.

Table 3-2: PTA Federal and State Permits	
Type	**Permit**
Federal Permits	Native Endangered & Threatened Species Recovery Endangered & Threatened Plants (TE40123A-3)
	Federal Fish and Wildlife Permit—Scientific Collection with Import / Export (MB95880B)
	National Wildlife Refuge System Research and Monitoring Special Use Permits (121516-21020-G, 12516-22023-R, and 12516-23020-R)
State Permits	Permit for Threatened and Endangered Plant Species (I2942 and I5287)
	Mauna Loa Forest Reserve Permit for Access and Research, Pu'u Huluhulu Native Plant Sanctuary
	Hawai'i Experimental Tropical Forest Research Permit
	Protected Wildlife Permit—Scientific Collection (WL19-42 and WL21-15)—Band-rumped Storm Petrel (*Hydrobates castro*)
	Protected Wildlife Permit—Scientific Collection (Upland Gamebirds: WL21-11)
	Wildlife Control Permit (WHI-PTA1)

Source: USAG-PTA, 2024a

3.3.4.2 Conservation Management

PTA conservation plans and conservation measures include coordination with DLNR and USFWS to manage and protect natural resources. PTA's conservation plans include the following:

- Pōhakuloa Implementation Plan (PIP) and USAG-PTA *External Standard Operating Procedures* work together to reduce the magnitude of biological resource impacts from training activities and operations through established management actions (USAG-PTA, 2010; USAG-PTA, 2018a).
- An INRMP is implemented to guide biological conservation and restoration (USAG-PTA, 2020c).
- An IWFMP is implemented to respond to and reduce the risk of fires related to training activities (USAG-PTA, 2021~~eg~~).
- An Integrated Pest Management Plan (IPMP) describes the installation's pest issues and programs used to control those pests effectively and economically. This document outlines pest surveillance resources and control; and describes the safety, environmental, and administrative requirements of the program (USAG-PTA, 2015a).

Wildfire, ungulates, habitat loss, anthropomorphic disturbance, and invasive species are the biggest threats to Hawai'i's populations of native plant and animal species. Wildfires destroy individual species and alter the habitat preventing species recovery, ungulate activity on PTA has severe impacts on the vegetation, and invasive plants outcompete native plants, dominating the habitat once established (Shaw

& Castillo, 1997). On PTA, these threats are addressed through conservation programs and conservation measures implemented in accordance with the 2003, 2008, and 2013 BOs. The measures include ungulate exclusion fencing, firebreak maintenance, implementation of weed and insect controls, vehicle wash-down stations, and restricted military activities in sensitive areas (USFWS, 2003; USFWS, 2008; USFWS, 2013).

NRP staff do extensive stewardship work focused on ecosystem management, including surveys and monitoring, genetic conservation of rare plants, and habitat improvement.

Plant Survey and Monitoring: Rare plant species at PTA are assigned to management tiers. Tier 1 species have fewer than 500 individuals at PTA and are monitored annually to document abundance and threats. Tier 2 species have more than 500 individuals at PTA, and annual surveys are conducted on 33 percent of the known geographic distribution to document abundance, distribution, and threats, with an entire species distribution survey completed every 3 years. The plant survey and monitoring program works to:

- Update known federally protected plant distribution every 3 years;
- Designate Areas of Species Recovery (ASR) to focus species management;
- Monitor federally protected species to guide management;
- Provide short-term protection of federally listed species impacted by installation construction;
- Assess native, non-native, and invasive species response to inform management actions (USAG-PTA, 2020c).

Surveys indicated that invasive species threats are not present within most ASR plots, but if invasive species were present, they were detected most frequently between July and September. Future surveys analysis will focus on understanding the temporal and spatial patterns to increase management efficiency and establish monitoring initiation triggers (USAG-PTA, 2024a).

Vegetation Monitoring: Vegetation monitoring is done within conservation fence units to track habitat condition changes and determine the success of fence units. This information is used to assess habitat improvement and infer the stability of federally protected species (USAG-PTA, 2020c).

Genetic Conservation and Outplanting: The Army actively works to preserve the genetic diversity of the 20 federally protected plant species found at the installation and, when feasible, increase the species abundance and distribution. Projects include genetic conservation, greenhouse management and plant propagation, habitat improvement, and outplanting plant species. NRP staff also work to improve the habitat by planting common native species to enhance habitat in general. The *Genetic Conservation and Outplanting Plan* is used to guide genetic conservation for federally protected plants. This plan guides management priorities, propagation and collection, and outplanting strategies (USAG-PTA, 2024a). The overall operational goals include the following:

- Increase federally protected plant species distribution and abundance, and improve species habitat.
- Maintain an accurate inventory species list.
- Maintain genetic material in the Rare Plant Propagation Facility.

- Collect and propagate propagules for outplanting.
- Propagate federally protected plant species for outplanting or transfer.
- Assess the outplanting status annually when possible.
- Assess germination and propagation requirements for federally protected plant species.
- Propagate common native species to be used for habitat improvement, and provide forage plants.
- Preserve genetic variability (USAG-PTA, 2020c).

Habitat Improvement Projects: Habitat improvement projects are implemented to provide a structure that supports the persistence or recovery of protected plant and wildlife species and to facilitate natural recruitment of native and protected species. These projects also provide structure and foraging opportunity for protected and native wildlife (USAG-PTA, 2020c).

Wildland Fire Management

Minimization of fire damage is integrated into the installation's biological conservation efforts. The threat of fire damaging or destroying native plant assemblages and habitat on PTA is a concern and can be the result of military activities, accidents, or natural disasters. For example, in 2018, a wildfire started in TA 19 and spread to TAs 18 and 22; approximately 1,445 acres were burned. PTA fire responders used natural resource concerns and knowledge of sensitive areas to prioritize and focus firefighting efforts (USAG-PTA, 2020d). Hawaiian ecosystems are not fire-dependent for health; thus, any fire is detrimental and ~~provides disturbance to~~ disturbs the native environment, providing the opportunity for non-native and invasive species to dominate the landscape (USAG-PTA, 2020c). Post-fire assessment by NRP staff of the burn area indicated that the weed control buffer (WCB) areas in these TAs reduced the direct impacts of the wildland fire event on protected species. The results showed the fire burned to the edge of the WCB areas before it stopped, preventing the fire from damaging protected plants and averting a potential extinction event for *Tetramolopium arenarium* (USAG-PTA, 2024a). In addition to the fire discussed above, a separate incident occurred on July 15, 2021, when a wildland fire ignited at FP 519 in TA 16 at PTA, outside of State-owned land, during military training exercises with a smoke grenade. The fire was declared 100 percent contained that same evening. The fire burned approximately 10 acres in the *Eragrostis atropioides* Herbaceous Alliance. There were no effects on ESA-listed plant species, Hawaiian hoary bat habitat, or Palila critical habitat from the July 15, 2021, fire.

The Army is applying lessons learned from recent fire events in 2018, 2021, and 2022. The corrective action for the July 15, 2021, fire involving a smoke grenade is to confirm the fire condition hourly per the SOPs for ignition control outlined in the PTA IWFMP. Additionally, fire awareness training for staff was conducted in October 2021. As a result of the fire that occurred on July 17, 2021, a fire that was started from blank ammunition, the Army updated its PTA training brief to use blank ammunition in areas away from dry vegetation and the PTA SOPs to include muzzle awareness and stricter guidelines for the use of blank ammunition in areas of high risk to prevent future similar fires. Some of these areas of high risk are on land leased from the State. The Army enforces training policy and the IWFMP to reduce the risk of fires related to training activities (USAG-PTA, 2021~~eg~~).

Leilani Fire

On the night of July 20, 2022, a unit training at PTA reported a fire in the PTA impact area following a training exercise involving pyrotechnic munitions. The Range Division and fire crews were alerted and monitored the fire because fires in the impact area are not actively fought due to health and safety concerns related to UXO. During the morning of July 21, 2022, Army personnel reported a fire (subsequently known as the Leilani Fire) outside the impact area, in the northeastern corner of TA 22, on State-owned land. It is possible that the fire was ignited by an ember from the impact area but that has not been definitively determined. Fire crews employed a combination of ground firefighting and helicopter bucket drops. The Leilani fire was contained, with 1,557 acres burned by July 29, 2022; however, crews continued to work on hot spots until August 3, 2022. On August 10, 2022, due to strong winds (30-40 mph), a re-ignition of the original fire occurred. It escaped the TA 22 containment and spread west onto adjacent State land. The fire burned approximately 17,712 acres in total, including: approximately 5,254 acres on PTA, approximately 2,880 acres of which is on State-owned land. 12,458 acres of State land off the PTA installation were burned, mostly in the Puʻu Anahulu Game Management Area. The fire response was a coordinated effort between the Army, Hawaiʻi County, National Park Service, and DLNR Division of Forestry and Wildlife (DOFAW) utilizing helicopters, additional fire break construction, and on the ground fire-fighting. It was contained on August 23, 2022.

The Leilani fire affected 5,254 acres of threatened and endangered species habitat at PTA. The ten federally listed plant species known to occur in the burned area include *Festuca hawaiiensis* (Endangered), *Haplostachys haplostachya* (Endangered), *Kadua coriacea* (Endangered), *Portulaca sclerocarpa* (Endangered), *Portulaca villosa* (Endangered), *Silene hawaiiensis* (Threatened), *Silene lanceolata* (Endangered), *Solanum incompletum* (Endangered), *Stenogyne angustifolia* (Endangered), and *Zanthoxylum hawaiiense* (Endangered). Post-fire assessment found a net decline of *P. slerocarpa, Z. hawaiiense, S. lanceolatae,* and *S. angustifolia*. The fire also burned potential available treeland roosting habitat (approximately 3,000 acres) for the endangered Hawaiian hoary bat (*Aeorestes semotus*). The Leilani fire surpassed the annual and cumulative allowances, 119 acres and 3,324 acres, respectively, for authorized incidental take of potential available treeland roosting habitat outside the impact area. There is evidence that some plants have regenerated from roots, despite being burned in the fire.

On State land beyond the PTA boundary, the Leilani fire largely affected non-native grasslands within the Puʻu Anahulu Game Management Area. The fire also burned an estimated 2,500 acres of ʻōhiʻa/native forest habitat, which is about 50 percent of the remaining forest in the Puʻu Anahulu Game Management Area. DOFAW reported that five federally listed plant species occur within the area burned. State personnel reported substantial impacts to *S. lanceolata*, *S. angustifolia*, and *Z. hawaiiense*.

Fountain grass (*Cenchrus setaceus*), an invasive, non-native grass, is driving changes in the fire regime (both frequency and intensity) across the leeward side of Hawaiʻi Island. This species has invaded thousands of acres across the western side of PTA and was a major factor in wildfire spread. Fountain grass is the primary focus for invasive species management with particular focus on firebreaks and control buffers around selected rare plant populations to help reduce the fire risk damage and spread.

The environmental conditions at PTA (landscape in general) have been continually degrading due to over population of ungulates and the pressure they put on plants/vegetation/habitat, low rainfall/drought, pervasive and invasive species of fountain grass, fire weed, and local pests. There is also drought and low rainfall. All of these factors contribute to worsening environmental conditions. These conditions are due,

in part, to climate change. Fires have become larger, more intense, and more frequent everywhere, affecting not only natural resources but also human health and safety, a primary concern for Army trainers.

Wildland Fire Management measures and Range SOPs are in place to ensure that troops check fire conditions hourly when training with munitions that may be incendiary. Further action to ensure all wildland fire and range SOPs are in force has been undertaken.

The IWFMP addresses safety, land management, and environmental compliance relative to fires and fire hazards. Multiple programs are outlined to support fire prevention and suppression, with emphasis on the need to avoid fire damage in areas of high natural resource value. The fuel break system includes 14 fuel breaks of approximately 39 miles; approximately 20 miles are on State-owned land. The fuel break system that includes State-owned land and the Kīpuka Kālawamauna endangered plant habitat incorporates varying widths of vegetation control and firebreak road. Fuel breaks are maintained to IWFMP standards of less than 20 percent crown cover and less than 12 inches of grass height. Additionally, fuel monitoring corridors are used for preventative wildfire measures. These corridors are designated belts of land, a minimum of 300 feet wide, used to monitor contiguous fuels along opposite sides of the corridor. A break in continuity is defined as an area where herbaceous crown cover is less than 20 percent. There are five fuel monitoring corridors covering approximately 35 miles; two fuel monitoring corridors, Keamuku and Eastern, are all or partially on State-owned land covering approximately 10 miles (USAG-PTA, 2020c; USAG-PTA, 2021e~~g~~; USAG-PTA, 2024a).

Policy was implemented at PTA in August 2018 preventing future expenditure of training flares from helicopters at altitudes below which the flare would be expected to burn out before reaching the ground. In response to the 2021 fires, PTA SOPs were updated to include muzzle awareness and hourly confirmation of fire danger ratings. The Army will continue to enforce training policy and the IWFMP to reduce the risk of fires related to training activities (USAG-PTA, 2021e~~g~~; USARPAC, 2023).

The Army is augmenting wildland fire response through additional training for personnel and the integration of interagency support and resources into wildland fire management activities (wildfire prevention, protection, mitigation, and management). In addition to thermal technology in place at PTA, advanced technology is being increased to include additional thermal technology equipment, which enables firefighting personnel to locate and eliminate hot spots where a fire persists. The Army continues to assess firebreaks and fire roads to determine additional needs to prevent the spread of wildland fires.

Ungulate Exclusion Fence Units

Fencing is a conservation measure implemented in accordance with the 2003 and 2008 BOs issued to USAG-HI by USFWS at PTA to protect native habitat and federally listed plant species. Large-scale fence units are intended to provide species and habitat protection and to alleviate the threats to native and listed plant species. The installation works to keep these fenced areas free of ungulates by using inspections to verify functionality of fences and gates, making repairs, controlling vegetation along the fence line, aerial and ground surveys, camera surveillance, and incidental sightings to track ungulate presence and remove ungulates when detected. ~~As of 2017, all fence units were considered free of ungulates.~~ Fence lines are frequently inspected to locate and repair damaged fencing. Inspection frequency ranges from monthly to every six months depending on the fence vulnerability (USACE-POH, 2017; USAG-PTA, 2020c; USAG-PTA, 2024a). Over the 2022-2023 reporting period, NRP staff removed 42

ungulates from ungulate exclusion fences at PTA, two of which were from the Kīpuka Kālawamauna ungulate exclusion fence units (USAG-PTA, 2024a). There are 15 large-scale fence units with approximately 86 miles of fence and 107 access gates surrounding approximately 37,300 acres across PTA (**Figure 3-4**) with approximately 28 miles of ungulate exclusion fencing surrounding 8,500 acres on the State-owned land at PTA (**Figure 3-7**).

The PIP provides additional wildland fire safety by integrating with the PTA NRP in the management of ASRs within ungulate exclusion fence units. Approximately 300-foot buffer zones are established around areas managed for rare plants. Forty-five ASRs cover approximately 2,830 acres and are periodically reviewed to adjust as conditions and populations change. Training activities can also present fire risks; the USAG-PTA *External Standard Operating Procedures* outlines when and how training activities can be conducted, stipulating when training can occur based on the IWFMP guidelines. Training considerations include relative humidity and wind criteria, particularly when dealing with pyrotechnics (USAG-PTA, 2010; USAG-PTA, 2018a, USAG-PTA, 2024a).

Three ungulate exclusion fence units protect the Kīpuka Kālawamauna endangered plant habitat (**Figure 3-7**). Designated by the installation when two rare plant species were discovered in 1977 and federally listed in 1979, this area is approximately 7,850 acres across both U.S. Government- and State-owned land at PTA (USFWS, 2003). This plant habitat is home to 13 rare and listed plant species (USAG-PTA, 2020c). **Table 3-3** describes the ungulate exclusion fence units within the Kīpuka Kālawamauna endangered plant habitat.

Table 3-3: Kīpuka Kālawamauna Ungulate Exclusion Fence Units

1	Kīpuka Kālawamauna north unit includes all of (and extends north of) TAs 17, 19, and 20; approximately 4,256 acres is located on State-owned land.
2	Kīpuka Kālawamauna west unit* includes most of the State-owned land portion of TA 22 and extends south into U.S. Government-owned land; approximately 2,381 acres is located on State-owned land.
3	Kīpuka Kālawamauna east unit includes some of TA 22 and extends south into U.S. Government-owned land; approximately 563 acres is located on State-owned land.

Key: *Fence unit was impacted by the 2022 Leilani fire, but this fence continues to be a functional fence (USAG-PTA, 2024a).

Source: USAG-PTA, 2020c

Table 3-4 describes the other four ungulate exclusion fenced areas mostly on State-owned land (**Figure 3-7**).

Table 3-4: Other Ungulate Exclusion Fence Units on State-Owned Land

1	Pu‘u Koli unit includes most of TA 21 and extends south into U.S. Government-owned land; approximately 816 acres is located on State-owned land.
2	*S. hawaiiensis* unit is completely located on TA 3 and covers approximately 43 acres.
3	*H. haplostachya* unit is completely located on TA 13 and covers approximately 165 acres.
4	*S. incompletum* unit is completely located on TA 18 and covers approximately 293 acres.

Source: USAG-PTA, 2020c

Ungulate and Small Mammal Control

Feral ungulates have detrimental effects on native vegetation because they browse on and trample native vegetation. This damage and recovery time to native plant populations presents invasive plant species an opportunity to dominate the landscape, making recovery of native plant species even more challenging. Additionally, small invasive mammal populations (e.g., cat, mongoose, rodent) depredate ESA-listed plants and animals. NRP staff ensure fence units protect sensitive species and monitor for ungulate ingress and coordinate removal when needed. The NRP also controls small mammal populations using live and A24 traps. Additionally, tracking tunnels, tracking paper with an inked area and bait placed inside a weather-resistant tunnel, are used to monitor changes in rodent activity. These control measures are a critical tool to minimize the negative effects from these predators to the listed and sensitive species and to maximize listed and sensitive species' overall success within the natural landscape. Between fiscal years 2022 and 2023, NRP staff removed 252 predators using live and A24 traps (USAG-PTA, 2024a). To further minimize invasive mammal populations, incoming soldiers and staff are instructed not to feed feral cats and to ensure all trash is picked up and secured in appropriate garbage receptacles.

Game Management Program

NRP staff use the Game Management Program, in conjunction with state hunting regulations, to manage introduced game animals. This program is designed to reduce negative impacts on Palila critical habitat, minimize potential ungulate ingress into ungulate exclusion fence units, and provide outdoor recreation and public access for hunting game mammals and upland game birds. Hunting occurs on approximately 38,400 acres (60 square miles) within five ~~six~~ designated hunting areas at PTA. Four~~Five~~ of the five~~six~~ hunting areas—Ahi, Humuʻula~~, Keiki~~, Menehune, and Turkey, which occur in areas designated by the State as A, E, and G—occur on State-owned land at PTA. The program actively monitors the hunting areas to reduce negative effects on protected natural resources and ensure game resources and hunter efficacy. NRP staff monitor the hunting dynamics of game populations through field surveys that enable the calculation of game and animal densities. This information helps inform management of protected species and critical habitat. In support of this, PTA holds a *Protected Wildlife Permit–Scientific Collection (Upland Gamebirds: WL21-11)* that authorizes the collection and possession of upland game birds and *Wildlife Control Permit (WHI-PTA1)* that authorizes game harvest limits above State prescribed hunting regulations (USAG-PTA, 2024a). Conservation law enforcement officers and game management support work to control ungulates at PTA and support the hunting program.

Public hunting on PTA is available on weekends and national holidays, pending training compatibility and in compliance with the 2022 PTA hunting policy and iSportsman management. Three types of hunting are permitted at PTA: game mammals (most months of the year), upland game birds (first Saturday of November to the last Sunday of January), and wild turkey (March 1 to April 15). Over the 2022-2023 reporting period, a total of 820 permits were issued; 890 mammals and 744 game birds were harvested. To gather information on game species distribution and abundance, PTA NRP staff conduct game bird surveys annually and mammal monitoring is done remotely via camera ~~to gather information on game species distribution and abundance~~ (USAG-PTA, 2024a). Refer to Section 3.2 and Figure 3-2 for additional hunting information.

Figure 3-4: Conservation Units with Ungulate Exclusion Fences Pōhakuloa Training Area

Invasive Species Management

The Army understands the importance of invasive species management, monitoring, and control. NRP staff initiate and implement programs to minimize introduction and spread of non-native species through roadside surveys, control and monitoring (weed checks), site-specific survey and control of secondary target species, and Rapid ʻŌhiʻa Death surveys, monitoring, and sampling. The INRMP outlines the Invasive Plants Program for 39 invasive species (see **Section 3.3.4.3**) in accordance with the 2003 BO. The invasive species management focuses on early detection, eradication, and follow-on surveys to ensure eradication success focusing along roads, the BAAF, construction sites, and around the vehicle washrack where new species of invasive concern might be introduced (USAG-PTA, 2020c; USAG-PTA, 2024a; USFWS, 2003). The BAAF and washrack are on U.S. Government-owned land. To minimize the risk of transporting invasive animal species to and from PTA, contractors are trained on equipment, machinery, and vehicle decontamination procedures prior to entering and leaving PTA. Additionally, PTA 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, 2024a).

To systematically survey and monitor high risk areas for invasive species, baited traps are deployed on equipment or vehicles and along roadsides. Established transects within the BAAF and at construction and auxiliary sites are intended to detect basking reptiles and uncommon or new species within approximately 15 feet of each transect line. Security fences around the BAAF are inspected quarterly for brown tree snakes. Additionally, USAG-PTA and construction personnel are trained to inspect for invasive ants, particularly the little fire ant (*Wasmannia auropunctata*) (LFA) and to report incidental reptile sightings, including the brown tree snake. All incoming contractors are provided the PTA Invasive Pest Prevention SOPs and other invasive species materials (USAG-PTA, 2024a).

The PTA Invasive Pest Prevention SOPs include, but are not limited to, a PTA natural resources briefing prior to implementation of projects, parameters for using off-site materials for fill or landscaping in accordance with the *Protocol for Optional Use of Off-Site Aggregate for Infrastructure Construction at PTA and KMA*, keeping construction support sites and staging areas free of invasive pests, vehicle and equipment debris cleaning, and steps to prevent spread of the Rapid ʻŌhiʻa Death fungus with tool sanitization and other invasive pests, including LFA in accordance with *Policy Memorandum USAG-HI-71, Avoidance of Little Fire Ant Introduction* (USAG-HI, 2017a; USAG-PTA, 2018b). PTA also adheres to Army-specific green waste policies to minimize the spread of the coconut rhinoceros beetle (CRB) (*Oryctes rhinoceros*), which has not been detected on PTA or the island of Hawaiʻi (USAG-HI, 2022~~b~~). In August 2021, LFA was detected inside Red Cross supplies; monitoring and insecticide treatments were conducted by NRP staff for 8 weeks. September and October 2021 monitoring events showed no evidence of LFA, demonstrating the effectiveness of the Army's treatment and monitoring protocol (USAG-PTA, 2024a~~b~~).

Over the 2022~~19~~–2023~~1~~ reporting period, ~~six~~ eight invasive invertebrate inspections were completed by NRP staff; ~~no new~~there was one invasive species documented at the BAAF, and there was no evidence of brown tree snakes. In April 2023, invasive Argentine ants (*Linepithema humile*) were detected in a BAAF dirt pile scheduled for removal; insecticide was selectively applied to minimize the risk of relocating the Argentine ants to other parts of the island (USAG-PTA, 2024a).

Conservation Partnerships and Programs

PTA NRP staff work to develop and maintain relationships with external partners and agencies to share expertise, find common problem resolutions, and maximize conservation efforts. To date, these partnerships have resulted in collaborative projects that work to understand ungulate and non-native predator impacts, remote sensing technology uses with a conservation focus, and groundwater resource and geologic condition assessments. Agencies with which the PTA NRP partners include the National Park Service at Volcanoes National Park, which provides expertise on numerous topics, the DLNR for hunting and game management, U.S. Geological Survey (USGS), U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) and U.S. Forest Service (USFS), Three Mountain Alliance, the Hawaii Conservation Alliance, the Palila Working Group, and others (USAG-PTA, 2020c).

~~One of the most impactful land management and resource conservation tools used by the Army is DoD's REPI Program. It provides policy guidance and framework for how to enter into agreements with non-federal organizations to receive Army funds to acquire land or easements from willing landowners to prevent development or use incompatible with the military mission. REPI fosters these ongoing partnerships to enhance and preserve the Army's mission while sustaining and protecting species, habitats, and landscapes. The Army's work and partnerships through the REPI Program result in projects that sustain military mission capabilities and restore, protect, 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). Through 2022, REPI executed approximately $131 million by partnering with conservation entities to protect and/or manage habitat in Hawai'i (REPI, 2023a). REPI funding in 2023 on Hawai'i island includes over $5 million in DoD and partner funds to develop conservation projects on a landscape-scale including habitat restoration and fence installation (REPI, 2023b).~~ One of the most impactful land management and resource conservation tools used by the Army is the Office of the Secretary of Defense's (OSD) REPI Program, authorized by 10 U.S.C. 2684a. REPI 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 to strategically buffer installations against incompatible development, prevent degradation of threatened and endangered species habitat, 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, 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 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 island of Hawai'i have ~~These projects~~ 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 ~~(REPI, 2023c). Some of the many Hawai'i partners participating in the REPI Program are USFWS, DLNR Division of Forestry and Wildlife, National Fish and Wildlife Foundation, DHHL, and USDA~~.

Three new Army REPI partnerships were established in 2024. The Parker Ranch Foundation Trust will 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 Oʻahu to identify high-threat invasive species and develop follow-on protocol with the Hawaii Invasive Species Council. 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 4-1** and **Figure 3-5** represent a limited selection of the work that the Army and it's 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 the DoD, OSD and its partners have contributed approximately $175 million to REPI projects supporting military installations in Hawaiʻi, permanently protecting over 15,332 acres, and providing funding for staff capacity and management actions to accomplish habitat and threatened and endangered restoration goals, increase agricultural production and local food security, protect cultural resources and invest in outreach, and accomplish climate resilience initiatives.

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 the USFWS, USDA NRCS, USFS, 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 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. Hawaiʻi's recent designation has opened more funding opportunities and expanded use of those funds to better engage local communities by seeking 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.

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 USEPA residential soil lead regional screening level (RSL). 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., 2017). 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., 2017). 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., 2017).

Numerous studies have been conducted to study environmental contaminant impacts on plants and wildlife. Lawrence et al, 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 reduction (Lawrence et al., 2015). 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) was 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; Shahid et al., 2017b).

A Phase I ECOP of the State-owned land was conducted in 2017 to identify areas of concern with the potential to contain hazardous substances or petroleum products (see **Section 3.5.4**). A Phase II ECOP was completed in 2017 to assess whether contaminants of concern (COCs) were present in surface soils at the areas of concern identified within the Phase I ECOP. The Phase II ECOP included surface soil sampling and a qualitative screening ecological risk assessment. The surface soil sampling concluded that the contaminants detected in site soils have a low likelihood to become mobilized due to the low rainfall in the area, lack of streams, and absence of a developed drainage system across the State-owned land. The contaminants are also unlikely to infiltrate to the underlying aquifers due to low rainfall in the area and the considerable depth to these aquifers. The qualitative screening ecological risk assessment concluded there were no realistic exposure pathways for ecological receptors and no unacceptable risk at the areas of concern within the State-owned land. Exposure pathways were assessed using the USEPA's 1989 guidance four-pronged exposure pathway process that includes: source, retention or transport medium, potential contact, and exposure route. The Phase II ECOP notes that the Hawaiʻi DOH discontinued terrestrial ecotoxicity investigations (efforts to study how toxic substances impact terrestrial ecosystems) in 2011 because there was low confidence in the accuracy of published action levels in Hawaiʻi (USACE-POH & USAG-HI, 2017b).

3.3.4.3 Vegetation Community

The PTA landscape is dominated by non-native herbaceous plants, particularly *Cenchrus setaceus* (crimson fountaingrass) and *Senecio madagascariensis* (Madagascar fireweed). A sub-alpine tropical dryland ecosystem supporting *Metrosideros polymorpha* (ʻōhiʻa lehua) and dryland native shrubs, including *Myoporum sandwicense* (false sandlewood, naio) and *Sophora chrysophylla* (māmane), covers the PTA landscape (USACE-POH, 2017; USAG-PTA, 2020c).

Four vegetation types occur within the State-owned land at PTA: shrublands, grasslands, barren lava with less than 5 percent vegetation cover, and woodlands. Within these types, a total of 333 vascular plants have been documented; 44 percent are forbs, 17 percent are grasses or grass-like plants, 21 percent are shrubs, the remaining 18 percent are comprised of ferns, vines, and trees. Approximately 36 percent of plant species on PTA are native; the rest are non-native (USAG-PTA, 2020c; USNVC, 2021). **Table 3-5** lists the 14 plant communities and alliances [e.g., shrub, woodland (tree), herbaceous layer] identified on PTA; 12 plant communities and alliances occur on State-owned land at PTA (**Figure 3-6**).

USAG-PTA also tracks NatureServe heritage ranking, which reviews and ranks the global conservation statuses 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 (NS, 2021). Following is the breakdown of global ranks for plant species at PTA:

- G1 (critically imperiled) – 17 plant species.
- G2 (imperiled) – 25 plant species.
- G2/G3 (imperiled/vulnerable) – 8 plant species (USAG-PTA, 2020c).

The global conservation status of plants known in the State-owned land at PTA is described in the **Protected Plants** subsection.

Table 3-5: Plant Communities on State-Owned Land at Pōhakuloa Training Area		
Community Type	**Acres Occupied within State-owned Land**	**Percent Acreage Occupied within State-owned Land[1]**
Dodonaea viscosa shrubland	4,553	20
Metrosideros polymorpha woodland	730	3
Cenchrus (ciliaris setaceum) mixed medium-tall ruderal grassland	3,726	16
Myoporum sandwicense-Sophora chrysophylla shrubland	2,515	11
Cenchrus clandestinum semi-natural grassland	0	0
Eragrostis atropioides herbaceous	3,425	15
Metrosideros polymorpha sparsely vegetated woodland	228	1
Myoporum sandwicense-Sophora chrysophylla woodland	2,447	11
Semi-natural herbland	1,173	5
Olea europaea semi-natural woodland	0	0
Chenopodium oahuense shrubland	527	2
Eucalyptus ssp. Semi-natural woodland	6	<1
Barren land or sparsely vegetated semi-natural herbland	3,901	17
Urban land cover	64	<1
Totals	**23,295**	**100**

Key: [1] – Percentage sum exceeds 100 due to rounding

Source: USAG-PTA, 2020c; USAG-PTA, 2020d; USNVC, 2021

Figure 3-5: REPI Projects Associated With Pōhakuloa Training Area

Figure 3-6: Vegetation Communities on State-Owned Land at Pōhakuloa Training Area

Native Plants

There have been up to 326 native plant species documented at PTA; of these species, ~~12 have been documented on State-owned land (**Table 3-5**)~~32 native plant species were documented on State-owned land. Twenty native plant species are also federally and State-listed (see **Table 3-8**) and the remaining 12 are listed in **Table 3-6**. Native plant species are classified as endemic or indigenous to help specify the geographic distribution and associated importance. An indigenous species is found in Hawai‘i and other locations, while an endemic species is only found in Hawai‘i. Endemic species may be further limited to a specific area of the Hawaiian Islands. Refer to the PTA INRMP for a complete list of native plants documented on PTA (USAG-PTA, 2020c; USAG-PTA, 2024a).

Table 3-6: Native Plants Documented on State-Owned Land

Scientific Name	Common/Local Name	Status
Chenopodium oahuense	‘āweoweo	Endemic
Myoporum sandwicense	naio	Endemic
Sophora chrysophylla	māmane	Endemic
Dodonaea viscosa	Florida hopbush, ‘a‘ali‘i	Indigenous
Sida fallax	‘ilima	Indigenous
Leptecophylla tameiameiae	pūkiawe	Indigenous
Euphorbia olowaluana	Alpine sandmat, ‘akoko	Endemic
Osteomeles anthyllidifolia	Hawai‘i hawthorn, ‘ūlei	Indigenous
Dubautia scabra	rough dubautia, kupaoa	Endemic
Myrsine lanaiensis	lanai colicwood, kōlea	Endemic
Santalum ellipticum	coastal sandalwood, ‘iliahi a lo‘e	Endemic
Melanthera populifolia	grassland nehe, nehe	Endemic

Source: USAG-PTA, 2020c; USAG-PTA, 2024a

Protected Plants

In addition to the 12 native plants listed in **Table 3-6,** there are also 20 native plants species that are federally and State-listed on PTA: 19 endangered and 1 threatened species (**Table 3-8**). Another undescribed *Tetramolopium* species, although not listed, is provided the same protections as the listed *Tetramolopium* due to the rarity and limited distribution of the species and has been documented on State-owned land at PTA. The Army undertakes conservation measures issued by USFWS in the 2003, 2008, and 2013 BOs.

~~In 2020, PTA NRP staff surveyed over 385 linear miles and recorded 1,968 locations with protected plants on PTA (USAG-PTA, 2022a); approximately 14.7 acres surveyed were on State-owned land (USAG-PTA, 2023a).~~

Of the 20 listed plant species, 6 species have been documented only on PTA, and 11 species (including 3 that have been documented only on PTA) have been documented on the State-owned land at PTA and are clustered in portions of the western and southern TAs (**Figure 3-7**) (USAG-PTA, 2020c). ESA-listed plant species are monitored at least annually per the 2003 BO. NRP staff manage and monitor species based on a tiering system.

Tier 1 protected plant species have fewer than 500 documented individuals at PTA and are surveyed quarterly by NRP staff. Tier 2 protected plant species have more than 500 documented individuals at PTA and are surveyed annually by the NRP. Annual percentages are averaged over 5 years to extrapolate abundance (USAG-PTA, 2024a). **Table 3-8** lists protected plants documented at PTA through 2023, population estimates for protected plants documented on State-owned land (USAG-PTA, 2023~~b~~)~~, and what percentage that amount is of the known statewide population for that species based on USFWS 5-year reports~~. PTA survey count data reflects the minimum number of individuals. Because the distribution may not conform to assumptions associated with count classes, the lower boundary of each count class was used to quantify the minimum number of individuals. For this reason, the minimum number of individuals is likely low and under-representative of the actual population size. **Appendix K** provides descriptions and additional information for species documented on State-owned land at PTA~~ and the State and installation abundance (if known) based on the most recently available scientific and survey data~~.

Post-Leilani Fire Surveys

Between September 2022 and March 2023, PTA NRP staff conducted post-fire monitoring and compared it to pre-fire data to determine potential effects to ESA-listed plants at PTA. Tier 1 species were monitored at each plant location and a subset of Tier 2 species individuals were monitored to estimate post-fire population numbers (**Table 3-7**) (USAG-PTA, 2024a.) **Appendix K** provides additional information for species documented during post-Leilani fire surveys.

During post-fire monitoring activities, NRP staff noted native plants were resprouting from the roots; however, no observations were quantified. PTA NRP staff conduct ongoing monitoring of the area to continue to assess species recovery. The Army is committed to protecting and improving biodiversity at PTA through ecosystem management approaches as guided through the INRMP. Despite wildland fires, the biodiversity of native Hawaiian species remains high at PTA, which protects and stewards 38,000 acres of ungulate-free dryland forest (USAG-PTA, 2024a).

As noted in **Section 3.3.4.2**, there were 2,879.9 acres of State-owned land vegetation burned during the Leilani fire. **Table 3-7** provides the quantities of plant communities impacted by the fire.

Table 3-7: Pōhakuloa Training Area State-Owned Land Plant Communities Burned During the Leilani Fire

Community Type	Acres Burned within State-owned Land	Percent of Plant Communities within State-owned Land Burned
Dodonaea viscosa shrubland	1,443.0	31.7
Metrosideros polymorpha woodland	568.3	77.9
Cenchrus (ciliaris setaceum) mixed medium-tall ruderal grassland	651.1	17.5
Myoporum sandwicense-Sophora chrysophylla shrubland	201.7	8.0
Metrosideros polymorpha sparsely vegetated woodland	13.7	6.0
Barren land or sparsely vegetated semi-natural herbland	2.1	<1
Totals	**2,879.9**	**N/A**

Source: USAG-PTA, 2024c

Table 3-8: Protected Plants Documented on Pōhakuloa Training Area

Scientific Name	Common, Local Name	Tier	Protection	~~Statewide Percentage~~ State-owned Land Population (Pre-Leilani Fire)	State-owned Land Population (Post-Leilani Fire)
Asplenium peruvianum var. insulare	fragile fern	2	FE, SE, P1, G5T1	~~N/A~~ 0	N/A
Exocarpos menziesii	Menzie's ballart, heau	2	FE, SE, P3, G2	~~<1~~ 2	1
Festuca hawaiiensis [1]	Hawaiian fescue	2	FE, SE, P3, G1	~~1.8~~ 181	52*
Haplostachys haplostachya	Hawaiian mint, honohono	2	FE, SE, P3, G1	~~46.8~~ 11,242	5,004*
Isodendrion hosakae [1]	aupaka	1	FE, SE, P1, G1	~~N/A~~ 0	N/A
Kadua coriacea [1]	leather-leaf sweet ear, kioʻele	1	FE, SE, P1, G1	~~<1~~ 1	1
Lipochaeta venosa [1]	spreading nehe	1	FE, SE, P1, G1	~~N/A~~ 0	N/A
Neraudia ovata	spotted nettle bush maʻaloa	1	FE, SE, P1, G1	~~N/A~~ 0	N/A
Portulaca sclerocarpa	hard fruit purslane, poʻe	1	FE, SE, P1, G2	~~1.1~~ 5	3
Portulaca villosa	hairy purslane, ʻihi	1	FE, SE, P1, G1	~~N/A~~ 0	N/A
Schiedea hawaiiensis [1]	māʻoliʻoli	1	FE, SE, P1, G1	~~N/A~~ 0	N/A
Sicyos macrophyllus	Alpine bur cucumber, ʻānunu	1	FE, SE, P1, G1	~~N/A~~ 0	N/A
Silene hawaiiensis	Hawaiian catchfly	2	FT, ST, P3, G2	~~21.9~~ 1,991	32*
Silene lanceolata	lance-leaf catchfly	2	FE, SE, P3, G1	~~5.3~~ 646	712*
Solanum incompletum	Hawaiian prickle leaf, pōpolo kū mai	1	FE, SE, P1, G1	~~9.7 50 15.1~~ 11	5
Spermolepis hawaiiensis	Hawaiian parsley	2	FE, SE, P3, G2	~~N/A~~ 0	N/A
Stenogyne angustifolia -var. *angustifolia*	creeping mint	2	FE, SE, P3, G2	~~33~~ 4,640	501*
Tetramolopium arenarium [1]	Mauna Kea pāmakani	1	FE, SE, P1, G1T1	~~22.4~~ 94	40

Table 3-8: Protected Plants Documented on Pōhakuloa Training Area

Scientific Name	Common, Local Name	Tier	Protection	~~Statewide Percentage~~ State-owned Land Population (Pre-Leilani Fire)	State-owned Land Population (Post-Leilani Fire)
Vigna owahuensis	O‘ahu cowpea	1	FE, SE, P1, G1	~~N/A~~ 0	N/A
Zanthoxylum hawaiiense	Hawaiian yellow wood, a‘e	1	FE, SE, P2, G1	~~7.1~~ 47	46

Key: < – Less than
E – Endangered
F – Federal
S – State
T – Threatened

P (1-3) – PTA Priority Management Status greatest to least.
T – taxa specific, infraspecific, subspecies, or varieties are critically imperiled

G (1-5) – NatureServe Global Conservation Status (Most to least PTA Priority Management Status (most to least)
N/A – Not applicable
[1] – Species found only on PTA

* Represents a subset of individuals surveyed within State-owned land plots at PTA. See **Appendix K** for additional information and descriptions.

Source: USAG-PTA, 2020c; USAG-PTA, 2024d; USAG-PTA, 2024e

Genetic Conservation and Outplanting Implementation Priorities

PTA actively implements projects to manage federally and State-listed plant species genetic diversity as authorized by the *Native Endangered & Threatened Species Recovery Endangered & Threatened Plants (TE40123A-3)* recovery permit. Genetic conservation and outplanting conservation measures for 13 of the federally listed plant species are undertaken as identified in the 2003 and 2013 BOs (USAG-PTA, 2024a). The five implementation priorities associated with outplanting for management of plant species are listed from highest to lowest as follows:

- Implementation Priority 1 (High): *Isodendrion hosakae*, *Lipochaeta venosa*, *S. macrophyllus*, *Vigna o-wahuensis*.
- Implementation Priority 2: *K. coriacea, P. sclerocarpa, P. villosa.*
- Implementation Priority 3: *Neraudia ovata, S. incompletum, Schiedea hawaiiensis, Tetramolopium arenarium.*
- Implementation Priority 4 ~~(Low)~~: *Asplenium Peruvianum* var. *insulare*
- Implementation Priority 5 (Low): *E. menziesii, F. hawaiiensis, H. haplostachya, Silene hawaiiensis, S. lanceolata, Spermolepis hawaiiensis, S. angustifolia* var. *angustifolia, Z. hawaiiense.*

There are 45 ASRs that cover approximately 2,830 acres at PTA used to outplant protected plant species within this program. These ASRs include 151 plants from 6 species at 9 planting locations. ~~In 2019, 4 outplanting locations were designated on Government-owned lands, within TA 21 for 24 *K. coriacea*, 9 *N. ovata* and 2 *S. hawaiiensis*, and two outplanting sites on TA 22 for 45 *K. coriacea* and 18 *P. sclerocarpa*~~PTA NRP staff have established 29 outplanting sites on and off PTA (USAG-PTA, 2024a). There are 23 outplanting sites on PTA U.S. Government-owned land and four outplanting sites on State-owned land, one on TA 18 (#220), two on TA 19 (#212 and #216), and one on TA 22 (#210). PTA NRP staff have not found plants at outplant sites 210, 212, and 216 since 2019. Outplant site 220 contains two species, *S. lanceolata* and *Z. hawaiiense*, and the 2023 USFWS Recovery Permit report documented 27 and 4 plants for each species, respectively (USAG-PTA, 2024f). Seed collection for outplanting sites is prioritized by species abundance, current representation, and level of natural recruitment, and is limited to annual collections per PTA Recovery Permit (TE40123A-3) conditions. In 2023, PTA NRP staff added 506 seeds from 14 new species (USAG-PTA, 2024a).

Between 2022 and 2023, approximately 218 acres of WCBs were delineated within 33 ASRs and 3 outplanting sites~~Thirty-two ASRs received WCB treatments~~. ~~There are approximately 250 acres of WCBs within ASRs at PTA.~~ *Cenchrus setaceus* (fountain grass) and *Senecio madagascariensis* (fireweed) are managed as top priorities because of landscape prevalence combined with their fire fuel production and habitat-altering capacities (USAG-PTA, 2024a). Of the 24 ASRs on State-owned land, 21 received WCB treatment that covered approximately 86.5 acres (USAG-PTA, 2023~~b~~).

As noted in **Section 3.3.4.2**, the Army manages protected plant species by tiers based on the species abundance. Tier 1 species have fewer than 500 individuals at PTA and are monitored annually to document abundance and threats. Tier 2 species have more than 500 individuals at PTA, and annual surveys are conducted on 33 percent of the known geographic distribution to document abundance, distribution, and threats, with an entire species distribution survey completed every 3 years.

The NRP staff maintain five outplanting locations off the PTA installation on either State or county land. PTA has three State permits issued by DLNR:

- *Permit for Threatened and Endangered Plant Species (I2942 and I5287) – annual reporting*
- *Mauna Loa Forest Reserve Permit for Access and Research, Pu'u Huluhulu Native Plant Sanctuary – annual renewal*
- *Hawai'i Experimental Tropical Forest Research Permit – valid with Federal Native Endangered & Threatened Species Recovery Endangered & Threatened Plants (TE40123A-3) and State of Hawai'i Permit for Threatened and Endangered Plant Species (I2689)* (USAG-PTA, 2024a).

Invasive Plants

A total of 194 non-native plant species have been documented across PTA. Of this total, 42 species are categorized as highly invasive plant species, and an additional ~~11~~ species, *Cucumis dipsaceus* (hedgehog cucumber), is under consideration for categorization as an invasive species; 25 of these species have been documented on State-owned land (USAG-PTA, 2020c; USAG-PTA, 2024a). The USAG-PTA invasive plant species list includes the following five species on the Hawai'i State-listed noxious weed list: *Acacia mearnsii* (black waddle), *Rubus niveus* (Ceylon raspberry), *Passiflora tarminiana* (banana poka), *Salsola tragus* (prickly Russian thistle), and *Emex spinosa* (spiney emex). *Emex spinosa* is also a federal noxious weed (USDA, 2003; USDA, 2012). A noxious weed is considered a threat to agricultureal, public health, property, recreation or wildlife and is designated by federal, state, or local government agencies (WSSA, 2016). **Table 3-9** lists all PTA invasive plant species, including species listed on the federally and State-listed noxious weed lists.

The PTA INRMP ~~for PTA~~ prioritizes invasive species according to management importance. USAG-PTA's Invasive Plants Program, established and managed per the INRMP, outlines early invasive plant survey efforts and actions. Actions include annual surveys for ~~initial~~ identification of target invasive plant species ~~conducted annually~~ along approximately 200 miles of roadsides throughout PTA~~;~~ and quarterly surveys at the BAAF and construction sites. Surveys are continued for six months after construction completion and annually thereafter. Additionally, site-specific surveys are conducted for remote areas. Once an invasive species is located, initial treatment is completed along the roadside to prevent roads from becoming vectors for invasive plant spread. Treatments can include hand pulling and various herbicide applications depending on the literature recommendations for the species. Follow-on surveys of the species are scheduled based on species reproductive period and known effectiveness of treatment methods (USAG-PTA, 2020c; USAG-PTA, 2024a; USFWS, 2003). Over the 2022-2023 reporting period, no incipient (initial stage) weeds from **Table 3-9** were documented on PTA during roadside or quarterly surveys (USAG-PTA, 2024a).

Figure 3-7: Endangered Plant Habitat, Leilani Fire Footprint, Ungulate Exclusion Fence, Critical Habitat, and Federally Listed Plants on State-Owned Land

Table 3-9: List of Invasive Plant Species on Pōhakuloa Training Area			
Species Name (Common, Local Name)			
Acacia mearnsii[2] (black wattle)	*Grevillea robusta* (silk oak)	*Olea europea* * (olive)	*Rubus niveus* [2] (hill raspberry)
Ambrosia artemisiifolia * (ragweed)	*Heteromeles arbutifolia* *, [1] (toyon)	*Parthenium hysterophorus* (false ragweed)	*Rubus rosifolius* (thimbleberry, ola‘a)
Centaurea melitensis * (Malta star thistle)	*Kalanchoe delagoensis** (chandelier plant)	*Paspalum dilatatum* *, [1] (dallisgrass)	*Salsola tragus* *, [2] (prickly Russian thistle)
Cirsium vulgare * (bull thistle)	*Lantana camara* (lantana)	*Passiflora tarminiana* *, [2] (banana poka)	*Sambucus nigra ssp. canadensis* (Mexican elderberry)
Cupressus species * (cypress)	*Leucaena leucocephala* (white leadtree, ekoa)	*Piptatherum miliaceum* *, [1] (smilograss)	*Schedonorus arundinaceus* *, [1] (tall fescue)
Datura stramonium * (Jimson weed)	*Lophospermum erubescens* * (larger roving sailor)	*Pluchea carolinensis* (sour bush)	*Schinus molle* (California peppertree)
Delairea odorata * (Cape ivy)	*Macrotyloma axillare* [1] (perennial horsegram)	*Portulaca pilosa* (hairy pigweed, ‘ihi)	*Sphagneticola trilobata* (wedelia)
Emex spinosa *, [1, 2, 3] (spiny emex)	*Melinis minutiflora* [1] (molasses grass)	*Prosopis pallida* (tropical mesquite, kiawe)	*Tribulus terrestris* * (goat’s head)
Eschscholzia californica * (California golden)	*Neonotonia wightii* *, [1] (glycine)	*Psidium guajava* (common guava)	*Trifolium pratense* *, [1] (red clover)
Foeniculum vulgare * (fennel)	*Nicotiana glauca* * (tree tobacco)	*Rhamnus californica* * (coffee berry)	
Gomphocarpus physocarpus * (balloon plant)	*Nicotiana tabacum* [1] (cultivated tobacco)	*Ricinus communis* * (castor bean)	

Key: * – Documented on State-owned land
[1] – Under consideration for invasive classification
[2] – State noxious weed list
[3] – Federal noxious weed list

Source: USAG-PTA, 2020c; USAG-PTA, 2024a; USDA, 2003; USDA, 2012

3.3.4.4 Wildlife

Native Invertebrates

Over the course of 1 year, between 1996 and 1998, a study of terrestrial arthropods at PTA identified more than 485 species of arthropods from 21 sample sites and 28,413 individuals using multiple trap types and opportunistic observations (USAG-HI, 1998). A total of 5 classes from 22 orders and 127 families were identified; 33 percent were considered native, 43 percent non-native, and 24 percent unknown. Single specimens of two rare insects, *Rhyncogonus giffardi* and *Helicoverpa confusa* (confused helicoverpan noctuid moth), were collected in the Kīpuka Kālawamauna and TA 1, respectively. Additionally, there were 11 other rare genera collected during this study throughout PTA, although it is unclear how many of those were collected on State-owned land. There were 17 insect orders, 2 arachnid orders, and 1 each of the Crustacea, Diplopoda, and Chilopoda orders (USAG-HI, 1998). Another survey completed at Kīpuka ʻAlalā (not on State-owned land) in 2001 identified over 500 species of terrestrial arthropods from 11 orders from 24 sample sites (Oboyski et al., 2001).

Protected Invertebrates

The Army has identified five protected invertebrate species at PTA. Two of these species are federally and State-listed: anthracinan yellow-faced bee and Blackburn's sphinx moth. The remaining three are considered rare and species of concern by the State (**Table 3-10**).

Table 3-10: Protected Invertebrates Documented on Pōhakuloa Training Area

Scientific Name	Common, Local Name	Type	Status	Federal	State
Manduca blackburni	Blackburn's sphinx moth	Arthropod	N/E	E	E
Hylaeus anthracinus	anthracinan yellow-faced bee	Arthropod	N/E	E	E
*Helicoverpa confusa**	confused helicoverpan noctuid moth	Arthropod	N/E	-	Rare
*Hylaeus kona**	Kona yellow-faced bee	Arthropod	N/E	-	Rare
*Hylaeus flavipes**	yellow-footed yellow-faced bee	Arthropod	N/E	-	Rare

Key:

* – Observed on State-owned land
N/E – Native/Endemic
E – Endangered
T – Threatened

Source: (USAG-PTA, 2020c; USAG-PTA, 2024a)

In 2004, a single, anthracinan yellow-faced bee specimen was collected at PTA, but the exact location is unknown (USAG-PTA, 2020c). This bee species, typically found along coasts, was found in a *K. coriacea* fruit capsule and was suspected to have been accidentally transported to PTA. A 2018 *Hylaeus* species survey did not record any anthracinan yellow-faced bees at PTA (USAG-PTA, 2024a). The Blackburn's sphinx moth was discovered on PTA in July 2019, and there have been three documented occurrences to date. None of the observations have been on State-owned land, which is mostly above the moth's 5,000-foot elevation preference (USAG-PTA, 2024a). No protected invertebrate species were reported within PTA over the 2022-2023 reporting period (USAG-PTA, 2024a). **Appendix K** has additional information on the anthracinan yellow-faced bee and the Blackburn's sphinx moth.

Amphibians, Reptiles, and Fish

PTA does not have water bodies to support aquatic fauna. Therefore, no amphibians, fishes, or other aquatic wildlife have been documented on PTA.

No comprehensive reptile survey has been conducted on PTA (USAG-PTA, 2020c). There are no reptile species native to Hawaiʻi; therefore, all reptiles observed at PTA are considered invasive. Since 2015, USAG-PTA conducts quarterly reptile surveys around the BAAF and auxiliary construction sites. Additionally, civilian and military personnel are provided a reptile briefing that includes reporting sightings to Range Control and the PTA Natural Resources Program, particularly for brown tree snakes. Contractors are also provided a general briefing for invasive species and training on PTA decontamination procedures to minimize the risk of invasive animal transportation (USAG-PTA, 2024a).

Native Birds

A total of 38 bird species have been observed on PTA; 34 of those species have been observed on State-owned land. Bird species observed on PTA include 9 native and 29 non-native species. All nine native species and six of the non-native species are protected under the MBTA (USAG-PTA, 2020c). Three species, Hawaiian goose, band-rumped storm petrel, and Hawaiian petrel, are federally and State-listed. Over the 2022-2023 reporting period, PTA NRP staff monitored 15 transects, including 8 on State-owned land, between December and January. There were 28 birds detected during surveys; 5 native birds, 17 non-native birds, 5 game birds, and 1 indigenous bird (USAG-PTA, 2024a).

The Hawaiʻi State Wildlife Action Plan further classifies native species as endemic or indigenous to help specify the geographic distribution and associated importance. An indigenous species is found in Hawaiʻi and other Pacific islands, while an endemic species is only found only in Hawaiʻi. Endemic species may be further limited to a specific area of the Hawaiian Islands (DLNR-DOFAW, 2015). As with plants, USAG-PTA also considers the global conservation ranks of bird species in its proactive management efforts.

Protected Birds

Federally and State-listed endangered or threatened bird species observed on PTA and protected under the ESA, MBTA, or NatureServe Global Conservation Status are listed in **Table 3-11**.

Table 3-11: Protected Birds Observed on Pōhakuloa Training Area

Scientific Name	Common, Local Name	Status	Federal	State	Other
*Alauda arvensis**	Eurasian skylark	NN	-	-	MBTA
*Asio flammeus sandwichensis**	Hawaiian short-eared owl, pueo	N/E	-	E	MBTA
*Buteo solitarius**	Hawaiian hawk, ʻio	N/E	-	E	MBTA
*Branta sandvicensis**	Hawaiian goose, nēnē	N/E	T	E	MBTA
*Cardinalis cardinalis**	northern cardinal	NN	-	-	MBTA
*Haemorhous mexicanus**	house finch	NN	-	-	MBTA
*Chlorodrepani virens**	Hawaiʻi amakihi	N/E	-	-	MBTA/G3

Table 3-11: Protected Birds Observed on Pōhakuloa Training Area					
Scientific Name	**Common, Local Name**	**Status**	**Federal**	**State**	**Other**
*Himatione sanguine**	Apapane	N/E	-	-	MBTA/G3
*Mimus polyglottus**	northern mockingbird	NN	-	-	MBTA
Myadestes obscurus	Hawaiian thrush, ʻomao	N/E	-	-	MBTA
Hydrobates castro	band-rumped storm petrel, ʻakēʻakē	N /I	E	E	MBTA
*Pluvialis fulva**	Pacific golden-plover, kōlea	N/I	-	-	MBTA
Pterodroma sandwichensis	Hawaiian petrel, ʻuaʻu	N/I	E	E	MBTA
Tyto alba	barn owl	NN	-	-	MBTA[1]
*Zenaida macroura**	mourning dove	NN	-	-	MBTA

Key:

* – Observed on State-owned land
E – Endangered
T – Threatened
N/I – Native/Indigenous
N/E – Native/Endemic
NN – Non-native
G (1-5) – NatureServe Global Conservation Status (most to least)
T – NatureServe infraspecific taxa (subspecies or varieties) rank
MBTA – Migratory Bird Treaty Act
[1] – Limited MBTA protection in Hawaiʻi

Source: DLNR-DOFAW, 2015; NS, 2021; USAG-PTA, 2020c; USAG-PTA, 2024a; USAG-HI, 2021a

~~The current statewide population estimate for the Hawaiian goose is 3,252 individuals, with 1,091 Hawaiian geese estimated on the island of Hawaiʻi (84 FR 69918).~~ Over the 2022-2023 reporting period, there were 193 Hawaiian goose surveys conducted at PTA. The Hawaiian goose is the only protected species that has been documented on State-owned land during surveys. The Hawaiian short-eared owl has not been documented during surveys but has been observed incidentally on State-owned land at PTA. The band-rumped storm-petrel, Hawaiian petrel, and Hawaiian hawk have only been documented on U.S. Government-owned land. A total of 40 Hawaiian geese were detected during 2022-2023 surveys and incidental sightings, 13 of the Hawaiian geese detections occurred on State-owned land at PTA~~The two documented occurrences of the goose in TA 3 on State-owned land represents approximately 0.06 percent of the statewide population and just under 0.2 percent of the estimated population on the island of Hawaiʻi~~ (USAG-PTA, 2024a). In compliance with the 2013 BO, as described in **Table 3-1**, PTA implements actions to avoid and minimize project impacts to Hawaiian geese. **Appendix K** provides descriptions and additional information for federal and State-listed species at PTA.

PTA maintains a Federal Fish and Wildlife Permit—Scientific Collection with Import / Export (MB95880B) and provides annual reports to USFWS. There were no incidental takes reported of any MBTA-protected birds over the 2022–2023 reporting period (USAG-PTA, 2024a).

Mammals

Ten non-native mammal species have been observed on PTA: the introduced feral game animals *Sus scrofa* (pig), *Ovis* species (sheep), *Capra hircus* (goat); three *Rattus* species (rat), *Herpestes javanicus* (Javan mongoose), *Mus domesticus* (house mouse); and feral dogs (*Canis lupus familiaris*) and cats *(Felis catus*). Both feral cats and the Javan mongoose are listed as species of invasive concern by the Hawai'i Invasive Species Council, per EO 13112, *Invasive Species*, listing criteria. The council directs funding for the prevention, control, and research of listed species of invasive concern (HISC, 2021; USAG-PTA, 2020c).

Protected Mammals

The Hawaiian hoary bat is federally and State-listed as endangered. It is the only native terrestrial mammal species in Hawai'i. It is unknown if the Hawaiian hoary bat breeds or roosts on PTA, but acoustical surveys indicate that it is present throughout the installation during the breeding season. Acoustical sampling at five established monitoring sites on PTA detected the Hawaiian hoary bat between 2014 and 2023. Three monitoring sites are on State-owned land at PTA. Occupancy modeling done for 45 sites across PTA indicate that the Hawaiian hoary bat is present across PTA throughout the year with peak activity during autumn months, September to December (USAG-PTA, 2024a). There is potential roosting habitat on State-owned land, but no documented roosts. The 2003 BO requires the Army to assess effects of wildland fires that occur outside the impact area resulting from military training and report any indirect incidental take due to loss of potential available roosting habitat; additionally, the 2003, 2008, and 2013 BOs require the Army to report incidental takes resulting from a vehicle or aircraft take, barbed wire entanglement, or any other military activity (USFWS, 2003; USFWS, 2008; USFWS, 2013). A 2018 wildland fire occurred in TA 19 and spread to TAs 18 and 22, burning approximately 370 acres of potential Hawaiian hoary bat roosting habitat (USAG-PTA, 2020d). This fire was started from discharge of aviation flares during aerial training. This acreage exceeded annual take limit of Hawaiian hoary bat potential roosting habitat; therefore, it was reported to the USFWS in September 2018 and is being addressed in the programmatic biological assessment currently under development. In response to the fire, corrective actions were implemented (as of August 8, 2018) to prevent repeating accidents that could cause fires from aerial training by prohibiting the expenditure of flares from altitudes below the point at which the flare would be expected to burn out before reaching the ground.

On July 17, 2021, a fire started from a muzzle blast burned approximately 7.5 acres of vegetation considered potential available Hawaiian hoary bat roosting habitat on PTA off State-owned land. The 2003 BO defines roosting habitat as vegetation types that could provide available roosting habitat, currently or at some time in the future, including all treeland communities and shrubland communities with *S. chrysophylla* and *M. sandwicense* as dominant or co-dominant species. The fire resulted in indirect incidental take of the Hawaiian hoary bat, consuming approximately 6 percent of the allowable approximately 118.5 acres per year. No bat carcasses were reported in the burned area, and impacts on the Hawaiian hoary bat are assumed to be negligible. The fire was reported to USFWS on July 20, 2021 (USAG-PTA, 2024b).

In July and August 2022, the Leilani fire in TA 22 burned approximately 3,000 acres of potential available Hawaiian hoary bat treeland roosting habitat. This fire surpassed the annual and cumulative allowances, 118.5 acres and 3,324 acres, respectively, for authorized incidental take of potential available treeland roosting habitat outside the impact area (USAG-PTA, 2024a). In compliance with the 2003 BO, Leilani fire

impacts were reported to USFWS in May 2023 with additional information provided to USFWS in October 2023 and April 2024.

NRP staff frequently brief Army leadership about their bat protection responsibilities, and all personnel are trained to report bat vehicle or aircraft strikes. Additionally, military units and construction contractors are briefed regarding tree trimming or removal between June 1 and September 15 (birthing and pup rearing season); no trees greater than 15 feet in height are removed during this timeframe, and any trees less than that height are inspected for bats prior to removal. Barbed wired is used judiciously and only when necessary for security purposes; b~~B~~arbed wire security fences are inspected quarterly for entangled bats. Since 2008, there has only been one Hawaiian hoary bat found entangled in barbed-wire at PTA (USAG-PTA, 2024a). **Appendix K** has additional information on the Hawaiian hoary bat.

Critical Habitat

Palila critical habitat was designated by USFWS in 1977 for the endangered *Loxioides bailleui* (Hawaiian finch-billed honeycreeper, Palila). The Palila critical habitat encompasses approximately 60,000 acres, encircling the lower elevations of Mauna Kea including approximately 5,095 acres of State-owned land at PTA (**Figure 3-7**). The plant composition within the Palila critical habitat is *Myoporum sandwicense-Sophora chrysophylla* shrubland. Hawaiian finch-billed honeycreepers are generally seen only at elevations well above those at PTA, and there have been no observations on State-owned land (USAG-HI, 2021a; USAG-PTA, 2020c).

In March 2024, the USFWS published the final rule for approximately 119,326~~122,277~~ acres of critical habitat for 12 federally endangered species on Hawai'i, including ~~proposing~~ 6,822 acres of unoccupied critical habitat for *S. hawaiiensis* (89 FR 1790~~88 FR 18756-18821~~) part of which is along the western edge of State-owned land at PTA (**Figure 3-7**). The final rule noted that USFWS exempted PTA lands from the critical habitat designation, with the determination that the PTA INRMP provides conservation benefits to *S. hawaiiensis* (USFWS 2024a).

Noise Impacts on Plants and Wildlife

Noise beyond comfort levels can affect humans and wildlife with varying degrees of response based on multiple factors. Noise generated on PTA could cause unhabituated wildlife startle, alarm, and alert behaviors, potentially causing rapid movement or flight avoidance behavior. This could increase the risk of wildlife being struck by live-fire, abandoning nest or young, receiving auditory damage, or increasing energy expenditure and food demands (USFWS, 2013; NPS, N.D). The 2020 U.S. Army Public Health Command (USAPHC) noise modeling calculated noise levels generated by various military munitions including large arms and high explosive charges. Models incorporated noise sources, sound propagation and directivity, PTA terrain, and weather conditions (USAPHC, 2020). Wildlife noise impacts are based on perception and are species-specific. Because very little noise impact research has been done on PTA species, PTA NRP staff relied on published accounts for bird and human responses to noise and used surrogate species to evaluate impacts to vertebrate species. Surrogate species used for noise analysis have included Eastern bent-wing bat (*Miniopterus fuliginosus*) for the Hawaiian hoary bat, Mallard duck (*Anas platyrhynchos*) for the Hawaiian goose, and Atlantic puffin (*Fratercula arctica*) for band-rumped storm-petrel.

Documented noise impacts on wildlife include decreased species abundance and altered communication strategies (NPS, N.D.; McClure et al., 2013; Habib et al., 2006), foraging changes and deviations from normal behaviors (Luo et al., 2015; Bunkley & Barber, 2015; Conomy et al., 1998; Goudie & Jones, 2005), reduced species' ability to detect auditory threats, and decreased 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, 2001). 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 don't experience noise the way human and wildlife receptors do, their response to sound vibrations and noise effects across the plant 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 at 1 mile) has negative impacts on seedling recruitment and vegetation diversity. There are no known plant noise or vibrational studies done on plants in Hawai'i, or on surrogate tropical species (Phillips et al., 2021).

See **Section 3.7** for additional information on noise.

3.3.4.5 Existing Management Measures

In addition to the conservation measures, implementation plans, and MOUs listed in **Section 3.3.4.2** and **Appendix E**, the Army implements the following BMPs and SOPs to support species and habitat management, as shown in **Table 3-12**.

Table 3-12: Best Management Practices and Standard Operating Procedures Supporting Species and Habitat Management

Wildlife Friendly Lighting and Dark Skies (USAG-HI, 2023)	• 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. • 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. • Any individual who observes a disoriented bird flying around a light is encouraged to immediately turn off the light until the bird departs.

Table 3-12: Best Management Practices and Standard Operating Procedures Supporting Species and Habitat Management	
Green Waste Policy (USAG-HI, 2022~~b~~)	• Green waste handling, transportation, and disposal guidelines must be followed by any individual generating green waste. • Green waste cannot be stockpiled or allowed to accumulate for more than 30 days and must be disposed of at Hawaiian Earth Products. • All branches and stumps must be cut into minimum 4-foot lengths. • Landscaping will use CRB-safe materials. • All green waste being stored must be treated. • If CRB or CRB damage is detected, the Hawai'i Department of Agriculture CRB Response Office must be contacted.
BMPs to prevent negative impacts on natural resources from construction activities (USAG-PTA, 2015b)	• All construction equipment will be confined to the PTA construction area. • Construction employees will be educated to be mindful to minimize the movement of soil and seeds from outside PTA. • The NRP will be coordinated with if additional auxiliary support outside the established construction footprint is necessary and prior to any nighttime construction activities. • All petroleum, oils, and lubricants (POL) will be properly handled and disposed of. • All speed limits will be followed to minimize airborne dust settling on protected species, and all vehicles will stay on established roads during transit. • Protected species sightings or take will be immediately reported to the contract representative. If a take occurs, work will cease in the immediate area until NRP staff can investigate. • If, during construction activities, a~~A~~ny birds are discovered in underground lava tubes or openings in the lava, they will be immediately reported to the contract representative; work will cease in the immediate area until NRP staff can investigate.
USAG-PTA External Standard Operating Procedures for Training (USAG-PTA, 2018a; USARHAW, 2022)	• Digging is not authorized without prior approval. • The maximum speed limit is 15 mph, unless passing dismounted troops, when the maximum speed is 5 mph. • No open fires are allowed. • Smoking is allowed only in designated areas. • Training inside TAs 3, 13, 17–23, and 21 large-scale fence units must be coordinated with NRP staff. • There is no training in small-fenced and off-limit areas. • No vegetation cutting is allowed. • Rocky outcroppings are not to be disturbed, and caves, lava tubes, and overhangs are off-limits. • All vehicles are required to use the washrack at PTA prior to departing PTA. • All training must adhere to Pōhakuloa Training Area Range Operations Standard Operating Procedures: Sensitive Areas (Chapter 4-5).

Table 3-12: Best Management Practices and Standard Operating Procedures Supporting Species and Habitat Management	
Wildland Fire Management Measures	• Additional training for personnel and the integration of interagency support and resources into wildland fire management activities (wildfire prevention, protection, mitigation, and management). • Thermal technology in place at PTA is being augmented with additional thermal technology equipment, which enables firefighting personnel to locate and eliminate hot spots where a fire persists. • The Army continues to assess firebreaks and fire roads to determine additional needs to prevent the spread of wildland fires. • **Section 3.3.4.2** details additional wildland fire management measures.

3.3.5 Methodology and Significance Criteria

The environmental analysis for biological resources includes the following assumptions:

- The State would manage conservation and public use programs in the State-owned land not retained.
- The State would use State-owned land not retained for recreation/conservation purposes compatible with land use.
- ~~For land not retained, T~~the State would add the State-owned land not retained north of DKI Highway (except for the DHHL-administered land) to the Mauna Kea Forest Reserve and Ka‘ohe Game Management Area, as applicable, which would increase access on land managed for public hunting (**Section 3.2.5**).
- The State would continue current levels of species and habitat protections within State-owned land not retained.

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

- Reduction of populations or distribution of federally or State-protected species to include behavior alteration, survival, reproduction ability, or loss of individuals that would impact 20 percent or more of the population occurrence found on-installation.
- A “take” of federally or State-protected species that would have a noticeable impact on the stability of the populations found on-installation.
- Restriction of migratory or wildlife corridors between habitats, if present.
- Habitat fragmentation to an extent that adversely affects the connectivity of that habitat for protected species.
- Increase of invasive species (plant or animal) prevalence or populations.
- Long-term loss or degradation of designated critical habitat or habitat necessary for species survival.

3.3.6 Environmental Analysis

3.3.6.1 Alternative 1: Maximum Retention

Land Retained

Lease Impacts: Under Alternative 1, the Army would retain approximately 22,750 acres of the State-owned land at PTA under a new lease and would continue ongoing activities on State-owned land as described in **Section 2.1** and as covered by the 2003, 2008, and 2013 BOs.

There would be continued long-term, moderate, beneficial impacts from uninterrupted Army conservation activities on protected species, native species, and invasive species management. There would be continued long-term, moderate, adverse impacts on vegetation, as well as protected and native species, from ongoing activities such as potential habitat disturbance, aircraft downdrafts, and fuel spills. ~~Protected species include the Hawaiian hoary bat and Hawaiian goose, as well as rare invertebrate species (confused helicoverpan noctuid moth, Kona yellow-faced bee, and yellow-footed yellow-faced bee).~~ There may be continued long-term, negligible, adverse impacts on the anthracinan yellow-faced bee and Blackburn's sphinx moth; these impacts would be considered negligible because these protected invertebrates have not been documented on State-owned land. There could also be continued long-term, significant, adverse impacts on Hawaiian hoary bat habitat and protected and native species from potential training-related wildland fires due to ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land. ~~These potential impacts could be reduced to less than significant with continued implementation of the BMPs, SOPs, and additional management measures discussed in **Section 3.3.4**.~~

There also would be continued long-term, minor, adverse impacts from noise associated with ongoing activities. Numerous studies note that wildlife become habituated after continuous or frequent exposure to noise and disruptions, so it is likely that protected and native species on PTA have become habituated to noise associated with ongoing activities. Therefore, noise impacts of those ongoing activities would be minor. Noise impacts, including on wildlife and plants, are also discussed in **Section 3.7**. There also may be continued long-term, negligible, adverse impacts on species using the airspace above PTA.

~~The impacts on the statewide Hawaiian hoary bat population are unknown because there are no statewide estimates available. Hawaiian geese on PTA, which represent 0.2 percent of the population on the island of Hawai'i,~~ If present, native and protected species may be impacted by training noise and activities. As discussed in **Section 3.3.4.2**, the qualitative screening ecological risk assessment concluded there were no realistic exposure pathways for ecological receptors and no unacceptable risk at the areas of concern for contaminants within the State-owned land; therefore, there are no impacts associated with contaminants for native or protected species. There are no known wildlife corridors present on the State-owned land and no anticipated habitat fragmentation would be anticipated from continuation of ongoing activities. ~~There are no statewide estimates available for the rare invertebrate species.~~

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 continue to implement BMPs and conservation measures, as appropriate; coordinate and implement monitoring and survey programs; and comply with all BOs and associated mitigation measures. Mitigation measures include, but are not limited to, stabilization of protected plant

species, fuels management and maintenance of the fuel break, and implementation of Army conservation and stewardship programs. The Army also would comply with a new PTA BO when issued by USFWS, and continue to control and prevent the spread of invasive species to the extent practicable. 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:

- 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

Fee Simple Title Impacts: Impacts under a fee simple title method of land retention would be the same as those under the lease retention method for Alternative 1. The Army would continue to follow PTA conservation programs and agreements, adhere to the same federal laws and regulations, and comply with state laws, regulations, and permits to the extent practicable.

Land Not Retained

Under Alternative 1, the Army would not retain approximately 250 acres of the State-owned land at PTA. The State would continue current levels of species and habitat protections within the land not retained. All of the State-owned land not retained is comprised of Palila critical habitat, which is currently only occasionally used to support light training maneuvers. The State would continue current levels of species and habitat protections within the land not retained. The Army would need to re-initiate consultation with USFWS regarding the BO conservation measures for this area.

New impacts on biological resources in State-owned land not retained include long-term, negligible, adverse impacts on vegetation, wildlife, and protected species from increased public access; long-term, negligible, beneficial impacts on vegetation, wildlife, and protected species from ceased training and maintenance and repair activities and associated noise; and long-term, negligible, beneficial impacts from lease compliance actions (e.g., reforestation) and short-term, negligible, adverse impacts from lease compliance actions and cleanup and restoration activities (e.g., noise associated with lease compliance actions) that would be conducted in accordance with the lease or as otherwise negotiated with the State. There could also be continued long-term, significant, adverse impacts on Hawaiian hoary bat habitat and protected and native species from potential training-related wildland fires due to ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land. ~~These potential impacts could be reduced to less than significant with continued implementation of the BMPs, SOPs, and additional management measures within the State-owned land retained and U.S. Government-owned land discussed in **Section 3.3.4**.~~

~~**Potential**~~ **Mitigation Measures:** ~~No mitigation measures are recommended beyond~~Beyond the existing conservation measures and implementation plans outlined in **Table 3-1**, existing management measures in **Table 3-12**, and existing BMPs and SOPs outlined in **Appendix E**, the Army proposes the mitigation measures outlined in **Table 3-13**.

Table 3-13: Mitigation Measures to Reduce Adverse Impacts to Biological Resources

Mitigation Measure	Timing
The Army will conduct a multi-year research project to identify possible biological controls in the native range of *C. setaceus*. This project will include establishing an experimental population for non-target testing at a controlled facility, conducting non-target testing, and deploying the biological control if one is identified to be successful during testing.	To begin no later than October 2028.
The Army will conduct an installation invertebrate study to identify the presence and types of invertebrates located within PTA. The Army proposes to sample three locations within five different habitat types for 15 locations and develop a report of findings.	Study to begin no later than October 2028.
The Army will conduct a study to assess ungulates' impact on the health of the vegetation community at PTA.	Study to begin no later than October 2028 and identify an implementation plan, if needed, dependent on the results of the assessment.
The Army will negotiate an agreement with the State to monitor wildfires on land not retained and an agreement document will be developed with the State. The agreement will be implemented once all parties sign the agreement document or when the land retention estate document (e.g., lease or deed) is executed, whichever is later.	Negotiations to begin no later than October 2028.
In addition to the current thermal technology at PTA, the Army will add advanced technology which will include additional thermal technology equipment. The additional thermal technology equipment would enable firefighting personnel to locate and eliminate hot spots where a fire persists. The Army will install approximately six to eight infrared cameras that provide adequate coverage across the training area for wildfire heat signature monitoring—three cameras in the Keamuku Maneuver Area, three cameras in the Pōhakuloa Training Area, and one or two additional mobile cameras.	Contracting and installation to begin no later than October 2028.

The Army will monitor the mitigation measures to ensure their implementation and effectiveness and 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 could result in significant, adverse impacts ~~that could be reduced to less than significant~~ for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.3.5**.

3.3.6.2 Alternative 2: Modified Retention

Land Retained

Lease Impacts: Alternative 2 includes the loss of training potential at three TAs, the majority of which is Palila critical habitat and not used frequently; therefore, impacts would be the same as those described for Alternative 1 lease impacts.

Fee Simple Title Impacts: Alternative 2 would result in the same continued impacts on the retained land as those described for Alternative 1 fee simple title. The Army would continue to follow PTA conservation programs and agreements, adhere to the same federal laws and regulations, and comply with state laws, regulations, and permits to the extent practicable.

Land Not Retained

The Army would not retain approximately 3,300 acres of the State-owned land at PTA. Most of the State-owned land not retained is comprised of steep topography within Palila critical habitat, which is currently only occasionally used to support light training maneuvers. The State would continue current levels of species and habitat protections within the land not retained. The Army would need to re-initiate consultation with USFWS regarding the BO conservation measures for this area.

New impacts on biological resources in State-owned land not retained include long-term, negligible, adverse impacts on vegetation, wildlife, and protected species from increased ~~hunting and~~ public access; long-term, negligible, beneficial impacts on vegetation, wildlife, and protected species from ceased training and maintenance and repair activities and associated noise; and long-term, minor, beneficial impacts from lease compliance actions (e.g., reforestation) and short-term, minor, adverse impacts from lease compliance actions and cleanup and restoration activities (e.g., noise associated with lease compliance actions) that would be conducted in accordance with the lease or as otherwise negotiated with the State. There could also be continued long-term, significant, adverse impacts on Hawaiian hoary bat habitat and protected and native species from potential training-related wildland fires due to ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land. ~~These potential impacts could be reduced to less than significant with continued implementation of the BMPs, SOPs, and additional management measures within the State-owned land retained and U.S. Government-owned land discussed in **Section 3.3.4**.~~

~~**Potential**~~ **Mitigation Measures:** In addition to ~~No mitigation measures are recommended beyond~~ the existing conservation measures and implementation plans outlined in **Table 3-1**, existing management measures in **Table 3-12**, and existing BMPs and SOPs outlined in **Appendix E**, proposed mitigation measures are the same as outlined in Alternative 1.

Level of Significance: Alternative 2 could result in significant, adverse impacts ~~that could be reduced to less than significant~~ for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.3.5**.

3.3.6.3 Alternative 3: Minimum Retention and Access

Land Retained

Lease Impacts: Under Alternative 3, there would be continued long-term, minor to moderate, beneficial impacts from uninterrupted Army conservation activities on protected species, native species, and invasive species management. There would be continued long-term, minor to moderate, adverse impacts on vegetation, as well as protected and native species, from ongoing activities such as potential habitat disturbance, aircraft downdrafts, and potential fuel spills. ~~Protected species include the Hawaiian hoary bat and Hawaiian goose, as well as rare invertebrate species (confused helicoverpan noctuid moth, Kona yellow-faced bee, and yellow-footed yellow-faced bee).~~ There may be continued long-term, negligible, adverse impacts on the anthracinan yellow-faced bee and Blackburn's sphinx moth; these impacts would be considered negligible because these protected invertebrates have not been documented on State-owned land. There also could be continued long-term, significant, adverse impacts on Hawaiian hoary bat habitat and protected and native species from potential training-related wildland fires due to ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land. ~~These impacts could be reduced to less than significant with continued implementation of the BMPs, SOPs, and additional management measures discussed in **Section 3.3.4**.~~ There also would be continued long-term, negligible to minor, adverse impacts from noise associated with ongoing activities. As noted for Alternative 1, numerous studies note that wildlife become habituated after continuous or frequent exposure to noise and disruptions; therefore, noise impacts of ongoing activities would be negligible to minor. Noise impacts, including on wildlife, are also discussed in **Section 3.7**. There also may be continued long-term, negligible, adverse impacts on species using the airspace above PTA.

The impacts on the ~~statewide~~ Hawaiian hoary bat population and habitat~~, Hawaiian goose,~~ and protected and rare invertebrate species populations would be the same as those described for Alternative 1. As discussed in **Section 3.3.4.2**, the qualitative screening ecological risk assessment concluded there were no realistic exposure pathways for ecological receptors and no unacceptable risk at the areas of concern for contaminants within the State-owned land; therefore, there are no impacts associated with contaminants for native or protected species. There are no known wildlife corridors present on the State-owned land and no anticipated habitat fragmentation would be anticipated from continuation of ongoing activities.

The Army would continue to follow PTA conservation programs and agreements, adhere to the same federal laws and regulations, and comply with state laws, regulations, and permits.

Fee Simple Title Impacts: Impacts under a fee simple title method of land retention would be the same as those under the lease retention method for Alternative 3. The Army would continue to follow PTA conservation programs and agreements, adhere to the same federal laws and regulations, and comply with state laws, regulations, and permits to the extent practicable.

Land Not Retained

Under Alternative 3, the Army would not retain approximately 12,900 acres of the State-owned land at PTA. The State-owned land not retained includes the majority of the Kīpuka Kālawamauna endangered plant habitat and all of the Palila critical habitat within the State-owned land except for a segment of critical habitat that overlaps TAs 3 and 4. The State would continue current levels of species and habitat

protections within the land not retained. The Army would need to re-initiate consultation with USFWS regarding the BO conservation measures for this area.

New impacts on biological resources in State-owned land not retained include long-term, minor to moderate, adverse impacts on vegetation, wildlife, and protected species from increased hunting and public access; long-term, minor to moderate, beneficial impacts on vegetation, wildlife, and protected species from ceased training and maintenance and repair activities and associated noise; and long-term, minor to moderate, beneficial impacts from lease compliance actions (e.g., reforestation) and short-term, minor to moderate, adverse impacts from lease compliance actions and cleanup and restoration activities (e.g., noise associated with lease compliance actions) that would be conducted in accordance with the lease or as otherwise negotiated with the State. There could also be continued long-term, significant, adverse impacts on Hawaiian hoary bat habitat and protected and native species from potential training-related wildland fires due to ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land. ~~These potential impacts could be reduced to less than significant with continued implementation of the BMPs, SOPs, and additional management measures within the State-owned land retained and U.S. Government-owned land described in **Section 3.3.4**.~~

~~**Potential**~~ **Mitigation Measures:** ~~No mitigation measures are recommended beyond~~In addition to the existing conservation measures and implementation plans outlined in **Table 3-1**, existing management measures in **Table 3-12**, and existing BMPs and SOPs outlined in **Appendix E**, proposed mitigation measures are the same as outlined in Alternative 1.

Level of Significance: Alternative 3 could result in significant, adverse impacts ~~that could be reduced to less than significant~~ for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.3.5**.

3.3.6.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at PTA after the lease expires, including all of the Kīpuka Kālawamauna endangered plant habitat and other ungulate exclusion fencing units on, or partially on, State-owned land and all Palila critical habitat on PTA. The State would continue current levels of species and habitat protections within the ~~land not retained~~ State-owned land. The Army would need to re-initiate consultation with USFWS regarding the BO conservation measures for this area.

This change would result in new long-term, moderate, adverse impacts on vegetation, wildlife, and protected species from increased hunting and public access; new long-term, moderate, beneficial impacts on vegetation, wildlife, and protected species from ceased ongoing activities and associated noise and wildland fire risks within the State-owned land as well as the impact area and southern training ranges that the Army would no longer have access to; and new long-term, moderate, beneficial impacts from lease compliance actions (e.g., reforestation) and new short-term, moderate, adverse impacts from lease compliance actions and cleanup and restoration activities (e.g., noise associated with lease compliance actions), which would be conducted in accordance with the lease or as otherwise negotiated with the State.

The No Action Alternative would eliminate ongoing activities within the State-owned land, eliminate or substantially reduce training in the impact area and training ranges south of the State-owned land due to

lack of access, and consequently substantially reduce ongoing training on U.S. Government-owned land at PTA, which would considerably reduce the risk of potential training-related wildland fires. As a result, there could be continued, long-term, but less than significant, adverse impacts on Hawaiian hoary bat habitat and protected and native species from potential training-related wildland fires associated with U.S. Government-owned land.

The Army would have no land access to the impact area and training ranges south of the State-owned land, which would severely constrain the Army's ability to maintain and monitor the eight ungulate exclusion fence areas and 14 outplanting sites. This could result in new long-term, significant, adverse impacts on protected species on this U.S. Government-owned land. The Army would still be required to meet ongoing biological resources commitments per the BOs that occur within the State-owned land. To maintain conservation measure commitments, and as a separate action outside of this EIS, the Army could negotiate access to these areas with the State or the Army could re-initiate consultation with USFWS regarding the BO conservation measures.

~~Potential~~ **Mitigation Measures:** The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended. Additionally, no mitigation measures are recommended for the lease compliance actions and cleanup and restoration activities beyond applicable existing conservation measures and implementation plans outlined in **Table 3-1**, existing management measures in **Table 3-12**, and existing BMPs and SOPs outlined in **Appendix E**.

Level of Significance: The No Action Alternative could result in significant, adverse impacts based on the significance criteria in **Section 3.3.5**.

3.4 Historic and Cultural Resources and Cultural Practices

3.4.1 Definition

NEPA analysis considers impacts on "unique characteristics of the geographic areas such as proximity to historic or cultural resources" [40 CFR Section 1508.27(b)(3)] as well as "the degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places [NRHP] or may cause loss or destruction of significant scientific, cultural, or historical resources" [40 CFR Section 1508.27(b)(8)]. Potential impacts on the relationship of people to their environment (40 CFR Section 1508.14) include cultural and historical resources [NEPA Section 101(B)(4); 32 CFR Section 651.41(j); 40 CFR Section 1508.8~~1(g)(1)~~].

HEPA analysis considers impacts on the environment, which includes "natural or human-made resources of historic, archaeological, or aesthetic significance" [HAR Section 11-200-17(g)] as well as the "effects of a proposed action on the . . . cultural practices of the community and State" (HRS Section 343-2). Impacts or effects assessed include "aesthetic effects, historic effects, cultural effects, economic effects, social effects, or health effects, whether primary, secondary, or cumulative" (HAR Section 11-200-2).

Resources that are cultural or historical in nature are defined by several federal laws and EOs varyingly as historic properties (districts, sites, buildings, structures, or objects listed in the NRHP), archaeological sites, cultural objects, and/or collections subject to protection under the NHPA, the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act (NAGPRA), American Indian

Religious Freedom Act, and the guidelines on Curation of Federally Owned and Administered Collections (36 CFR Part 79).

Historic and cultural resources considered in this section may not be legally defined but are considered essential for the preservation of traditional culture. These include resources associated with tangible cultural heritage, including Traditional Hawaiian sites, historic period sites, archaeological sites, buildings, structures, districts, prominent topographic features, landscapes, habitat, plants, animals, water, or minerals. Cultural resources also include iwi kūpuna, or ancestral human remains, as well as funerary and sacred items.

Historic and cultural resources serve as indicators of the non-tangible relationship of people to their biophysical environment. In consideration of that, this section considers intangible elements, specifically cultural practices.

3.4.2 Regulatory Framework

NEPA requires discussion of the direct and indirect environmental impacts that may result from a proposed action and alternatives, including potential impacts on "historic and cultural resources" (42 U.S.C. Section 1502.16).

HEPA requires disclosure of the direct and indirect effects of a proposed action and alternatives on the environment, including "natural and human-made resources of historic, archaeological, or aesthetic significance" (HAR Section 11-200-17) as well as the "effects of a proposed action on the cultural practices of the community and State" (HRS Section 343-2). The effects on cultural practices are normally evaluated through a CIA prepared in accordance with the Office of Environmental Quality (now Environmental Review Program) "Guidelines for Assessing Cultural Impacts" (adopted November 19, 1997). The Army commissioned a CIA in compliance with HEPA as amended by Act 50, Hawaiʻi State Legislature 2000. The CIA is included as **Appendix I**.

In *Ka Paʻakai O Kaʻ Aina v. Land Use Com'n, State of Hawaiʻi* ("Ka Paʻakai"), the Hawaiʻi Supreme Court provided State government agencies an analytical framework to consider traditional and customary Native Hawaiian rights while reasonably accommodating competing private development interests. A *Ka* Paʻakai analysis would occur following the EIS process when the land retention estate(s) and method(s) are known.

The NHPA of 1966, as amended (54 U.S.C. Section 300101 *et seq*.), establishes the national policy for the preservation of historic properties. The regulations at 36 CFR Part 800 implement Section 106 of the NHPA (54 U.S.C. Section 306108) and detail a process for federal agencies to assess the potential effects of their undertakings on historic properties and provide the Advisory Council on Historic Preservation and other consulting parties the opportunity to comment. The adverse effects at PTA resulting from ongoing training and related activities on historic properties have been taken into account through the Section 106 consultation process. That process resulted in a 2018 Section 106 PA for PTA to address adverse effects. Separate Section 106 consultation is also conducted for other activities that fall outside the parameters of the 2018 Section 106 PA for PTA.

Consideration of, and compliance with, HRS Chapter 6E, Historic Preservation, is outside the scope of this EIS. However, the process for analyzing important historic and cultural resources through this EIS may inform the determination as to whether a property may be significant under Criterion "e" of HAR Section 13-275-6 or HAR Section 13-284-6 should either rule be applicable. These 6E properties:

"Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts – these associations being important to the group's history and cultural identity [HAR Section 13-275-6(b)(5); HAR Section 13-284-6-(b)(5)]."

3.4.2.1 Evaluation of Traditional Cultural Properties Under NHPA

Properties that are important to Native Hawaiian Organizations~~s~~ (NHOs) for traditional religious and cultural reasons are commonly referred to as Traditional Cultural Properties (TCP) as defined under the NHPA. TCPs may be eligible for listing in the NRHP and are considered to be historic properties if they meet NRHP criteria. Properties of religious and cultural significance are identified in consultation with NHOs as required by the NHPA during the identification procedures specified at 36 CFR Section 800.4. There is no separate federal requirement or procedure for conducting studies or assessments of properties significant for religious and cultural reasons (i.e., TCPs) outside of the NHPA process.

A 2012 study was completed and accepted by the Army for PTA: "*Ethnographic Study of Pohakuloa Training Area and Central Hāmākua District, Island of Hawai'i, State of Hawai'i*" (McCoy & Orr, 2012). This is the only TCP study commissioned by the Army for study and/or assessment of TCPs within PTA. The study found "a general lack of information in the literature concerning cultural practices and beliefs related to the Saddle Region, when compared to other, more populated areas of Hawaii." The study did not use any Hawaiian language resources. It further "evaluated information related to historic properties as well as cultural practices and beliefs associated with the project area [PTA]" (McCoy & Orr, 2012). The study identified traditional (pre-European contact) and contemporary cultural practices and associated potential TCPs. Since the McCoy and Orr study, no further studies for TCPs have been conducted at PTA by USAG-HI cultural resources management (CRM) staff or contractors.

This EIS complies with the requirements of NEPA and HEPA. Because the Proposed Action of this EIS is an administrative action, which is not the type of undertaking that has the potential to cause an effect on historic properties, Section 106 consultation regarding the Proposed Action is not required. ~~This EIS complies with the requirements of NEPA and HEPA and does not address compliance requirements under NHPA or HRS Chapter 6E, which are separate processes.~~ The CIA (**Appendix I**) identifies places of cultural importance and cultural practices. The CIA was prepared in support of the HEPA requirement to identify effects of the Proposed Action on cultural practices.

3.4.3 Region of Influence

The ROI for historic and cultural resources includes the State-owned land within PTA.

The ROI for cultural practices can extend beyond the ROI used for historic and cultural resources. There is clear guidance from the Hawai'i Environmental Review Program that recommends a geographic extent beyond the identified or typical boundaries of the geographic project area. The recommended area for considering when identifying cultural practices is typically the size of the traditional land area (ahupua'a) or region (moku), but this can be larger or smaller depending on what best helps to identify the resources that may be affected by the Proposed Action.

The CIA (**Appendix I**) prepared for this EIS considered the geographical area for cultural practices as the region between Mauna Kea, Mauna Loa, and Hualālai, known generally as the Saddle Region. The

geography of this interior plateau was primarily formed by the convergence of lava flows from Mauna Kea, Mauna Loa, and Hualālai, thus making this a largely distinct wahi pana (storied place). The CIA did not, nor did it intend to, identify all cultural resources or cultural practices within the geographical area; rather the CIA assessed how the Proposed Action within the State-owned land at PTA would potentially affect historic and cultural resources and cultural practices within PTA and the broad geographical area.

3.4.4 Existing Conditions

This section establishes the environmental setting against which potential environmental impacts were compared. The existing conditions reflect the current state of historic and cultural resources and cultural practices across the ROI and consider how existing and historic actions led to this current state.

3.4.4.1 Cultural History

The State-owned land is primarily within the ahupuaʻa of Kaʻohe Mauka in the moku of Hāmākua with a small portion of the eastern area within the western portion of the Humuʻula ahupuaʻa in the moku of Hilo. Some historic maps show a small portion of Pu'u Anahulu ahupua'a may include a small portion of the State-owned land at PTA. Early descriptions of the lands of Humuʻula and Kaʻohe describe them as sharing the summit region of Mauna Kea. Humuʻula and Kaʻohe are among the largest ahupuaʻa in the Hawaiian Islands.

Native accounts and other historical writings record the vast regional land divisions of Humuʻula and Kaʻohe, and the smaller ahupuaʻa and ʻili that adjoin them on the lower mountain slopes, included a wide range of named environmental zones (wao). Each of these wao were noted for resources—extending from the sea to the forested lands, and in some instances, to the summits of the two mountains. It was these resources that sustained Hawaiian life, culture, and spirituality.

The lowlands of Kaʻohe, Humuʻula, and the other neighboring ahupuaʻa, extending from the shore to around the 3,000-foot elevation, supported residential, agricultural, and subsistence activities, spanning the centuries of Hawaiian residency. The upper mountain lands of the Kaʻohe-Humuʻula region were frequented by travelers, collectors of natural resources, and for a wide range of cultural practices (BCT, 1864-1920; Kamakau, 1961). The larger ʻāina mauna (mountain lands) were frequented by individuals who were traveling to the upper regions of Mauna Kea to worship, gather stone, bury family members, or deposit the piko (umbilical cords of newborn children) in sacred and safe areas; and by those who were crossing from one region of the island to another.

Traditions and historical records show that the deification and personification of the land and natural resources, and the practices of district subdividing and land use as described above, were integral to Hawaiian life and were the product of strictly adhered to resource management planning. In this system, the people learned to live within the wealth and limitations of their natural environment and were able to sustain themselves on the land and ocean. It is in this cultural system that the significance of the lands of Kaʻohe, Humuʻula, and the neighboring ʻāina mauna are described in **Appendix I**.

3.4.4.2 Historical Overview

Radiocarbon dates from archaeological excavations indicate Traditional Hawaiian use of the region as early as AD 1000–1200, with intermittent visits occurring by AD 1200–1300 (Athens & Kaschko, 1989; Haun, 1986; Shapiro & Cleghorn, 1998). Early use of the area likely involved short-term, low-impact visits

by small groups of Hawaiian specialists who used the area to gather wild fauna, hardwood for tool use and canoe making, and wild plants for subsistence, medicinal, and ceremonial purposes.

Archaeological evidence suggests that many of the site types identified within the State-owned land may be associated with travel corridors through the region (Robins et al., 2006; Shapiro et al., 1998; Williams, 2002). Travel routes through the Saddle Region have been identified in ethno-historical documents that connected Traditional Hawaiian settlements (e.g., Kona, Waimea, and Hilo) and led to the Mauna Kea adze quarry, ancestral burials, and places of ceremonial and cultural importance (Cordy, 2000). Resource gatherers and travelers through the State-owned land found shelter in lava tubes, blisters, overhangs, and, to a lesser degree, small C-shaped surface structures that were typically found near the travel corridors (Athens & Kaschko, 1989; Cordy, 1994; Hommon & Ahlo, 1983; Streck, 1992). Occupation and use of these shelters were likely confined to short-term stays, although these groups likely established repeated-use camps while exploiting resources (Reinman & Schilz, 1992).

Pre-Contact period activity in the Saddle Region increased around AD 1400–1450 (Athens et al., 1991), and by AD 1450, there was a dramatic increase of production at the Mauna Kea adze quarry to mine the highly valued volcanic glass and fine-grained basalt (Williams, 2002). The increased use of the Saddle Region may also be related to the capture of birds whose feathers and fledglings were increasingly used as tribute items (Athens et al., 1991). A number of bird species that habituated the Saddle Region were consumed by Hawaiians, were seasonally hunted in the Saddle Region, and were considered a high value food resource especially for the adze makers visiting the quarries on the Mauna Kea summit (McCoy, 1986; Williams, 2002; Ziegler, 1994; Ziegler, 2003). More information regarding the Traditional Hawaiian period can be found in the CIA (**Appendix I**) and the Archaeological Literature Review (**Appendix J**).

During the early Post-Contact era, sandalwood was actively harvested in the upland forests of the Hawaiian Islands for export to China (Cuddihy & Stone, 1990). Sandalwood was a desirable export as the trees were plentiful, could be harvested year-round, and did not have to be cultivated. Thousands of trees were taken from the upland slopes of Kohala and Mauna Kea and transported by foot to Kawaihae for shipping to Honolulu and beyond. The overharvesting of sandalwood would soon exhaust the resource, leaving the upland regions deforested. By the 1840s, the sandalwood forests had been completely depleted to the point that only saplings remained (Clark, 1983). Early historic accounts provide insight into the remoteness of the Saddle Region and the difficulties foreigners had while traveling across the Saddle along a few well-defined trails that were difficult to follow even with Hawaiian guides present (Hommon & Ahlo, 1983).

During the 1848 Māhele ʻĀina (division of lands), Kaʻohe Ahupuaʻa was held by Victoria Kamamalu, who later relinquished the land to Kamehameha III as part of her commutation. Kamehameha III subsequently gave the land to the government land inventory (Buke Mahele, 1848). Four kuleana claims were registered by native tenants within Kaʻohe; however, none were located within or near the State-owned land. Humuʻula Ahupuaʻa was also held by Victoria Kamamalu, who relinquished the land to Kamehameha III, who retained it as part of the Crown Lands inventory (Buke Mahele, 1848). One kuleana claim was registered but not awarded in Humuʻula (Maly & Maly, 2005). Overall, the Māhele and subsequent land ownership regulations marked a key shift in Hawaiian land use history and ushered in a drastic transformation from a redistributive economy to a market-based system. This facilitated the rapid decline of native land tenure and led to the widespread purchase of land by wealthy foreign investors. **Appendices D** and **E of the CIA** contain information on land tenure and changes during the Māhele ʻĀina period and present disposition of select lands in the ʻāina mauna.

One of the first foreign-led endeavors in the State-owned land was ranching, which has a long history on the island of Hawaiʻi. Cattle and sheep were first introduced to Hawaiʻi in 1793 when the English Captain George Vancouver presented Kamehameha I with a gift of seven longhorn cows and four sheep (Brennan, 1974). Vancouver returned the following year bringing goats and geese, as well as more cattle and sheep. Over the next decade, the free roaming cattle reproduced rapidly in the Waimea Region and mountain slopes, and in a measure to control the large free roaming herds, Kamehameha III sanctioned the hunting of bullocks by hiring foreign hunters in 1819. One of the first bullock hunters to be authorized by the Hawaiian Kingdom was John P. Parker, the founder of Parker Ranch (Kelly, 1974). Parker was compensated with live cattle, from which he selected the best cattle for breeding and re-domestication to form Parker Ranch (Brennan, 1974).

The sheep industry in Hawaiʻi emerged alongside cattle ranching and was prevalent by the 1840s (Langlas et al., 1999). By 1873, a wagon road was established following the present route of Saddle Road within the State-owned land. This provided access to the Humuʻula Sheep Station, located just east of the State-owned land, and to the grazing lands of Mauna Kea, the Saddle Region, and the north slope of Mauna Loa. The sheep industry declined over the next several decades, and by 1950, there were roughly 6,000 to 8,000 sheep and 3,000 cattle in Humuʻula. Around 1965, the sheep operation was phased out completely. Further details on ranching history and its effects are provided in Appendix D of the CIA.

During World War II, the U.S. Government constructed Kaumana Road (currently Saddle Road) in 1943 to allow soldiers' ease of access to the island interior in the event of a coastal attack by invading forces (Langlas et al., 1999). At this time, the U.S. military also established several firing ranges at Pōhakuloa, including an anti-tank range, an artillery range, and an impact area. **Section 1.1.2** describes use of the area by the Hawaiʻi Territorial Guard, and formal establishment of a training area in 1956 through an Executive Order by the Governor of the Territory of Hawaiʻi. **Section 3.2** documents the land ownership as recognized under current laws and legal rulings and describes the lease under which the State-owned land is used by the Army.

3.4.4.3 Previous Cultural Resources Studies

The CRM program at PTA involves identification, documentation, evaluation, and treatment of Historic Period and Traditional Hawaiian resources. It also includes curation of materials and associated records in accordance with 36 CFR Part 79 and site protection of cultural resources. AR 200-1 considers cultural resources to be "historic properties as defined by the NHPA; cultural items as defined by the NAGPRA" and "archaeological resources as defined by the Archaeological Resources Protection Act." The following sections identify previous studies and efforts by the Army to identify historic cultural resources in the State-owned land of PTA.

Historical Architecture Surveys

Previous cultural resources surveys and internal investigations by the USAG-HI cultural resources program have recorded and assessed NRHP eligibility of historic structures within PTA. Built resources within PTA are primarily located within the Cantonment and BAAF, which are outside the ROI. No historic buildings or structures have been recorded within the ROI.

Archaeological Investigations

Archaeological investigations of the Saddle Region began with inventory surveys conducted in the 1960s and 1970s under the direction of the Army (Rosendahl, 1977). Following the passage of cultural resources

legislation and the advent of the CRM program at PTA, the Army has been directly responsible for managing cultural resources at PTA with various CRM firms being contracted to supplement the Army's survey coverage.

Surveys of State-owned land have been undertaken by USAG-HI CRM staff and its contractors and cooperators. **Figure 3-7** depicts existing survey coverage across the State-owned land. **Table 3-14** briefly summarizes the studies and findings from more detailed information provided in the Archaeological Literature Review (**Appendix J**). Portions of the area shown as unsurveyed include previous surveys that used a less rigorous methodology that does not meet the USAG-HI's current standards and are not counted toward the current assessment. Further, the USAG-HI ~~Cultural Resources~~CRM s~~S~~taff does not normally survey areas with safety and accessibility concerns. Portions of unsurveyed State-owned land comprise remote and inaccessible areas, such as some areas of geologically recent lava flows (dating from the late Pre-Contact period) and steep gradients over 30 degrees. As such, intensive pedestrian surveys may be prohibitive. Other portions of the State-owned land at PTA are not used for training or contain large areas fenced for protection of natural resources. These sensitive areas are off-limits to training. Activities 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 absence or low impact of Army training.

Thirty-one archaeological surveys have occurred within State-owned land. These studies have primarily been generated from regulatory compliance needs associated with infrastructure development projects, such as the construction of roadways, firebreaks, training facilities, fence lines, and an AHA. The sections below summarize these previous investigations. Older inventory surveys that do not meet current USAG-HI archaeological standards have been omitted from this overview, as they do not count toward the Army's total survey coverage.

Archaeological surveys of the Saddle Road corridor, which passes through State-owned land, were conducted in the 1980s and 1990s (Langlas et al., 1999; Welch, 1993). In 1994, an archaeological survey was conducted of roughly 8,000 acres within TAs 5, 6, 16, 17, 19, 20 and 22 (Shapiro & Cleghorn, 1998). Only 2,300 acres of this survey are included in the current overview because a portion of this work included an aerial survey and not intensive pedestrian survey. Archaeological investigations were also conducted at sites within TAs 5, 6, and 21 during two University of Hawai'i (UH) field school seasons (Bayman et al., 2001; Moniz-Nakamura, 1999).

Since the early 2000s, PTA CRM staff have conducted numerous archaeological investigations throughout PTA, including State-owned land. These investigations are documented in brief internal memorandums that are contained within various annual reports.

The largest survey projects conducted within State-owned land were performed in the early 2000s (Brown et al., 2008; Buffum et al., 2004; Desilets & Roberts, 2005; Desilets et al., 2005; Roberts et al., 2004a; Roberts et al., 2004b; Roberts et al., 2004c; Robins et al., 2006). These studies generally focused on Stryker Brigade Combat Team project areas and potential maneuver areas, covering approximately 10,315 acres. These survey projects included a consolidation of all radiocarbon dates obtained through archaeological investigations; site distribution analysis across the installation by site type; and relation of site types to transportation sites.

More recent work includes an archaeological investigation of previously recorded pit features within TAs 4 to 6 (Monahan et al., 2013).

3.4.4.4 Identified Historic and Cultural Resources and Cultural Practices

Assessing impacts on historic and cultural resources begins by identifying significant resources in the ROI. Identification efforts use the following reference materials to identify historic and cultural resources, which include historical architecture resources and archaeological sites: (1) reports written for archaeological and other CRM studies previously conducted in the ROI (and which were approved by USAG-HI for use), (2) GIS data representing locations of previously recorded cultural resources and previous study boundaries, (3) federal, state, and local inventories of historic places, including the NRHP, (4) historical and current maps and aerial photographs, (5) primary source documents, and (6) general reference literature. **Appendix J**, Archaeological Literature Review, contains a full review of historic and archaeological resources in the ROI.

The process for identifying cultural practices included the following steps as a means of gathering the best information available: (1) historic cultural information was gathered from stories and other oral histories about the affected area to provide cultural foundation for the CIA from Hawaiian language and English language resources, (2) as much information as could be identified was inventoried about as many known cultural, historic, and natural resources, including previous archaeological inventory surveys, CIAs, and other documents, that may have been completed for the possible range of areas, and (3) these data were then updated with information from Native Hawaiian cultural or lineal descendants (as defined in 43 CFR Section 10.14, HAR Section 13-300-35, and HAR Section 30-300-2) and other knowledgeable cultural practitioners. See **Appendix I**, Cultural Impact Assessment, for a full review cultural practices associated with the ROI.

The 2018 Section 106 PA for PTA determined that previous military training and related activities have had adverse impacts on historic properties at PTA, primarily within the impact area on U.S. Government-owned land (DA, 2018b). The continued presence of training personnel may also continue to impact resources through accidental damage. The Army's ongoing mitigation of these impacts, and the management measures to preserve and protect historic and cultural resources, is detailed in **Section 3.4.4.6**. Continuing impacts on historic and cultural resources related to ongoing activities have already been assessed in previous NHPA consultation.

Figure 3-8: Archaeological Investigations Survey Coverage Map

Table 3-14: Archaeological Coverage of State-Owned Land at Pōhakuloa Training Area		
Reference	**Training Area**	**Study Type**
Welch, 1993	1, 3–9, 12, 15, 16	Survey and testing
Moniz, 1997	5, 6	Survey / UH Field School
Langlas et al., 1999	1, 3–9. 11, 12, 15, 16	Survey and testing
Bayman et al., 2001; Moniz-Nakamura, 1999	5	Survey and testing / UH Field School
Shapiro & Cleghorn, 1998	5, 22	Survey
Godby, 2003	22	Site identification
King & Head, 2004	6–8	Survey
Roberts et al., 2004a	21	Survey
Roberts et al., 2004b	5, 21	Survey
Roberts et al., 2004c	1, 3, 4	Survey
Buffum et al., 2004	6, 7	Survey
Desilets & Roberts, 2005	16, 17, 20	Survey
Desilets et al., 2005	6, 9, 12–16, 19	Survey
Robins et al., 2006	5, 7	Survey and testing
Stine, 2006a	22	Survey
Stine, 2006b	22	Survey
Stine, 2006c	22	Survey
Taomia, 2006a	17	Survey
Taomia, 2006b	22	Survey
Taomia, 2007	22	Survey
Taomia & Stine, 2007	17–20, 22	Survey
Luscomb, 2007	22	Survey
Escott, 2006	22	Survey
Stine, 2008	11	Survey
Brown et al., 2008	6, 8, 9, 12–17, 19, 20	Survey and testing
Taomia, 2009	18	Survey
Crowell et al., 2010	21	Survey
Stine, 2010	2	Survey
Tejeda, 2013	7	Testing and evaluations
Monahan et al., 2013	4–6, 21, 22	Survey and testing

Historic-Period Architectural Resources

Historic-period architectural resources represent the built human environment and are typically expressed as buildings and as structures, such as engineering works that may be eligible for inclusion on the NRHP per 36 CFR Section 60.4. To date, there are no historic architectural resources known to be extant within the State-owned land. Previous cultural resources studies have recorded and evaluated historic-period structures within PTA, but not on the State-owned land, including Quonset huts and other Cantonment facilities that date from the World War II to Cold War periods. These resources are located outside the ROI in the nearby Cantonment and BAAF.

Traditional Hawaiian and Historic-Period Resources

Historic and cultural resources within the State-owned land range across the Traditional Hawaiian to Historic periods. Within surveyed portions of State-owned land, as of April 2021, 105 archaeological sites have been identified (**Table 3-15**), and ongoing documentation of archaeological sites is regularly conducted by PTA CRM staff, including mapping, archaeological testing, site condition updates, and GIS data collection. Four sites of unknown origin have been evaluated as not eligible for listing in the NRHP and are therefore not significant, including two rock cairns (SIHP 50-10-31-23462 and 24327), a blister cave and pit complex (SIHP 50-10-31-24326), and a rock wall and C-shaped structure (SIHP 50-10-31-24328). The remaining 101 sites within the State-owned land are treated as significant for the purpose of Section 106 compliance and are avoided during ongoing training and related activities.

Traditional Hawaiian archaeological sites recorded in the ROI include habitation features (lava tube caves, blisters, overhangs, stone platforms, walls, enclosures, and C-shaped structures); excavated pāhoehoe pits, likely related to the procurement of ʻuʻau (Hawaiian petrel); lithic quarries; ahu (rock cairns); and trail segments.

Historic-period resources in the State-owned land include trails (often extending from or following along Traditional Hawaiian trail systems), military features (foxholes, enclosures, walls, excavations, trash/ammunition scatters), ranching infrastructure remnants (walls, enclosures, fence lines), and features associated with land surveying activities (survey benchmark/boundary monuments). Traditional Hawaiian and Historic-period site types are described in the sections below.

Table 3-15: Known Traditional Hawaiian and Historic-Period Resources Within State-Owned Land

Site Number	Location	Description	Period
50-10-31-5002	TA 5	Ranch wall	Historic
50-10-31-5003	TA 6	Habitation lava tube	Traditional
50-10-31-5009	TA 17	Trail	Traditional
50-10-31-14638	TA 5	Habitation lava tubes, rectangular house foundation, artifact scatter, pavement	Traditional
50-10-31-19490	TA 5	Habitation lava tubes, trails, C-shape	Traditional
50-10-30-19509	TA 22	Habitation lava tube	Traditional
50-10-30-19529	TA 22	Habitation lava tube	Traditional

Table 3-15: Known Traditional Hawaiian and Historic-Period Resources Within State-Owned Land			
Site Number	**Location**	**Description**	**Period**
50-10-31-21351	TA 5	Lithic workshop complex	Traditional
50-10-31-21744	TA 5	Lithic scatter	Traditional
50-10-31-21745	TA 5	Habitation lava blister	Traditional
50-10-31-21746	TA 4	Mound/excavation complex	Unknown
50-10-31-22941	TA 4	Lava blisters	Traditional
50-10-31-23450	TA 15	Habitation, overhang shelter, artifact scatter, pictographs	Traditional
50-10-31-23452	TA 1, 3–9, 13, 14, 16, 17	Ranching fence line	Historic
50-10-31-23455	TA 5	Pāhoehoe pits	Traditional
50-10-31-23456	TA 5	Possible habitation enclosure	Traditional
50-10-31-23457	TA 7	Trail	Traditional
50-10-31-23462	TA 7	Cairn	Unknown
50-10-31-23562	TA 5	Habitation lava tube	Traditional
50-10-31-23563	TA 5	Modified outcrop/wall	Traditional
50-10-31-23565	TA 5	Volcanic glass quarry	Traditional
50-10-31-23566	TA 5	Habitation lava tube	Traditional
50-10-31-23568	TA 5	Habitation lava tube	Traditional
50-10-31-23572	TA 5	Habitation complex	Traditional
50-10-31-23575	TA 5	Habitation lava blister	Traditional
50-10-30-23694	TA 22	Lava tube and burial	Traditional
50-10-31-23842	TA 1	Habitation platform/terrace	Unknown
50-10-31-23843	TA 1	Enclosure/mound complex	Unknown
50-10-31-23844	TA 1	Mound	Unknown
50-10-31-23845	TA 1	Mound	Unknown
50-10-31-23846	TA 1	Ranching enclosure	Historic
50-10-31-23847	TA 3	Ranching alignments	Historic
50-10-31-23848	TA 3	Mound	Historic
50-10-31-23849	TA 4	Mound	Historic
50-10-31-23850	TA 4	Ranch corral	Historic
50-10-31-23851	TA 4	Habitation lava tube	Unknown

Table 3-15: Known Traditional Hawaiian and Historic-Period Resources Within State-Owned Land			
Site Number	**Location**	**Description**	**Period**
50-10-31-23852	TA 1, 3–9, 13, 14, 16, 17	Rock wall and enclosure	Historic
50-10-31-23853	TA 4	Habitation lava tube	Unknown
50-10-31-23854	TA 3	Volcanic glass quarry	Traditional
50-10-31-23856	TA 4	Pāhoehoe pits	Traditional
50-10-31-24326	TA 7	Blister cave and pit complex	Unknown
50-80-10-24327	TA 7	Cairn	Unknown
50-80-10-24328	TA 7	Wall, C-shape	Unknown
50-10-31-26728	TA 5	Habitation lava tube	Traditional
50-10-31-26729	TA 5	Habitation lava tube blister	Traditional
C-020305-01	TA 22	Lava tube	Unknown
C-031705-01	TA 22	Lava tube	Traditional
C-031705-02	TA 22	Lava tube	Traditional
C-031705-03	TA 22	Lava tube	Traditional
C-031705-04	TA 22	Lava tube	Traditional
C-031705-05	TA 22	Lava tube	Traditional
C-031705-06	TA 22	Lava tube	Traditional
PL-PTA-02	TA 21	Volcanic glass quarry	Traditional
PL-PTA-03	TA 21	Volcanic glass quarry	Traditional
PL-PTA-04	TA 21	Volcanic glass quarry	Traditional
PL-PTA-05	TA 21	Volcanic glass quarry	Traditional
PL-PTA-06	TA 21	Volcanic glass quarry	Traditional
PL-PTA-029	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-030	TA 21	Volcanic glass quarry	Traditional
PL-PTA-031	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-032	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-033	TA 21	Volcanic glass quarry	Traditional
PL-PTA-034	TA 21	Volcanic glass quarry	Traditional
PL-PTA-061	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-062	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-063	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-064	TA 21	Volcanic glass quarry and artifact scatter	Traditional

Table 3-15: Known Traditional Hawaiian and Historic-Period Resources Within State-Owned Land			
Site Number	**Location**	**Description**	**Period**
PL-PTA-065	TA 21	Volcanic glass quarry	Traditional
PL-PTA-066	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-067	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-068	TA 21	Volcanic glass quarry and artifact scatter	Traditional
T-012805-02	TA 22	Habitation lava tube	Traditional
T-020305-02	TA 22	Habitation lava tube	Traditional
T-020701-02	TA 6	Artifact scatter	Traditional
T-031709-01	TA 18	Mound	Unknown
T-040418-01	TA 1	USGS survey marker	Historic
T-041906-01	TA 22	Habitation lava tube	Unknown
T-041906-02	TA 22	Habitation lava tube	Unknown
T-041906-03	TA 22	Habitation lava tube	Unknown
T-043094-02	TA 22	Habitation lava tube	Unknown
T-043094-03	TA 22	Habitation lava tube	Unknown
T-043094-04	TA 22	Habitation lava tube	Unknown
T-043094-05	TA 22	Habitation lava tube	Unknown
T-050906-01	TA 22	C-shape	Unknown
T-070104-01	TA 5	Artifact scatter	Traditional
T-071306-01	TA 22	Enclosure	Unknown
T-080206-01	TA 1	Enclosure	Unknown
T-082217-08	TA 14	USGS boundary marker	Historic
T-082306-01	TA 22	Cairn	Unknown
T-082306-02	TA 22	Modified outcrop	Unknown
T-082306-03	TA 22	Lava tube	Unknown
T-082306-04	TA 22	Pāhoehoe pit	Unknown
T-082306-05	TA 22	Pāhoehoe pit	Unknown
T-092202-01	TA 3	Volcanic glass quarry	Traditional
T-092202-02	TA 3	Artifact scatter	Traditional
T-092202-03	TA 3	Artifact scatter	Traditional
T-092202-04	TA 3	Artifact scatter	Traditional
T-092202-05	TA 3	Artifact scatter	Traditional

Table 3-15: Known Traditional Hawaiian and Historic-Period Resources Within State-Owned Land			
Site Number	**Location**	**Description**	**Period**
T-092899-01	TA 22	Habitation lava tube	Traditional
T-100606-01	TA 22	Mound	Unknown
T-100606-02	TA 22	Mound	Unknown
T-111402-01	TA 3	Artifact scatter	Traditional
T-111402-02	TA 3	Volcanic glass quarry	Traditional
T-111402-05	TA 3	Volcanic glass quarry	Traditional
T-111402-06	TA 3	Volcanic glass quarry	Traditional

Traditional Hawaiian Sites

Traditional Hawaiian sites within the ROI are typically classified as either limited-use or repeated-use sites. Limited-use sites were occupied on a short-term basis, such as an overnight stay (Streck, 1992) in surface structures (e.g., rock-constructed enclosures) and natural shelters formed in lava flows (e.g., caves and rock shelters). The limited-use occupation sites are defined by sparse amounts of cultural material, often limited to charcoal scatters or shallow ash deposits, and small artifact scatters. Repeated-use sites contain cultural midden deposits and features and exhibit structural modifications, such as constructed platforms, walls, terraced areas, and cupboards. Cultural deposits at repeated-use sites are stratified and typically contain a wide range of well-preserved artifacts (Athens & Kaschko, 1989; Haun, 1986; Shapiro et al., 1998; Shapiro & Cleghorn, 1998; Robins et al., 2006). Faunal assemblages excavated from repeated-use sites are dominated by bird bone, particularly those of adult ʻuaʻu, while marine shell and fish bone also occur in limited quantities (Athens & Kaschko, 1989; Ziegler, 1994). Some repeated-use sites may represent base camps for groups exploiting natural resources in upland areas (Reinman & Schilz, 1992).

Limited-use and repeated-use habitation site types are typically located along trails running through the Saddle Region and near important upland resources, such as lithic quarries, lava tubes with drip water sources, and bird nesting areas. Within the ROI, habitation sites are generally concentrated within TAs 5 and 22. Site 19490 in TA 5 is comprised of several lava tube habitation features along with a trail segment, a C-shaped structure, and other archaeological features, including midden deposits, ahu, and a surface artifact scatter. In 2003, a pair of well-preserved kī (ti) leaf sandals was collected from Site 19490 by PTA CRM staff (**Appendix J**). Within TA 22, Site 23694 is situated within the "C" (Charlie) lava tube cave system, where archaeological features and cultural materials were first identified during a biological resources survey of PTA. A subsequent site visit by PTA CRM staff in 2003 (Godby) documented iwi kūpuna (human remains) at Site 23694 along with an artifact scatter containing lithic debitage, water-worn stones, and gourd fragments. A circular-shaped hearth containing charcoal, ash, and bird bone was also noted near one of the cave entrances (Godby, 2003).

Other Traditional Hawaiian sites in the State-owned land are related to the procurement of upland resources, including volcanic glass used in the production of stone tools. The Saddle Region is one of Hawaiʻi's most abundant volcanic glass sources, and the relatively recent pāhoehoe flows in the State-owned land contain a great number of volcanic glass outcrops, most of which have been exploited and are generally concentrated within the eastern portion of the State-owned land. These volcanic glass

sources are concentrated in TA 21 as detailed in **Table 3-15**. In addition to volcanic glass flakes, quarry sites also frequently contain fragmented and complete hammerstones, hundreds of which have been documented within State-owned land. Williams noted the use of "large hammerstones made of vesicular pahoehoe" for initial quarrying of the material and small, dense basalt hammerstones derived from Mauna Kea basalt for secondary reduction activities (Williams, 2002). While lithic scatters are commonly associated with quarry sites where primary reduction of lithic material occurred, lithic scatters are also frequently documented at repeated and limited-use occupation sites, representing secondary reduction to produce adze blanks, and the maintenance and production of flake cutting tools.

Excavated pāhoehoe pits are by far the most abundant feature type within the Saddle Region, although they are outnumbered by lithic quarries within the ROI. Moniz-Nakamura suggests that the excavated pits represent efforts to create nesting habitat for ʻuaʻu or to enlarge natural burrows to retrieve nestlings (Moniz-Nakamura, 1999). Nesting burrows can be up to 1.8 meters long with 15- to 20- centimeter-high entrances; enlarging these entrances makes it easier to retrieve the nestlings from the burrow.

Microfossil and organic residue analysis of sediment samples from excavated pit features within the State-owned land was also conducted at Site 23455 in TA 5 and Site 23856 in TA 4 (Monahan et al., 2013). Using control samples from known petrel nesting sites on the slopes of Mauna Loa, the samples produced strong Fourier Transform Infrared Spectroscopy avian signatures from all sampled pits and some of the samples closely resembled the Mauna Loa samples (Monahan et al., 2013). However, this same signature was also found in control samples outside the pits; thus, indicating that birds were in the area but not specifically targeting the excavated pits. Monahan also cautioned that the avian signature is general (not classified to genus or species) and could reflect the presence of birds, other than seabirds, that are known to use the pits during recent times (Monahan et al., 2013).

Several Traditional Hawaiian trail segments are situated within the State-owned land, and other major Hawaiian trails have been identified within PTA but outside State-owned land. These isolated trail segments often consist of worn lava paths, sometimes with associated linear curbstone constructions, and alignments of cairns or ahu. Site 5009, the Puʻu Kapele trail, is located within TA 17, and a 100-meter-long trail segment is mapped at Site 23457 within TA 7. Trail segments leading to habitation features have also been documented at Site 19490 within TA 5.

Historic-Period Sites

Historic-period sites associated with nineteenth century ranching include rock walls, fence lines, and animal enclosures. Site 23452, a fence line incorporating rock walls constructed around 1895, extends across a roughly 10-mile-long alignment within State-owned land, situated to the south of Saddle Road. Several other sites associated with Historic Period ranching are located in the eastern portion of the ROI, including Sites 5002 (NRHP-eligible rock wall), 23846 (animal enclosure), 23847 (alignment), and 23850 (corral).

Saddle Road was constructed in 1943 to allow movement into the interior in case of another foreign attack (Langlas et al., 1999). A roughly 12-mile-long segment of Saddle Road, today known as DKI Highway, is located within State-owned land. Following the Army acquisition of PTA, hundreds of rock structures and associated debris have been constructed for training activities. These sites are also tracked by PTA CRM staff but are not significant due to their recent age.

Identified Cultural Practices

To identify cultural practices, the CIA authors researched archival documents, oli (chants), mele (songs), hula (dance), and Hawaiian language sources including books, manuscripts, and newspaper articles. The CIA also identified Hawaiian place names associated with landscape features, archaeological sites, and ecological resources. The information gathered through research helped to focus interview questions on specific features and elements within the State-owned land. Information was also collected from area informants. Additional details are provided in the CIA (**Appendix I**).

The goal of the CIA is not to provide an exhaustive list of cultural practices because many practitioners subscribe to a lifestyle in which tradition and custom can comprise a wide range of activities throughout their daily lives. The intention is to provide a comprehensive list of cultural practices that were known to have occurred within the CIA study area or were likely to have occurred based on the resources present in the area (**Table 3-15**). This information is based on oral histories and the data available to disclose the presence of cultural practices. Additional detail is provided in **Appendix I**.

There are six named places potentially associated with cultural practices within the boundaries of the State-owned land at PTA (**Table 3-16**). These wahi pana (traditional places) reflect the intergenerational knowledge and place-based understandings of Native Hawaiians.

Table 3-16: Named Places Potentially Associated with Cultural Practices

Resource	Meaning / Interpretation of Name	Associated Use, if any
Puʻu (Hills)		
Puʻu Keʻekeʻe	Crooked or deformed hill	ʻUmi reportedly built an ahu or temple here. Currently used for cultural practices.
Puʻu Ka Pele (also Puʻu Kapele)	The hill of Pele or volcano hill	Currently used for cultural practices.
Puʻu Kea	White hill	None identified
Puʻu Mauʻu	Grass hill	None identified
Puʻu Koʻohi	None identified	None identified
Alanui (Trails)		
Alanui Kui	None identified	Part of the Alanui Aupuni trail system.

The cultural practices listed in **Table 3-17** were identified in the CIA. These cultural practices were known to have occurred within the CIA study area or were likely to have occurred based on the research presented in the CIA and information obtained from interviewees.

Table 3-17: Cultural Practices	
Cultural Practices	**Occurrence at PTA**
Quarrying	Historically occurred on State-owned land
Stone Tool Manufacturing	Historically occurred on State-owned land
Traditional Hunting, Bird Collecting, and Feather Collecting	Historically occurred in broader geographic area; may have occurred on State-owned land
Mālama Iwi	Historically occurred on State-owned land
Ceremonial Practices	Currently occurs on State-owned land; historically occurred in broader geographic area
Kilo	Currently occurs on State-owned land; historically occurred in broader geographic area; may have historically occurred on State-owned land
Kahuna and Associated Practices	Historically occurred in broader geographic area; may have historically occurred on State-owned land
Alanui (Trail Usage)	Historically occurred on State-owned land
Habitation	Historically occurred on State-owned land
Agriculture, Cooking, and Food Traditions	Historically occurred on State-owned land
Life Cycle Practices	Historically occurred in broader geographic area; may have historically occurred on State-owned land
Uhau Humu Pohaku (Dry Stone Stacking)	Historically occurred on State-owned land
Parietal Art (Petroglyphs and Pictographs)	Historically occurred on State-owned land
Haku Mele and Haku ʻOli	Historically occurred in broader geographic area; may have historically occurred on State-owned land
Hula	Historically occurred in broader geographic area; may have historically occurred on State-owned land
Hōlua (Sledding)	Historically occurred in broader geographic area; may have historically occurred on State-owned land
Laʻau Lapaʻau	Historically occurred in broader geographic area; may have historically occurred on State-owned land
Moʻolelo	Historically occurred in broader geographic area; may have historically occurred on State-owned land
Hunting	Currently occurs on State-owned land and broader geographic area
Disposition of Cremated Remains	Currently occurs in broader geographic area
Ranching/Paniolo	Currently occurs in broader geographic area; historically occurred on State-owned land and broader geographic area

Summary of Information Obtained from Interviewees

Data obtained from the CIA's ~~project's~~ initial community outreach and online survey yielded information about the sharing of moʻolelo (stories), inoa ʻāina (place names), and cultural practices that occur on State-owned land at PTA and the broader geographic extent. Survey respondents also shared several Native Hawaiian beliefs such as the general area of Pōhakuloa being considered a sacred place, and that military use degraded this sacred nature or otherwise desecrated the land. Three individuals were interviewed for information on cultural resources, practices, and beliefs occurring within or associated with the general project area and broader geographic area. Interviewees corroborate and reinforce information obtained from archival research and survey responses that cultural practices and beliefs are known for the broader geographic area encompassing the project area; however, it is unclear which of these cultural practices are historically specific to the project area itself.

Cultural practices mentioned by interviewees that currently occur in the project area include conducting spiritual and religious practices at Puʻu Kapele, Makahiki celebrations, and hunting. One interviewee shared that traditional resource gathering (e.g., pōhaku, māmane, ʻaʻaliʻi) occurs in the general area. Interviewees also noted that historic cultural practices associated with the general project area include alanui (trail usage) and bird gathering. One interviewee shared that if more access was provided, more cultural practices would occur.

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 project area. All three individuals interviewed expressed concerns about cultural access limitations. One of the interviewees, Dr. Wong-Wilson, shared that the ongoing possession of the land by the Army is viscerally felt by, and painful for, those who are connected to the ʻāina.

The second general category of effect noted by interviewees included physical alteration of cultural resources from military training and military munitions use. Mr. Kapele mentioned that the continuation of training is also the continuation of desecration to sacred sites, and that training bars access to these important cultural and religious sites. Dr. Kahakalau discussed the adverse impacts from fires at PTA, and that training impacts the land as a physical, natural, and spiritual resource.

All survey responses and interview summaries can be found in **Appendix I**.

3.4.4.5 2022 Leilani Fire

There are 76 previously recorded archaeological sites within the PTA footprint of the Leilani fire, 25 of which are on State-owned land. ~~Nine of the sites on State-owned land have been evaluated since the fires (site surveys and evaluations are still ongoing).~~All 25 of these archaeological sites have been subject to condition assessments that show ~~The cultural sites assessed since the fire had~~ no clear indication of damage or long-term impacts identified ~~resulting~~ from the fire. The archaeological sites within the burn footprint lack surface archaeological deposits that may be affected by fire (e.g., mixed midden). No caves were affected, and have not been affected historically, because fire fuel is limited to the ground surface. The footprint of the Leilani fire in relation to previously recorded historic and cultural resources on State-owned land at PTA is shown in **Figure 3-9**. The Archaeological Literature Review (**Appendix J**) provides more information on the previously recorded sites at PTA.

Figure 3-9: Leilani Fire Footprint and Previously Recorded Historic and Cultural Resource Sites

3.4.4.6 Existing Management Measures

The Army operates a CRM Program at PTA, including the State-owned land. The team's CRM responsibilities include maintaining a listing of archaeological sites and global positioning system locations; conducting fieldwork to identify, evaluate, and manage cultural resources, which consists of archaeological surveys and monitoring before, during, and after training activities; managing site preservation, including conducting periodic site inspections and installing visual or physical boundaries to avoid or minimize impacts on sites; consulting with NHOs; and coordinating with other regulatory agencies.

Cultural resources at PTA are managed in compliance with all applicable federal laws and regulations, primarily NHPA Section 106 and NAGPRA, as well as DoD Instruction 4710.3, AR 200-1, *Environmental Protection and Enhancement*, and USARHAW Regulation 350-19, *Ranges and Training Areas*.

The CRM Program is guided by two documents: (1) *An Integrated Cultural Resources Management Plan for the U.S. Army Garrison - Pōhakuloa, Hawai'i Island* (USAG-PTA, 2018c), and (2) *Programmatic Agreement Among the U.S. Army Garrison, Pōhakuloa Training Area, 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 Installations on the Island of Hawai'i, Hawai'i* (DA, 2018b).

The Army's Integrated Cultural Resources Management Plan (ICRMP) was finalized in 2018. Along with providing an overview of cultural resources at PTA, the ICRMP outlines the missions of the various Army groups (USARPAC, USAG-HI, USAG-Pōhakuloa, 25th ID, and USARHAW) at PTA and dictates the responsibilities of the USAG-HI and USAG-Pōhakuloa Garrison Commanders. The ICRMP summarizes statutes, policies, implementing authorities, regulations, and guidelines pertaining to the management of cultural resources under USAG-Pōhakuloa stewardship, and lists their application to each of nine SOPs for managing cultural resources.

The Army also finalized the 2018 Section 106 PA for PTA with the objective of addressing its NHPA Section 106 requirements for training actions and related activities. The Army consulted with a wide variety of NHOs, families, and individuals who attach traditional religious and cultural importance to sites within the Army installations on the island of Hawai'i.

Compliance with Section 106 of the NHPA requires close coordination between PTA CRM staff and project planners to integrate the identification and evaluation of historic properties with training activities or other projects at PTA. This compliance process includes regular consultation with the SHPD, NHOs, and other interested parties. When a project is proposed, Army staff assess whether the action is already addressed in the 2018 Section 106 PA for PTA. If not addressed, the Army would initiate consultation through the NHPA Section 106 process. Such consultation is initiated by letter but may take place face-to-face. If a project is determined to have an adverse effect on historic properties, the Army would resolve adverse effects with consulting parties. Army cultural resources staff members conduct regular and ongoing outreach to, and engagement with, Native Hawaiians to facilitate compliance with the NHPA and NAGPRA. This outreach includes consultation correspondence, Native Hawaiian Listening Sessions, site visits, and other communication and meetings.

Previous NHPA consultations, including the 2018 Section 106 PA for PTA, have provided mitigation for ongoing training and related activities. Under current mitigation measures, USAG-HI would continue to

identify and evaluate cultural resources eligible for listing in the NRHP. Ongoing activities would continue to comply with the Section 106 PA. Ongoing activities also adhere to existing SOPs as outlined in the ICRMP, developed during previous NHPA consultations for ongoing cultural resources preservation and management. Resources determined to be eligible for listing in the NRHP, as well as resources not yet formally evaluated, are to be avoided per AR 200-1. Impacts on historic properties would continue to be mitigated in accordance with the law.

As of April 2021, iwi kūpuna (Native Hawaiian human skeletal remains) have been identified at one site within the ROI (SIHP 50-10-30-23694). Under NAGPRA, the Army completed notification and consultation for this burial site and left the iwi kūpuna in place. It is USAG-HI policy to leave burials in place and undisturbed wherever possible after consultation with Native Hawaiian families, groups, and individuals. The 2018 Section 106 PA for PTA (DA, 2018b) and the ICRMP (which provides SOPs for NAGPRA compliance) also address inadvertent discoveries of iwi kūpuna at PTA and stipulate that any iwi kūpuna accidentally uncovered ~~would~~ be protected from additional disturbance until appropriate NAGPRA compliance is completed.

Training operations at PTA also adhere to procedures and requirements in USARHAW Regulation 350-19, *Ranges and Training Areas*, which stipulates that Garrison commanders conduct environmental awareness education programs to publicize the Army's concerns and actions regarding the conservation of cultural resources during training activities; that hunting, fishing, and recreational activity areas are designated in coordination with cultural resources managers; and that the USARHAW Range Division develops and coordinates training policies, programs, and initiatives to preclude conflicts between range operations, training, and CRM. Further, the USAG-PTA *External Standard Operating Procedures* (USAG-PTA, 2018a) identify cultural resources restricted areas, as well as a variety of general restrictions, including vehicle, excavation, and emergency discovery procedures.

Cultural Access Policies

Cultural access to State-owned land at PTA is secured through a USAG-HI cultural access process. The process is sponsored through USAG-HI CRM staff, who secure names and information for submission to military police a minimum of 5 days in advance.

3.4.5 Methodology and Significance Criteria

This section outlines the methods and criteria used to assess potential significant impacts on historic and cultural resources and cultural practices. Historic and cultural resources and cultural practices were defined for the State-owned land as described in **Section 3.4.4.4**.

3.4.5.1 Historic and Cultural Resources

For land retained (State-owned land proposed to be retained by the Army), the analysis considers the impacts of ongoing activities that led to the existing conditions and whether there would be new impacts. For land not retained (State-owned land not proposed to be retained by the Army), the impacts of the cessation of ongoing activities on that land, as well as from Army regulatory programs and lease compliance actions and cleanup and compliance actions, 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 CRM activities.
- For land not retained, the State would conduct CRM activities and public use programs at current federal levels.
- The State would add land not retained north of DKI Highway (except for DHHL-administered land) to the Mauna Kea Forest Reserve and Ka'ohe Game Management area, which would allow for improved public access.
- 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 the continuation of training would result in potential significant adverse 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 measures were reviewed, and where appropriate, proposed mitigation measures were developed to avoid, minimize, rectify, or reduce impacts on historic and cultural resources.

3.4.5.2 Cultural Practices

Once cultural resources, practices, and beliefs within the potentially affected area were identified, the potential impacts from the Proposed Action and its alternatives on those cultural resources, practices, and beliefs were identified and analyzed. The criteria used to assess potential impacts are drawn from the Office of Environmental Quality Control (now the Environmental Review Program) guidelines and include the extent or degree to which the Proposed Action would result in the following (OEQC, 2012):

- Physical alteration on 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, practices, and beliefs take place was evaluated by determining if cultural resources, practices, and beliefs were identified for each alternative, and assessing the potential for the impact to reoccur from continuation of ongoing activities on land retained, or to cease on land not retained.

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 to access cultural resources, practices, and beliefs within the project area is one of the critical means by which the Proposed Action and its alternatives ~~were assessed~~are analyzed.

The type of access this analysis considers is—for the purposes of this EIS—termed "cultural access," which differs from public access (i.e., open access for the general public). This EIS defines cultural access as follows:

- **Cultural access** is the ability of Native Hawaiians and cultural practitioners 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) that are directly associated with the area.

It should be noted that cultural access is not wholly prohibited in the project area. The potential then for the Proposed Action to impact cultural access is defined in terms of its limiting potential:

- **Limited cultural access** occurs when 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, having specific timeframes when access is allowed, or having certain locations that are off limits due to security or safety concerns.

It is presumed the form of access valued by interviewees for the current study is unlimited cultural access, which is defined as follows:

- **Unlimited cultural access** occurs when 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 continuation of ongoing activities would result in potential significant impacts on cultural practices in the current study is the extent or degree to which:

- Cultural access to State-owned land at PTA 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, practices, and beliefs. 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 indicate that current management measures would not mitigate impacts on cultural practices, resources, and beliefs, new mitigation measures are proposed, partly based on information received from interviewees.

The analysis of the Proposed Action and its alternatives on cultural practices also assumes the following:

- For land retained, the Army would adhere to existing applicable regulations and PAs, including managing current CRM activities.
- For land not retained, the State would conduct CRM activities and public use programs at current federal levels.
- The State would add land not retained north of DKI Highway (except for DHHL-administered land) to the Mauna Kea Forest Reserve and Kaʻohe Game Management area, which would allow for improved public access to those areas.
- 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.

3.4.6 Environmental Analysis

This analysis considers impacts on historic and cultural resources and cultural practices from the Proposed Action. Adherence with existing applicable regulations, BMPs, and SOPs is applied to the analysis before making impact conclusions (i.e., existing ~~cultural resource management~~CRM efforts are considered when determining the affected environment and are included in the baseline environmental conditions for the analysis).

3.4.6.1 Alternative 1: Maximum Retention

Land Retained

Lease Impacts: Under Alternative 1, the Army would retain approximately 22,750 acres of the State-owned land at PTA under a new lease and would continue ongoing activities on this land as described in **Section 2.1**. ~~The Proposed Action~~Alternative 1 would result in no new impacts from ongoing activities.

There would be continued long-term, moderate, beneficial impacts on historic and cultural resources from the continuation of CRM programs and actions that preserve and protect historic and cultural resources. CRM actions would continue as described in **Section 3.4.4.6**, including the 2018 Section 106 PA for PTA. The Army would continue to identify and evaluate historic and cultural resources eligible for listing in the NRHP. Ongoing activities would continue to comply with the Section 106 PA. Ongoing activities also would continue to adhere to existing SOPs as outlined in the ICRMP, developed during previous NHPA consultations for ongoing cultural resources preservation and management.

Continuing impacts on historic and cultural resources related to ongoing activities have already been assessed in previous NHPA consultation. The 2018 Section 106 PA for PTA determined that previous military training and related activities have had adverse effects on historic properties at PTA, primarily within the impact area on U.S. Government-owned land (DA, 2018b). Some ongoing activities may continue to have long-term, moderate, adverse impacts on historic and cultural resources.

Under Alternative 1, there would be no new impacts from ongoing activities on cultural practices within the land retained. ~~The Proposed Action~~Alternative 1 would result in the continuation of limited cultural access on State-owned land at PTA. 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.

There could also be continued long-term, significant, adverse impacts on cultural practices due to potential training-related wildland fires from ongoing activities within the State-owned land retained and associated activities within U.S. Government-owned land impacting biological resources that are important to the cultural practices of Native Hawaiians.

Impacts on Native Hawaiians from the continued presence of the military installation and continued tenure of DoD control of the land under a new lease also would sustain existing feelings of emotional and psychological stress noted by community members during scoping and the Draft EIS and Second Draft EIS public review periods, as well as an ongoing perception that their sacred and traditionally and culturally important land is under an unjust military occupation.

Fee Simple Title Impacts: Impacts under a fee simple title method of land retention would result in the same impacts as a lease retention method for Alternative 1 for both historic and cultural resources and cultural practices. Under fee simple title, it is assumed that the Army would continue to adhere to the same federal laws and regulations, as well as state laws and regulations (to the extent practicable), for managing historic and cultural resources.

Land Not Retained

Under Alternative 1, the Army would not retain approximately 250 acres of the State-owned land at PTA. There would be new long-term, negligible, adverse impacts on historic and cultural resources from increased public access; new short-term, negligible, adverse impacts on historic and cultural resources from lease compliance actions and cleanup and restoration activities following lease expiration and in accordance with the lease or as otherwise negotiated with the State. There would also be new long-term, negligible, beneficial impacts from the discontinuation of military activities and associated impacts.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities that could result in new short-term, negligible, adverse impacts on cultural practices from ~~additional~~ limitations on cultural access due to public safety. There would also be new long-term, minor, beneficial impacts on cultural practices from the removal of limitations on cultural access, which would support Native Hawaiians and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs.

~~**Potential**~~ **Mitigation Measures:** ~~Beyond the existing management measures presented in **Section 3.4.4.6**, the Army would also consider the following mitigation measures to further reduce potential adverse impacts on cultural practices: (1) through consultation with Native Hawaiians and cultural practitioners, the Army would formalize a cultural access request process to enable Native Hawaiians and cultural practitioners opportunities to promote and preserve cultural practices, beliefs, and resources; and (2) the Army would explore options to provide unlimited cultural access to specific locations to be determined in consultation with Native Hawaiians and cultural practitioners. If the Army were to select these mitigation measures, the Army would identify them in the ROD and endeavor to formalize the cultural access request process prior to the end of the current lease so that it is in place when the lease expires. The Army would consider developing a mitigation plan with monitoring requirements for any mitigation measures it selects to implement to ensure their use and effectiveness.~~Beyond the existing management measures presented

in **Section 3.4.4.6**, the Army would commit to the mitigation measures presented in **Table 3-18** to reduce adverse impacts identified for cultural practices.

Table 3-18: Mitigation Measures to Reduce Adverse Impacts to Cultural Practices

Mitigation Measure	Timing
The Army will develop a formalized access plan for quarterly access for Native Hawaiian organizations, individuals, and consulting parties, ʻohana, lineal descendants, and cultural practitioners.	The Army will develop the timing, location, and terms of the access through consultation with the Native Hawaiian community. This consultation will begin no later than October 2028. The Army will implement the access plan once the land retention estate document (e.g., lease or deed) is executed or when the access plan is agreed upon by all parties, whichever is later.
The Army proposes to install interpretive panels at the Gilbert Kahele Recreation Area to illustrate the historical and cultural importance of the Saddle Region. The interpretive panels will be accessible to community members and visitors of the park.	Consultation with the Native Hawaiian community and the County of Hawaiʻi regarding the signs' location and content will begin no later than October 2028. The Army will determine the location, information on the panels, and installation timing of the panels through consultation with Native Hawaiians, cultural practitioners, and the County of Hawaiʻi.
The Army will negotiate an agreement with the State to monitor wildfires on land not retained and an agreement document will be developed with the State. The agreement will be implemented once all parties sign the agreement document or when the land retention estate document (e.g., lease or deed) is executed, whichever is later.	Negotiations to begin no later than October 2028.
In addition to the current thermal technology at PTA, the Army will add advanced technology which will include additional thermal technology equipment. The additional thermal technology equipment would enable firefighting personnel to locate and eliminate hot spots where a fire persists. The Army will install approximately six to eight infrared cameras that provide adequate coverage across the training area for wildfire heat signature monitoring—three cameras in the Keamuku Maneuver Area, three cameras in the Pōhakuloa Training Area, and one or two additional mobile cameras.	Contracting and installation to begin no later than October 2028.

The Army will monitor the mitigation measures to ensure their implementation and effectiveness and 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 less than significant impacts on historic and cultural resources for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.4.5**. Alternative 1 also would result in significant, adverse impacts on cultural practices for lease and fee simple title, and less than significant impacts on cultural practices for land not retained based on the significance criteria in **Section 3.4.5**.

3.4.6.2 Alternative 2: Modified Retention

Land Retained

Under Alternative 2, the Army would retain and continue ongoing activities on approximately 19,700 acres of the State-owned land at PTA.

Lease Impacts: The land retained includes the same types of historic and cultural resources as those located on land retained under Alternative 1. There would still be limited cultural access on State-owned land retained and continued tenure of DoD control of the land. Therefore, impacts on historic and cultural resources and cultural practices would be the same as those described for Alternative 1 lease impacts.

Fee Simple Title Impacts: The land retained includes the same types of historic and cultural resources as those located on land retained under Alternative 1. There would still be limited cultural access on the land retained under fee simple title and continued tenure of DoD control of the land. Alternative 2 would result in continued impacts that would be the same as those under fee simple title impacts for Alternative 1. No new impacts would occur under Alternative 2 fee simple title retention. Under fee simple title, it is assumed that the Army would continue to adhere to the same federal laws and regulations, as well as state laws and regulations (to the extent practicable), for managing historic and cultural resources.

Land Not Retained

The Army would not retain approximately 3,300 acres of the State-owned land at PTA. Most of the State-owned land not retained is composed of steep topography that is infrequently used to support light training maneuvers.

Impacts on historic and cultural resources would include new long-term, negligible, adverse impacts from increased public access. Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities that could result in new short-term, minor, adverse impacts on historic and cultural resources. The State-owned land not retained under Alternative 2 is mostly unsurveyed and might contain unknown cultural resources. As such, Alternative 2 could result in new long-term, minor, beneficial impacts on historic and cultural resources due to reduced risk of physical damage to historic and cultural resources associated with military activities on land not retained. 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 the lease compliance actions would comply with NHPA Section 106 and its implementing regulations.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities that could result in new short-term, negligible, adverse impacts on cultural practices from ~~short-term~~ limitations on cultural access due to public safety concerns. These impacts may be greater than Alternative 1 because more land would not be retained under Alternative 2. There would also be new long-term, minor, beneficial impacts on cultural practices from the removal of limitations on cultural access, which would support Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs.

~~**Potential**~~ **Mitigation Measures:** Alternative 2 existing management measures and ~~potential~~ mitigation measures are the same as those identified for Alternative 1.

Level of Significance: Alternative 2 would result in less than significant impacts on historic and cultural resources for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.4.5**. Alternative 2 also would result in significant, adverse impacts on cultural practices for lease and fee simple title, and less than significant impacts on cultural practices for land not retained based on the significance criteria in **Section 3.4.5**.

3.4.6.3 Alternative 3: Minimum Retention and Access

Land Retained

Lease Impacts: Under Alternative 3, only vital TAs would be retained. The land retained includes the same types of historic and cultural resources as those located in land retained under Alternative 1. There would still be limited cultural access on State-owned land retained and continued tenure of DoD control of the land. Therefore, impacts would be the same as those described for Alternative 1 lease impacts.

Fee Simple Title Impacts: Alternative 3 would result in continued impacts that would be the same as those under fee simple title impacts for Alternative 1. No new impacts would occur under Alternative 3 fee simple title retention. Under fee simple title, it is assumed that the Army would continue to adhere to the same federal laws and regulations, as well as state laws and regulations (to the extent practicable), for managing historic and cultural resources.

Land Not Retained

Under Alternative 3, the Army would not retain approximately 12,900 acres of the State-owned land at PTA. It is assumed the State would continue current levels of historic and cultural resource management within the land not retained. Land not retained under Alternative 3 in the western portion of the ROI (mainly TA 22) contains concentrations of Traditional Hawaiian archaeological sites, mainly lava tubes and entrances, C-shapes, enclosures, mounds, pits, and modified outcrops. Land not retained in the eastern portion of the ROI includes a portion of TA 21 where a concentration of Traditional Hawaiian archaeological sites (lithic quarries) is recorded. These quarry sites comprise hundreds of individual exploited outcrops and associated lithic scatters. Land not retained in the northern and eastern portions of the ROI is mostly unsurveyed and might contain unknown cultural resources. Alternative 3 would result in new long-term, moderate, beneficial impacts on historic and cultural resources from the discontinuation of military activities and associated impacts. There could also be new long-term, minor, adverse impacts from increased public access.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities that could result in new short-term, minor, adverse impacts on historic and cultural resources. 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 the lease compliance actions would comply with NHPA Section 106 and its implementing regulations. These impacts may be greater than Alternative 2 because more land would not be retained under Alternative 3.

There would also be new long-term, moderate, beneficial impacts on cultural practices from the removal of limitations on cultural access, which would support Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs. There could also be new short-term, minor, adverse impacts ~~due to short-term~~ from limitations on cultural access due to public safety concerns during lease compliance actions and cleanup and restoration activities.

~~**Potential**~~ **Mitigation Measures:** Alternative 3 existing management measures and ~~potential~~ mitigation measures are the same as those identified for Alternative 1.

Level of Significance: Alternative 3 would result in less than significant impacts on historic and cultural resources for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.4.5**. Alternative 3 also would result in significant, adverse impacts on cultural practices for lease and fee simple title, and less than significant impacts on cultural practices for land not retained based on the significance criteria in **Section 3.4.5**.

3.4.6.4 No Action Alternative

Under the No Action Alternative, no State-owned land would be retained, which would cause training at PTA to cease or be severely limited. Additionally, there would be reduced or no training on U.S. Government-owned land (impact area and training ranges) to the south due to lack of land access.

The No Action Alternative could result in new long-term, moderate, beneficial impacts on historic and cultural resources from the discontinuation of military activities and associated impacts. There could also be new long-term, minor to moderate, adverse impacts from increased public access; and new short-term, minor to moderate, adverse impacts on historic and cultural resources from lease compliance actions and cleanup and 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 the lease compliance actions would comply with NHPA Section 106 and its implementing regulations.

Similar to the State-owned land not retained under the action alternatives, under the No Action Alternative, the Army would no longer fund or manage resource management and public use programs in the State-owned land after expiration of the lease. This may result in new short-term, moderate, adverse impacts on historic and cultural resources during the transition period for CRM programs from Army to State management.

Impacts on cultural practices under the No Action Alternative would include new short-term, moderate, adverse impacts from ~~short-term~~ limitations on cultural access due to public safety concerns during lease compliance actions and cleanup and restoration activities. These impacts may be greater than Alternative 3 because no State-owned land would be retained under the No Action Alternative.

There would be new long-term, significant, beneficial impacts on cultural practices from the removal of Army limitations on cultural access, which would support Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs. Cultural access would likely substantially increase when land is returned to the State because existing access restrictions would be lifted.

~~Potential~~ **Mitigation Measures:** The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended. No mitigation measures are recommended for the lease compliance actions and cleanup and restoration activities beyond the existing management measures discussed in **Section 3.4.4.6** and **Appendix E**.

Level of Significance: The No Action Alternative would result in less than significant impacts on historic and cultural resources based on the significance criteria in **Section 3.4.5**. The No Action Alternative would also result in significant, beneficial impacts on cultural practices based on the significance criteria in **Section 3.4.5**.

3.5 Hazardous Substances and Hazardous Wastes

3.5.1 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 CERCLA and the 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 Clean Water Act (CWA) Section 307(a) and Section 311(b)(2)(A), CERCLA Section 102, Clean Air Act Section 112, and Toxic Substances Control Act (TSCA) Section 7. 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.

For purposes of analysis, this section includes hazardous substances; hazardous wastes, including waste oils and biomedical waste; petroleum, oil, and lubricants (POL); lead; asbestos; polychlorinated biphenyls (PCB); pesticides; herbicides; radon; mold; military munitions and MEC; radioactive materials; and per- and polyfluoroalkyl substances (PFAS). The Army maintains updated safety data sheets for all hazardous substances used in accordance with the Chemical Reporting: Community Right-to-Know regulations (40 CFR Part 370).

Military munitions [defined in 10 U.S.C. Section 101(e)(4)] includes 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 § 179.3, 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 munitions constituents (MC) (e.g., TNT, RDX), as defined in 10 U.S.C. 2710(e)(3), present in high enough concentrations to pose an explosive hazard.~~MEC consists of the following:~~

~~**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.~~

~~**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 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).~~

3.5.2 Regulatory Framework

Regulations are enacted to manage hazardous substances and streamline hazardous waste management. The Army is committed to environmental stewardship and protection and adheres to regulations including, but not limited to, DoDI 6050.05, *Hazard Communication Program*; CERCLA; and RCRA. The regulatory framework pertinent to PTA for potential impacts is discussed in the following subsection.

CERCLA, 42 U.S.C. Section 9601 *et seq*. (1980) [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. 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, remedial design/remedial action, and post construction completion.

The State provides regulations for the handing of hazardous waste under HRS Chapter 342J, along with related implementing rules. The hazardous waste program of the State is preventative, supporting education about hazardous waste and its reduction and recycling, as well as regulatory guidance.

CERCLA regulations are found within the National Oil and Hazardous Substances Pollution Contingency Plan (National Contingency Plan), 40 CFR Part 300, which applies to cleanup response actions taken pursuant to CERCLA and Hazardous Substances Spill Prevention under Section 311 of the CWA, as amended. The National Contingency Plan provides the organizational structure and procedure for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants.

HRS Section 128D-7, State Contingency Plan, ensures the State complies with the National Contingency Plan. The Oil Pollution Prevention Regulation, 40 CFR Part 112, addresses specific requirements and provisions for the preparation of Spill Prevention, Control, and Countermeasures Plans (SPCCPs)~~ Plans~~. The current response actions as described in the U.S. Army Corps of Engineers (USACE) SPCC-P~~Plan~~, which is applicable to federal military installations in Hawai‘i, and a site-specific SPCCP ~~Plan~~ for PTA are applicable to the State-owned land and are considered appropriate and reasonable for effective response actions (USAG-HI, 2012; USAG-PTA, 2018a).

Title III of SARA authorized the Emergency Planning and Community Right-to-Know Act, 42 U.S.C. Section 11001 *et seq*. (1986). This act was designed to help local communities protect public health, safety, and the environment from chemical hazards.

The *Pollution Prevention Act*, 42 U.S.C. Section 13101 *et seq.*, is a national policy to reduce or eliminate waste generation at the source whenever feasible.

RCRA, 42 U.S.C. Section 6901 *et seq*. (1976), gives the ~~U.S. Environmental Protection Agency (~~USEPA~~)~~ the authority to control hazardous waste from cradle to grave. Subtitle C of RCRA establishes guidelines for the generation, transportation, treatment, storage, and disposal of hazardous wastes. Subtitle I of RCRA governs the storage of materials in underground storage tanks (UST), including the storage of unused products (including gasoline) and waste. The determination of when military munitions become a waste, for purposes of regulation, is addressed in the Military Munitions Rule, which also amends regulations regarding emergency responses involving military and nonmilitary munitions and explosives.~~ As an operational range, PTA currently is subject to the Military Munitions Rule.~~

RCRA, 40 CFR Parts 260 through 273, regulates hazardous waste identification, classification, generation, management, and disposal. The State equivalents are HAR Chapters 11-260.1 to 279.1, Hazardous Waste Management Provisions, which are equivalent to, or more stringent than, the federal program.

HRS Chapter 342L, Underground Storage Tanks, and its implementing rules in HAR Chapter 11-280.1, Underground Storage Tanks, regulate compliance with USTs containing petroleum or other substances identified by DOH. The regulations govern inspection, permitting, operations, compliance, recordkeeping, and maintenance of publicly available records of UST locations and any violations associated with regulated USTs.

The TSCA, 15 U.S.C. Section 2601 *et seq*. (1976), provides USEPA with authority to implement reporting, record keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. The TSCA, 40 CFR Parts 700–799, gives USEPA comprehensive authority to regulate any chemical substance whose manufacture, processing, distribution in commerce, use, or disposal may present an unreasonable risk of injury to health or the environment. Federal facilities are affected by regulations under TSCA because they address the handling and disposal of substances regulated under TSCA and the remediation of asbestos and radon.

The Defense Environmental Restoration Program was formally established by Congress in 1986 to provide for the cleanup of DoD property ~~at active installations and formerly used defense sites~~ throughout the United States and its territories under CERCLA. The two restoration programs under the Defense Environmental Restoration Program are the Environmental Restoration Program and the Military Munitions Response Program. The Environmental Restoration Program addresses contaminated sites, while the Military Munitions Response Program addresses closed military ranges and other sites suspected or known to contain MEC ~~(UXO, DMM, or MC)~~.

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 Defense to be a range and has not been put to a new use that is incompatible with range activities.

The entirety of the State-owned land, 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 Military Munitions Response Program, CERCLA, and the terms of the lease. 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 under USAG-HI's and USAG-PTA's SOPs.

EO 12088, *Federal Compliance with Pollution Control Standards* (43 FR 47707), requires all federal agencies to comply with environmental laws and fully cooperate with USEPA, state, interstate, and local agencies to prevent, control, and abate environmental pollution.

The *Federal Hazardous Materials Transportation Act*, 49 U.S.C. Section 5101 *et seq*., gives HDOT authority to regulate shipments of hazardous substances by air, sea, highway, or rail. The HDOT Hazardous Materials Program administers the regulations relating to the transporting of hazardous materials through areas under HDOT's control.

The Army uses federal USEPA ~~Regional Screening Levels (~~RSLs~~)~~ and State DOH Environmental Action Levels (EAL) for screening concentrations of contaminants in soil, soil gas, and groundwater that are used in decision-making (DOH-EMD, 2017; USEPA, 2020a). The RSLs are contaminant concentration levels established by USEPA to evaluate contaminated sites that are on the National Priorities List or are declared remedial sites under CERCLA or RCRA. They are used for screening and initial site cleanup and are not legally enforceable standards but instead provide long-term targets to be used to analyze different remediation techniques and alternatives. The Army uses the RSLs for industrial soil and drinking water and DOH EALs for sites greater than 150 meters from surface water and where groundwater is a current or potential drinking water resource to establish a basis of comparison for the concentrations of contaminants observed on the training ranges.

The USEPA RSL provides the screening level calculation tool to assist those involved in decision-making concerning CERCLA hazardous waste sites and to determine whether levels of contamination found at a site may warrant further investigation or site cleanup, or whether no further investigation or action may be required (USEPA, 2020a). ~~The Military Munitions Rule and DoD Explosives Safety Board (DDESB) do not impose the regulatory requirements of RCRA Subtitle C on operational military ranges. Specifically, military munitions as they relate to solid waste and their intended use, are not discarded, not solid wastes under RCRA's Subtitle C regulations, and consequently not regulated as hazardous waste. On the other~~

~~hand, if military munitions are used or fired, land off-range, and are not promptly rendered safe or retrieved, they would be a solid waste and potentially subject to cleanup authorities under either CERCLA or RCRA corrective actions.~~

HRS Chapter 342P, Asbestos and Lead, and its implementing rules in HAR Chapter 11-501, Asbestos Requirements; HAR Chapter 11-502, Asbestos Containing Materials in Schools; HAR Chapter 11-503, Fees for Asbestos Removal and Certification; and HRS Chapter 11-504, Asbestos Abatement Certification Program, regulate the management of asbestos-containing material (ACM), and its implementing rules in HAR Chapter 11-41, Lead-Based Paint Activities, regulate the management of lead-based paint (LBP). HRS Chapter 342P and these implementing rules also establish rules to control and prohibit asbestos pollution and LBP hazards, and regulate asbestos and lead abatement for the State.

AR 200–1, *Environmental Protection and Enhancement*, governs the use, transport, and disposal of all hazardous substances and regulated waste by military or civilian personnel and on-post tenants and contractors at all Army facilities. Army Pamphlet 710-7, *Hazardous Material Management Program*, establishes the standard Army practices for the centralized control and management of hazardous substances. USAG-HI adheres to USAG-HI Regulation 200-4, *Installation Hazardous Waste Management Plan*, which provides plans and procedures for handling, storing, and disposal of hazardous substances and hazardous wastes on USAG-HI installations.

Army Pamphlet 385-24, *The Army Radiation Safety Program*, implements AR 385-10, *The Army Safety Program*, which prescribes radiation safety policies, requires Army organizations to develop management and quality control processes to control and mitigate radiation hazards associated with Army activities and equipment, and ensures that exposure to ionizing radiation is kept as low as reasonably possible.

The DA Memo for *Army Environmental Per- and Polyfluoroalkyl Substances (PFAS) Policy* (DA, 2021a) established policy for the appropriate approaches to identify, assess, and address DoD releases of PFAS that impact drinking water supplies, both on and off installations.

The DA Memo for *Response and Reporting of Aqueous Film Forming Foam Usage, and Accidental Releases/Spills on Military Installations and National Guard Facilities* (DoD-OSD, 2022) establishes policy until suitable aqueous film forming foam (AFFF) replacements are identified to ensure consistent actions are taken when responding to an allowable use or accidental release of AFFF on military installations.

All training on the State-owned land adheres to procedures and requirements in USARHAW Regulation 350-19, ~~*Installations*~~ *Ranges and Training Areas*, ~~the~~ USAG-PTA *External Standard Operating Procedures*, *Pōhakuloa Training Area Range Operations Standing Operating Procedures,* and the 1964 lease.

3.5.3 Region of Influence

The ROI for hazardous substances and hazardous wastes is the area on and immediately surrounding the State-owned land, the impact area (U.S. Government-owned land) to the south due to the firing of military munitions from the State-owned land into the impact area, and transportation corridors and disposal areas for hazardous substances and hazardous wastes associated with ongoing activities on the State-owned land. 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.

3.5.4 Existing Conditions

Guidance and procedures on fuel, oil, and hazardous substance and waste storage and handling at USAG-HI installations, including PTA, are managed by USAG-HI and USAG-PTA SPCCPs ~~Plans~~ (USAG-HI, 2012; USAG-PTA, 2018a). The USAG-PTA *External Standard Operating Procedures* provides guidance for spill plans, storage and usage of POLs, refueling procedures, and the usage of spill kits (USAG-PTA, 2018a). USAG-HI personnel that perform tasks involving the handling of oil and hazardous materials are trained and ~~adequately~~ supervised under the Environmental Compliance Officer training and inspection program.

The Army trucks hazardous materials, ~~substances, including, but not limited to, pesticides, herbicides,~~ POLs, and military munitions~~,~~ from Kawaihae Harbor to PTA and trucks used petroleum products, used hazardous materials, and hazardous wastes to either Hilo or Kawaihae Harbor for shipping off-island to the U.S. mainland or other areas for recycling, reuse, or disposal, as necessary, in accordance with federal and state regulations.

The 2017 Phase I ECOP identified the following sites on or near the State-owned land as having potential to have hazardous substances or petroleum products in, on, or at the property (1) due to release to the environment, (2) under conditions indicative of a release to the environment, or (3) under conditions that pose a material threat of a future release to the environment (**Figure 3-10**) (USACE-POH & USAG-HI, 2017a); the TA(s) wherein the listed feature is located is indicated in parentheses:

- Actively used sites on State-owned land:
  - Aboveground storage tank (AST) (at the boundary of TAs ~~4 and~~ 5 and 6; further discussed in **Section 3.5.4.1**)
  - BAX Target V-10 (TAs 7 and 8; further discussed in **Section 3.5.4.3**)
  - FPs (further discussed in **Section 3.5.4.11**)
- Formerly used sites on State-owned land:
  - Former Target Vehicle Storage Site at FARP 18 (TA 5; further discussed in **Section 3.5.4.1**)
  - Former Debris Pile (TA 21; further discussed in **Section 3.5.4.3**)
  - Former Landfill (POTA-06 on TA 6; further discussed in **Section 3.8.4.3**)
  - Former Bazooka Range, including High Mortar Concentration Area (TA 17; further discussed in **Section 3.5.4.11**)
  - Former Tank Gunnery Range (TA 12; further discussed in **Section 3.5.4.11**)
  - Potential Former Burn Pan (TA 9; further discussed in **Section 3.5.4.11**)
  - Former Davy Crockett Weapon System Range Firing Position (TA 9; further discussed in **Section 3.5.4.12**)
- Sites near but not on State-owned land:
  - Current Burn Pan Area (south of TA 13 on U.S. Government-owned land; further discussed in **Section 3.5.4.3**)

Release mechanisms for potential contamination from training activities may include off-range flow of surface water, erosion, and deposition (via surface water) of soil, and infiltration into groundwater, if SOPs and BMPs are not followed. The Phase II ECOP surface soil sampling concluded that the contaminants detected in site

soils [i.e., antimony, arsenic, cobalt, copper, iron, 1-methylnaphthalene, lead, manganese, naphthalene, selenium, silver, total petroleum hydrocarbons (TPH) as diesel range organics (DRO) and residual range organics, and zirconium] have a low likelihood to become mobilized off-site due to the low rainfall in the area, lack of streams, and absence of a developed drainage system across the State-owned land. The contamination within the above-listed sites is further discussed in the subsections below. The surface contamination detected is also unlikely to infiltrate to the underlying localized perched aquifer and the more regional, deeper, high-level aquifer present at PTA due to the low rainfall in the area and the considerable depth to these groundwater systems, which are 700 and 1,800 feet below ground surface (bgs), respectively (USACE-POH & USAG-HI, 2017b~~a~~). The Phase II ECOP identified potentially complete exposure pathways for human receptors from contaminants within the State-owned land surface soils; while human receptor exposure pathways were identified as unlikely and incomplete for surface water, sediment, and groundwater (USACE-POH & USAG-HI, 2017b). Consequently, the surface soil contamination is unlikely to impact public health.

In 2013, the PTA-2 borehole was drilled within the PTA Cantonment to investigate the subsurface hydrogeologic conditions of the Saddle area. The PTA-2 borehole encountered the localized perched aquifer and the regional, deeper, high-level aquifer. A groundwater sample was collected from the deeper, high-level aquifer. None of the analytes tested in the groundwater sample, including organic compounds, organic chemicals, microbiological constituents, and radiochemical parameters, exceeded the laboratory method detection limits, which indicates PTA activities have not impacted this aquifer. Laboratory analysis of the groundwater sample did not identify any COCs that would preclude its use as a drinking water source. Carbon-14 age dating of the groundwater sample yielded an age of 5,000 years, which supports the hypothesis that minimal direct recharge occurs at this aquifer from infiltration of rain. A groundwater sample was not collected from the perched aquifer due to its slow recovery from being an unstable formation; however, there is reason to expect that the perched aquifer has somewhat better water quality (e.g., lower sulfate) than the deeper, high-level aquifer (Thomas, 2019; Pierce & Thomas, 2009). See **Section 3.9.4** for additional information on the PTA-2 borehole.

DLNR has implemented the COMP (see **Appendix G**), which requires that DLNR inspect Army compliance with the lease. Site visits are occurring, and the Army has received no corrective action requirements from the site visits (DLNR, 2014; DLNR, 2015a; DLNR, 2022; DLNR, 2023).

Figure 3-10: Sites Identified in the Environmental Condition of Property

3.5.4.1 Petroleum, Oils, and Lubricants

POLs used within the State-owned land include engine fuels (gasoline, diesel, and jet fuel), motor oils, and lubricants. Fuel is brought onto the State-owned land, as needed, with portable secondary containment (USACE-POH & USAG-HI, 2017a). Vehicles on the State-owned land that are not used for transportation are empty shells for training purposes. POL wastes are collected and temporarily stored at the Cantonment within secondary containment for recycling per AR 200-1 and USAG-HI Regulation 200-4.

All refueling operations on PTA use mobile refuelers and fuel storage tanks/bladders. Mobile refuelers and fuel storage tank trucks/bladders (with more than 55-gallon capacity) support the refueling of military vehicles and aircraft and are operated at established FARPs during tactical operations and exercises.

FARP 18 (located on TA 5), encompasses four FARP points and allows for rapid re-fueling and re-arming of helicopters and tilt-rotor aircraft during training~~ (USACE-POH & USAG-HI, 2017a)~~. No fuel is permanently stored within the State-owned land as fuel is brought in, as needed, and stored within portable secondary containment (USACE-POH & USAG-HI, 2017a). In 2017, in support of the Phase II ECOP, the Army conducted a preliminary screening within areas of concern of the State-owned land. The preliminary screening included soil sampling at FARP 18 that indicated that concentrations of TPH-DRO and TPH as residual range organics exceeded DOH EALs and/or USEPA Region 9 RSLs and are considered ~~contaminants of concern (~~COCs~~)~~ that potentially pose an unacceptable risk to site users. The TPH contamination was attributed to active training where aircraft refueling operations are performed (USACE-POH & USAG-HI, 2017b).

Storage Tanks

No known USTs are or were previously present within the State-owned land (USACE-POH & USAG-HI, 2017a). One former leaking UST site was identified near the State-owned land. It was located in the Cantonment at the U.S. Army Dining Facility, Building T-186 (DOH UST Identification 9-603074 under Release Identification 970101). The 250-gallon diesel UST was closed under a site cleanup completion/No Further Action in 1994; the DOH issued a Site Cleanup Completed No Further Action status as of December 31, 2001 (DOH-SHWB, 2020). The leaking UST is not anticipated to have an adverse environmental impact on the State-owned land because the source of the contamination has been taken out of service and because of its regulatory status of Site Cleanup Completed No Further Action (USACE-POH & USAG-HI, 2017a).

One 140-gallon diesel AST (PTA601-1) is located within the State-owned land. It is adjacent to Building 601, Emergency Generator Building (located at the boundary of TAs ~~4 and~~ 5 and 6) (DOH & USEPA, 2019; USACE-POH & USAG-HI, 2017a). The AST is located on top of a four-sided, gravel-filled, open-bottomed, concrete berm (USACE-POH & USAG-HI, 2017b). During the 2017 sampling effort for the Phase II ECOP, the TPH-DRO Exposure Point Concentration (EPC) sample collected around the AST inside the enclosure fence line exceeded the DOH EALs for Leaching and Groundwater Protection; however, the result was below the DOH EAL for direct exposure and there are no established USEPA preliminary remediation goals for TPH-DRO for either direct exposure scenarios or protection of groundwater. Because direct exposure pathways for groundwater are considered incomplete within the State-owned land, an EPC exceedance of the DOH EALs for protection of groundwater was not considered to pose an unacceptable risk to human health~~ (USACE-POH & USAG-HI, 2017b)~~. Based on this result, TPH-DRO is not a COC at the sampled location (USACE-POH & USAG-HI, 2017b).

A 100- to 200-gallon fuel day tank for a generator is located on a concrete pad within the gravel parking lot of the BAX (on TAs 7 and 8). The day tank has secondary containment and was installed in 2012 (USACE-POH & USAG-HI, 2017a).

Washracks, Sediment Basins, and Oil-Water Separators

Washracks, sediment basins, and oil-water separators are used on PTA to separate oil, fuel, and grease from water using gravity because these substances have a specific gravity that is lower than that of water (e.g., gasoline floats on water). No washracks, sediment basins, or oil-water separators are within the State-owned land (USACE-POH & USAG-HI, 2017a).

Convoys of Military Vehicles

Tactical military vehicle convoys traveling onto or off USAG-HI installations are equipped with spill recovery equipment and supplies to respond to small oil, radiator, or hydraulic fluid leaks. At a minimum, supplies include drip pans, absorbent pads, socks/booms, granular or other loose absorbent, durable plastic bags, a broom, a shovel, and containers for the used absorbent (USACE-POH & USAG-HI, 2017a).

Drum Storage

New and used POLs are stored in 55-gallon and smaller drums located throughout the installation including the State-owned land (e.g., FARP 18). Generally, only containers of 55 gallons or greater are required to have secondary containment; however, it is the USAG-HI policy to store single-wall containers in secondary containment or on containment pallets where possible. Typically, new petroleum products are issued to units in containers of five gallons or less; however, some maintenance bays also have a few 55-gallon drums of new material (USAG-HI, 2012).

Motor Pool Complexes and Maintenance Facilities

Motor Pool Complexes provide storage and maintenance for tactical, construction, and utility vehicles as well as associated equipment such as trailers used by Army and USAG-HI activities. Other field maintenance facilities maintain associated equipment such as fuel bladders and power generators or perform tasks such as jet engine testing and painting that are outside the scope of Motor Pool Complexes maintenance (USAG-HI, 2012). POLs and other chemical products used to maintain the vehicles and other equipment are stored at these maintenance shops. Maintenance at various levels includes fluid changes, component replacement, and technical inspections. Used POLs and chemical products are stored at PTA and collected for disposal at regular intervals (USAG-HI, 2012).

Several maintenance facilities are located within the State-owned land including at the BAX Complex within TAs 7 and 8, FARP 18 on TA 5, and Cooper Air Strip (USAG-HI, 2012). The maintenance of moving target equipment is conducted at the BAX maintenance building, the draining of fluids from target vehicles is conducted within FARP 18, and the maintenance of unmanned aircraft is conducted at Cooper Air Strip (USACE-POH & USAG-HI, 2017a).

3.5.4.2 Hazardous Waste Storage

There are ~~limited temporary~~no hazardous waste storage facilities ~~for hazardous wastes~~ on the State-owned land. Hazardous wastes are collected by the PTA Directorate of Public Works (DPW) Environmental

Compliance office and stored at the Cantonment, which is on U.S. Government-owned land (USACE-POH & USAG-HI, 2017a). Used hazardous substances generated within the State-owned land are limited to used batteries, petroleum products, and vehicle maintenance fluids. If a spill occurs, the contaminated soils are immediately removed and stored in appropriate containers at the Cantonment for off-site disposal. PTA has an actively managed environmental compliance office. Staff identify, track, and document hazardous wastes as well as ensure proper disposal of hazardous wastes.

3.5.4.3 Other Contaminated Areas of Concern

Current Burn Pan Area (South of TA 13; adjacent to but not on State-owned land)

The current burn pan is within PTA immediately south of TA 13 along the southern boundary of the State-owned land (i.e., adjacent to but not on State-owned land). The burn pan is a low-lying rectangular-shaped area located on a graded ʻaʻa lava flow. The burn pan has been in operation since the late 1990s/early 2000s. Military units dispose of excess propellant bags/increments incidental to artillery firing training through on-site powder burns at the completion of training. During the 2017 Phase II ECOP sampling, naphthalene and copper EPC results from soil samples collected in this area exceeded the USEPA RSLs for Risk-Based Soil Screening Level; however, none of these metals are COCs on the basis of this screening level exceedance because the pathway for leaching to groundwater is considered incomplete within the State-owned land (USACE-POH & USAG-HI, 2017b). Additionally, the EPCs for naphthalene and copper are below the DOH EALs for the protection of groundwater.

Former Debris Pile (TA 21)

Historically, metals, small arms casings, and miscellaneous debris were observed at the site that was attributed to being dumped from the adjacent road embankment (USACE-POH & USAG-HI, 2017b). The majority of the waste has been removed and the area has evidence of site grading activities being performed. The area is primarily lava flows (pahoehoe) and crushed lava. There is little to no soil or vegetation present. During the 2017 Phase II ECOP sampling, naphthalene and copper EPC results from soil samples collected in this area exceeded the USEPA RSLs for Risk-Based Soil Screening Level; however, none of these metals are COCs on the basis of this screening level exceedance because the pathway for leaching to groundwater is considered incomplete within the State-owned land (USACE-POH & USAG-HI, 2017b). Additionally, the EPCs for naphthalene and copper are below the DOH EALs for the protection of groundwater.

Battle Area Complex V-10 (TAs 7 and 8)

The BAX V-10 is located at the boundaries of TAs 7 and 8 and contains approximately 115 active target areas that are actively used for practice. The BAX was constructed within the past 13 years and consists of a graded gravel roadway to a series of automated target areas. The BAX V-10 is used for aerial target practice for helicopter gunships. Soil samples collected from the BAX Target V-10 area contained concentrations of COCs (antimony, lead, and zirconium) that potentially pose unacceptable risks to site users (USACE-POH & USAG-HI, 2017b). Antimony concentrations exceeded the DOH Direct Exposure EAL for unrestricted land use; lead concentrations exceeded the DOH Direct Exposure EAL for unrestricted, commercial/industrial, and construction/trench worker scenarios for direct contact to soil, USEPA Residential and Commercial/Industrial RSLs, and the DOH Tier 1 EAL for gross contamination for unrestricted land use; and zirconium concentrations exceeded the EPA direct contact RSL for residential soil. The arid conditions, lack of perennial or intermittent streams, depth to groundwater, and the

relatively conservative models used to establish the screening levels limit the groundwater pathway. These site conditions produce a low potential for contaminant mobilization via leaching and subsequent migration to a drinking water source that would be consumed by a receptor. The risk posed by the COCs is through a direct exposure pathway, and the COCs are unlikely to mobilize off-site. These compounds are not likely to become a larger regional issue, are generally consistent with those associated with small Army training areas, and tend to remain localized (particularly in arid environments).

3.5.4.4 Pesticides and Herbicides

The DoD has historically applied pesticides around the base of concrete pads to prevent insect infestation to structures. There are few, if any, older permanent structures within the State-owned land. The majority of buildings were constructed in the last 20 years, so there is a lower chance that pesticides were used around these buildings. Pesticides at PTA are managed by the DPW in accordance with the *USAG-HI IPMP* and are stored within the U.S. Government-owned land (USAG-HI, 2014). No pesticide mixing or storage facilities are located on the State-owned land.

Herbicides have been used to control invasive species at PTA within the endangered species critical habitat areas located on TAs 18 through 22 (USACE-POH & USAG-HI, 2017a).

Fuel breaks, fence lines, and ASR locations may also have been sprayed with herbicide (USACE-POH & USAG-HI, 2017a). An ASR is defined as a 100-meter buffer around all known individual plants at sites selected for management and may be fenced. Existing roads are used for fuel breaks and are established along the western border of TAs 20 and 22, along the eastern border of TA 18, and along Kīpuka Road in TA 18.

The PTA NRP staff are required to follow state and federal regulations and label directions for all pesticide and herbicide applications. Restricted pesticides are used by a certified pesticide applicator. The PTA NRP also produces a monitoring and spraying program for each threat category and maintains copies of monitoring and spraying schedules, location of treatment, plant species treated, threat/pest treated, last time sprayed, and chemicals used for Army review (USAG-HI & USARPAC, 2013).

3.5.4.5 Hazardous Waste

No hazardous waste is allowed to be disposed of within State-owned land. Hazardous waste, if any, is collected by PTA DPW Environmental staff and stored in the approved, maintained, designated hazardous waste storage unit on the Cantonment before being containerized and removed from the facility for disposal off-island. PTA is listed as a Conditionally Exempt Small Quantity Generator under Site ID HIR000000703 (USEPA, 2021a). Any medical waste generated from ongoing activities is handled in accordance with USAG-HI Policy, *Management of Class VII Medical Supply Items* (USAG-HI, 2018b)

3.5.4.6 Asbestos-Containing Material

Only one permanent structure on the State-owned land was constructed prior to the phase-out of ACMs (roughly 1973–1990)—a small single-story, poured concrete guard shack (located on TA 6) that is estimated to have been constructed in the late 1940s to 1950s. Construction of this structure predates the lease (USACE-POH & USAG-HI, 2017a). Because the guard shack is constructed of poured concrete, which is not a type of concrete known to have been mixed with asbestos fibers, it is not expected to contain asbestos. The other structures on the State-owned land were constructed between 1984 and 1987.

3.5.4.7 Mold

The low average rainfall in the area prohibits mold growth. There are few permanent structures on the State-owned land. The Phase I ECOP evaluation did not identify any visible mold on the current structures within the State-owned land.

3.5.4.8 Polychlorinated Biphenyls

Oil-cooled, pad-mounted electrical transformers are in use throughout the installation. Pad-mounted transformers typically have a coolant capacity ranging from 55 up to several hundred gallons. Transformers are cooled with a non-PCB mineral oil solution. Based on a PCB survey conducted in the early 1990s, no transformers or other equipment containing PCBs were located on the State-owned land (USACE-POH & USAG-HI, 2017a). Two non-PCBs transformers are located on the State-owned land, including the pole-mounted transformer located adjacent to Building 601 (at the boundary of TA 4 and 5), likely installed during the mid-1990s, and the non-PCB pad-mounted transformer located in the BAX gravel parking lot (at the boundary of TA 7 and 8) that was installed in 2012.

Typically, discharges from pad-mounted transformers are small quantities, resulting from slow corrosion of transformer components due to weather exposure. Slow discharges tend to be absorbed rapidly into the soil surrounding the transformer pad and have minimal potential of entering waterways or storm drainage systems. Catastrophic failure and release of the full contents of a transformer are likely only in the event of a vehicular collision; however, most transformers are located away from roadways or are protected by collision obstacles or curbing.

Aside from a few exceptions, transformers are not equipped with secondary containment structures, dikes, or berms. Because early detection is the key to minimizing potential environmental pollution caused by leaking transformers, USAG-HI conducts regular inspections of all pad-mounted transformers (USAG-HI, 2012).

3.5.4.9 Lead

Lead sources can include LBP and military munitions. Lead was a major ingredient in house paint used throughout the country for many years. LBP is defined as any paint or surface coating that contains more than 0.5 percent lead by weight. Buildings constructed before 1978 are considered a risk for LBP. One structure on the State-owned land was constructed prior to 1978; a single-story, poured concrete wall guard shack (located on TA 6) constructed in the late 1940s to 1950s, prior to the lease.

Lead associated with military munitions is discussed in **Section 3.5.4.11**.

3.5.4.10 Radon

Radon is a naturally occurring, slightly radioactive gas that is produced by the decay of rock containing uranium and radium. Radon collects in rooms that are in contact with the ground, like basements (USEPA, 2021b). Radon occurs in low concentrations in the Hawaiian Islands (Zone 3 – predicted average indoor radon screening levels less than two picocuries per liter) and is not considered a specific risk to this area (USEPA, 2021c).

3.5.4.11 Military Munitions and Munitions and Explosives of Concern

Military munitions and MEC at PTA are managed in accordance with DoD Manual 4140.72, *Management of Material Potentially Presenting an Explosive Hazard*. DoD Manual 4140.72 provides guidance for the safe management of military munitions and munitions debris, range-related debris, military munitions containers and packaging material, military munitions-related facilities and associated equipment, and other debris.

Military munitions at PTA are managed via the ASP and the Training Support System, which are licensed by the DoD Explosives Safety Board (DDESB) and sited and built to meet regulatory requirements for net explosive weight, compatibility, and quantity-distance for ammunition storage and handling. The ASP, located on State-owned land, is a safe and secure storage facility that receives, stores, issues, and maintains accountability of ammunition at PTA. Military munitions are brought to PTA from O'ahu for training exercises. The Army trucks the military munitions from Kawaihae Harbor to PTA in accordance with federal and state regulations. No military munitions are stored permanently on PTA. The ASP is critical to support training operations at PTA. The Training Support System sites within the State-owned land consist of two AHAs and two FARPs. AHAs are temporary sites close to the range or TA where military munitions are issued and turned-in by the individual or crew that will use them. AHAs are licensed and must comply with regulatory requirements. FARPs are used to arm and fuel helicopters and tilt-rotor aircraft during training operations. Locations of the ASP and AHAs are not disclosed in this EIS for security reasons.

Approximately 1.7 million rounds of military munitions are fired at PTA annually. Approximately 95 percent of the military munitions expended at PTA are small arms (9 millimeters or less in diameter), of which 10 percent are blanks. For larger munitions, (n=66,677), 79 percent (n=52,627) are inert (i.e., have no explosive component). Live-fire exercises occur at TAs, FPs, and ranges across the State-owned land. The firing of military munitions into the State-owned land is limited to non-dudding (non-exploding) ammunition that is 30 millimeters or less in diameter~~, small arms (30 millimeter or less) ammunition~~ in Parcel A (DLNR, 1964). Pyrotechnics and simulators are also used within approved portions of the State-owned land. Other military munitions (e.g., mortar and artillery rounds) are fired from the State-owned land into the impact area, which is on U.S. Government-owned land. The *Pohakuloa Training Area Range Operations Standard Operating Procedures* and the USAG-PTA *External Standard Operating Procedures* contain requirements for range operations, maintenance, and clearing. Following training activities, soldiers are required to collect ~~casings from spent rounds~~spent munitions items, wood boxes, and other ~~solid waste debris~~trash generated during live-fire training and return them to the AHAs and ASP for recycling or disposal, as appropriate. Range Operations personnel oversee the ~~cleanup~~ management of ranges when the soldiers have completed their training. Military personnel endeavor to remove or deactivate all live and blank ammunition upon completion of a training exercise and prior to entry by the public in compliance with the lease and *Pohakuloa Training Area Range Operations Standard Operating Procedures*. Additionally, military personnel remove ~~solid waste~~ spent munitions items, wood boxes, and other trash prior to departing a training area or range facility in accordance with *Pohakuloa Training Area Range Operations Standard Operating Procedures* and the USAG-PTA *External Standard Operating Procedures*. Despite ~~cleanup~~ range management efforts, erratic bullets and gun components have been found on the TAs, FPs, and ranges.

Military munitions use at PTA predates the current lease and goes back as early as World War II. The types of military munitions that have been used on the State-owned land include small-caliber, large-caliber,

pyrotechnics, obscurants, recoilless rifle projectiles, rifle grenades, rockets, and mortars~~,~~ and artillery (FPs only) (USACE-POH & USAG-HI, 2017a). Historic use of these munitions, prior to the current lease's range management requirements, may have left behind MEC. Because the State-owned land is still an operational range, a full assessment of MEC that may be present has not been conducted.

When suspected UXO is found in a training area and determined to present an imminent health and safety concern, the explosive ordnance disposal team investigates it to identify the item and decide whether it can be removed or must be destroyed in place. If the UXO can be removed, it is moved to Range 8 for destruction. If the UXO cannot be removed, USAG-PTA cultural resources staff determine if protective measures are needed to protect vulnerable aspects of historic properties. If so, those protective measures are implemented before the UXO is destroyed in place (DA, 2018b).

The past and current use of military munitions potentially leaves behind MCs that may represent a potential threat to soil and groundwater quality. Lead is the primary COC from small-caliber munitions, while copper, antimony, zinc, and tungsten are other contaminants commonly associated with small-caliber munitions. As noted in **Section 3.3.4**, soils at outdoor firing ranges, particularly soil berms, can have lead concentrations above the USEPA residential soil RSL, and factors that affect soil lead concentrations at outdoor firing ranges include range use, bullet lead content, and bullet abrasion. Additionally, antimony contamination is common in soils at outdoor firing ranges (Olive, 2006; Sanderson et al., 2018). The high explosives used in medium- and large-caliber munitions may result in the release of compounds such as cyclotrimethylenetrinitramine, cyclotetramethylenetetranitramine, and trinitrotoluene, and the propellants for these munitions may release 2,4-dinitrotoluene, 2,6-dinitrotoluene, and nitroglycerin. Perchlorate compounds are soluble in water and commonly released from the use of pyrotechnics, and white phosphorus is commonly released from many obscurants. Pentaerythritoltetranitrate is a component of detonation cords and is possible on ranges where demolition training has been conducted (USACE-POH & USAG-HI, 2017a). Soil sampling to determine the presence or absence of MCs has not been performed at all TAs, FPs, and ranges on the State-owned land due to the impracticality of sampling every such location on an approximately 23,000-acre area.

Mobilization of MCs typically occurs from surface water flow but can also occur from wildfires. ~~The s~~Surface water ~~carries the~~ can carry contaminants onto nearby soils where soil erosion and deposition further extend the range of the contamination. Contaminants in surface water also can infiltrate to groundwater. Wildfires can exacerbate the spread of contaminants by reducing vegetative cover to make soils more susceptible to erosion and by deposition of smoke-carried contaminants. As noted in **Section 3.3.4**, factors affecting lead migration at outdoor shooting ranges include weathering, groundwater depth, and soil characteristics such as pH, phosphorus content, clay/organic matter content, and cation exchange capacity. Additionally, the transformation of metallic lead fragments into secondary lead minerals may increase lead migration (Fayiga and Saha, 2016). There are limited surface water and groundwater pathways on PTA because of low rainfall, a lack of perennial streams, and the considerable depth to the groundwater aquifer; therefore, the migration of MCs is limited (USACE-POH & USAG-HI, 2017a).

As stated previously, military munitions use occurs on TAs, FPs, and ranges; therefore, these locations have the potential to contain MEC. The 2017 Phase I ECOP ~~for the State-owned land~~ identified the FPs within TAs 9, 12, and 13 as generally having received the greatest use and having the greatest potential to contain MEC (USACE-POH & USAG-HI, 2017a). The Phase II ECOP soil sampling did not result in

exceedances of applicable screening criteria for the FPs (USACE-POH & USAG-HI, 2017b). ~~Soil sampling has not been performed on all the TAs, FPs, and ranges to determine the presence or absence of MCs.~~

The 2017 Phase I ECOP for the State-owned land also identified three former ranges of special significance for MEC. These ranges are a Former Bazooka Range, Former Tank Gunnery Range, and Potential Former Burn Pan. No land use restrictions have been imposed on any of these sites because they remain in use for training activities by the Army and are considered operational ranges, even though live fire is not currently conducted. Each site is shown in **Figure 3-10** and described as follows:

- The Former Bazooka Range, including the High Mortar Concentration Area, is on TA 17 and measures approximately 60 acres. It was labeled on historical maps from 1959 and 1965 as the "Rocket Launcher and Practice Range." The site used a rail-mounted moving target for weapons practice. In 2015, the site underwent ~~a~~ surface-only ~~cleanup action~~ range management activities that removed 71,300 pounds of material documented as safe, 2,000 pounds of range-related debris, and 81 MEC items. The debris was heavily concentrated within an approximately 11-acre central location (USACE-POH & USAESCH, 2016; USACE-POH & USAG-HI, 2017a). Subsurface military munitions at this site have not been addressed. In 2017, surface soil at this site was sampled and analyzed for explosive material and MC metals. Analysis of the soil samples detected concentrations of MC metals above USEPA Region 9 RSLs for Risk-Based Soil Screening for protection of groundwater but below State DOH Tier 1 EALs. The metals were either below background levels or only above USEPA Region 9 RSLs for protection of groundwater. Due to the arid conditions, lack of streams, and depth of groundwater at the site, which creates a low potential for contaminant mobilization via leaching, as well as the lack of groundwater wells and surface water development in the State-owned land, the metals are not considered COCs that potentially pose an unacceptable risk to site users and warrant further investigation. Subsurface soils were not evaluated because historical records and land use did not suggest that subsurface soil impacts have occurred (USACE-POH & USAG-HI, 2017b).
- The Former Tank Gunnery Range is on TA 12 to the north of the MOUT Area. This site was operational as a tank gunnery range in the 1950s and possibly up until the early 1960s based on a 1959 historical map (USACE-POH & USAG-HI, 2017a). There are no records of ~~a cleanup action~~range management activities being performed at this site. In 2017, surface soil at this site was sampled and analyzed for explosive material and MC metals. The soil samples contained no concentrations of these contaminants above USEPA Region 9 RSLs or State DOH Tier 1 EALs. Subsurface soils were not evaluated because historical records and land use did not suggest that subsurface soil impacts have occurred (USACE-POH & USAG-HI, 2017b).
- A Potential Former Burn Pan is on TA 9. This site was identified on a 1959 historical map as an "Impact Area: Infantry and Armor Tactical Exercises Only." A portion of the site was used for cinder mining. Approximately 0.4 acre of the site was used as a burn pan prior to the mid-1990s. A burn pan is an area where excess military munition propellant is ignited for ~~disposal~~treatment. It is unknown what materials were disposed of at this site. In 2017, surface soil at this site was sampled and analyzed for polycyclic aromatic hydrocarbons, explosive material, and MC metals. The soil samples contained concentrations of naphthalene (a polycyclic aromatic hydrocarbon) and copper (a metal) above the USEPA Region 9 RSLs but below State DOH Tier 1 EALs. Additionally, copper is not a concern because the pathway for leaching to groundwater is incomplete due to site conditions and the lack of groundwater wells and surface water development in the State-owned land. Therefore, neither naphthalene nor copper is considered

a COC that potentially poses an unacceptable risk to site users and warrants further investigation. Subsurface soils were not evaluated because historical records and land use did not suggest that subsurface soil impacts have occurred (USACE-POH & USAG-HI, 2017a; USACE-POH & USAG-HI, 2017b).

While all military munitions used on the State-owned land were targeted to an intended destination, it is possible that not all of the military munitions reached their intended destination, and some may have impacted the State-owned land. During the construction of the DKI Highway, subsurface investigations identified MEC including mortars. Therefore, there is a potential for MEC to be found anywhere on the State-owned land because of the DoD's live-fire training at PTA. If MEC is discovered, the Army immediately responds and deactivates and removes the item (USACE-POH & USAG-HI, 2017a).

The DoD and Hawai'i DOH entered into an agreement known as the DoD and State Memorandum of Agreement Cooperative Agreement. It ~~is~~ was applicable from July 1, 2022, through June 30, 2024, and provided~~s~~ compensation to the State for reviews and attending training, workshops, and conferences for DoD environmental restoration projects (DOH & USACE, 2022).

A 2017 study of firing range users concluded that shooting at firing ranges results in the discharge of lead dust and elevated blood lead levels (Laidlaw et al., 2017). Few data exist on blood lead levels for DoD firing range workers; however, airborne concentrations of lead on DoD firing ranges have exceeded the Occupational Safety and Health Administration permissible exposure limit for some job duties, which might lead to increased blood lead levels (NRC, 2012). The DoD implements applicable medical examinations and surveillance programs, including blood lead levels, under DoD Manual 6055.05, *Occupational Medical Examinations: Medical Surveillance and Medical Qualification*.

3.5.4.12 Radioactive Materials

Depleted uranium (DU) is leftover uranium after the fuel and weapons-grade isotopes of the metal are removed during the refinement process. It is 40 percent less radioactive than naturally occurring uranium and emits low-energy alpha particles, which do not penetrate skin (SCHER, 2010).

Current Army and DoD regulations prohibit the use of munitions that contain DU in training (DA, 2011). The only DU-containing/coated munition used at PTA was the Davy Crockett Weapon System M101 spotting round, which the Army used at PTA between 1962 and 1968. The Davy Crockett Weapon System consisted of a 120-millimeter or 155-millimeter recoilless rifle with a range of up to 2.5 miles. The system was capable of firing a nuclear projectile (M388) and a high-explosive filled practice projectile (M390); however, only the high-explosive filled practice projectile (M390) was used at PTA. The high-explosive-filled practice projectile (M390) contained a malleable iron ball for weight and high-explosive material but did not contain DU (USACE-STL, 2007). Before firing the practice projectile, a 20-millimeter spotting round (M101) was fired to aim the weapon system. The spotting round consisted of a nosecone, body, and tailfin. The body of the spotting round was made of a DU alloy. Each spotting round contained approximately 0.5 pound of D38 uranium alloy (92 percent DU and 8 percent molybdenum). The spotting round was a low-velocity projectile designed to produce a small cloud of smoke to mark the point of impact and typically broke into large fragments upon impact, with limited dispersal. It did not produce sub-micron-sized DU particles common with modern DU penetrators used in kinetic energy munitions (e.g., armor-piercing ammunition, anti-armor rounds). The spotting rounds did not aerosolize on impact and did not generate a cloud of DU-rich dust particles. When exposed to the environment for prolonged periods, DU

metal fragments oxidize or "rust" into friable, yellowish-to-blackish-colored particles. These particles are 3 to 6 times denser than soil particles and not easily mobilized by wind. The oxidized particles likely washed into crevices between exposed lava flows where they weakly bonded with iron-rich particles naturally occurring in the soil (NDCEE, 2008; USACE-POH & USAG-HI, 2017a).

The Army performed extensive archival research in 2007 to determine the number of DU-containing/coated munitions used in Hawaiʻi. The research found that only 716 20-millimeter spotting rounds (M101) were allocated to the military for use in Hawaiʻi, and a maximum of 400 of these M101 rounds were fired at PTA based on archival research and field surveys. The M101 rounds were fired at only four ranges at PTA. Of these ranges, only one (i.e., Range 13 on TA 9) is partially on State-owned land; the other three ranges are entirely on U.S. Government-owned land. Each range consisted of a firing location where the projectiles were fired and an impact location where the projectiles impacted. The impact locations have the greatest potential for containing spotting round MEC. The portion of the range partially on State-owned land is the firing location. The impact locations for all four ranges are on U.S. Government-owned land (USDHHS, 2008; USACE-POH & USAG-HI, 2017a).

Numerous testing and surveys of these four ranges have been performed by the Army to identify DU-containing materials. The testing and surveys included soil samples in 2007 and 2008; measurements of radiation levels by helicopter and from the ground in 2008; visual searches for spotting round bodies, DU metal fragments, and pistons associated with the Davy Crockett Weapon System in 2007 and 2008; and dust samples in 2009. The surveys primarily focused on the impact locations, which are entirely on U.S. Government-owned land, because these locations have the greatest potential for DU (HQDA, 2008a; HQDA, 2009; USDHHS, 2008; USACE-POH & USAG-HI, 2017a).

Ten soil samples were collected in 2007 from the perimeter of the impact locations on the four ranges. The samples were taken in places where sediment had accumulated from past runoff events. These samples were analyzed for isotopic uranium by alpha spectrometry and found no indication of DU from the spotting rounds. All of the results were consistent with naturally occurring concentrations of uranium. Most soil types in Hawaiʻi bind uranium to the soil particles, which limits uranium mobility (HQDA, 2008a; USACE-POH & USAG-HI, 2017a).

Radiation surveys were performed in 2008 on the former Davy Crockett Weapon System impact locations to locate DU-containing/coated munitions from the radiation signatures they produce. These surveys measured radiation levels by helicopter and from the ground. The measurements were taken exclusively from the U.S. Government-owned land; no measurements were taken on the State-owned land because the State-owned land does not include any Davy Crockett Weapon System impact locations (HQDA, 2009).

Visual surveys in 2007 and 2008 discovered pistons, fragments of back plate assemblies, an aluminum tailfin, and one intact spotting round on the ranges. The tailfin and intact spotting round were the only two DU-containing materials discovered, and both were found at the impact locations on U.S. Government-owned land. Given the minimal amount of DU-containing materials discovered at PTA compared to other installations where the Davy Crockett Weapon System was used, the visual survey performers hypothesized that some type of range clearance may have occurred. Visual surveys have found no indications of DU-containing materials on the State-owned land, and no radioactive materials are used on the State-owned land (HQDA, 2008a; HQDA, 2009; USDHHS, 2008; USACE-POH & USAG-HI, 2017a).

Given the lack of mobility of the oxidized DU particles, measurable migration of DU to nearby surface water is unlikely (NDCEE, 2008; USARHAW, 2020). The depth to groundwater in the vicinity of PTA is approximately 1,000 feet bgs. Although the PTA area exhibits high soil permeability, the combination of limited precipitation and great depth to groundwater makes it unlikely that any DU that exists on PTA would migrate into the groundwater (IMCOM, 2016).

Fugitive dust downwind of the ranges was suspected to have higher than average levels of uranium. The Army completed a 1-year airborne uranium monitoring program in 2009 to determine if the decay and vaporization of DU fragments has impacted local air quality. The monitoring program collected 210 air samples from three sites upwind and downwind of PTA to provide a basis of comparison. The monitoring program concluded that the DU had not impacted air quality at PTA or in the surrounding area because the total airborne uranium levels in the collected particulate matter samples were within the range of naturally occurring uranium in Hawaiian soils and rock and were several orders of magnitude below the U.S. and international chemical and radiological health guidelines (USACE-POH & USAG-HI, 2010).

The Army performed a series of health and risk assessments from 2008 to 2010 to determine the potential impacts on human health from past use of DU at PTA. Each assessment determined that there are no likely adverse impacts on persons working on or living near PTA from past use of DU. The assessments concluded that off-installation populations would not be affected because the closest populated area is the Waikiʻi Ranch, which is approximately 7 miles from the closest DU ranges. This distance and the restricted access of PTA prevents the general population from exposure. The locations where the spotting rounds were fired from have since reopened for other uses, but DU-containing military munitions are no longer used at PTA (HQDA, 2010; USACE-POH & USAG-HI, 2017a). Per DoDD 4715.11, *Environmental and Explosives Safety Management on Operational Ranges Within the United States*, paragraph 5.4.9.2, high-explosive munitions shall not be fired into the same area as DU (e.g., the impact locations for these four ranges); therefore, the DU impact locations are not disturbed by explosive munitions associated with ongoing activities.

In 2011, the DU health and risk assessment data and analysis were presented to the Nuclear Regulatory Commission (NRC). The NRC issued a license (Number SUC-1593) to the Army in 2013 for possession and management of DU related to former training with the Davy Crockett Weapon System on ranges including those at PTA. The license has been amended four times with the most recent amendment being signed in November 2019. The license covers the entire area of all four ranges (firing locations and impact locations) and does not distinguish between State-owned land and U.S. Government-owned land. Under this license, the Army follows approved Safety and Environmental Radiation Monitoring plans to monitor potential DU migration. The license requires the Army to comply with NRC regulations and standards for protecting the public and the environment from potential radiation and is subject to NRC inspections and periodic reviews. These requirements are meant to ensure the DU will not pose a future health risk. Under the NRC license, the Army can maintain facilities in a safe condition to prevent the unauthorized removal of licensed material. The license requires the Army to post radioactive material warning signs around the perimeter of the impact locations and does not authorize the Army to fire high-explosive munitions into areas containing DU, use DU, or perform ground-disturbing activities on or decommission the DU ranges. The Army retains responsibility for the cleanup ~~and restoration~~ of ~~former training areas~~ closed ranges, and any cleanup or decommissioning of the ranges would require additional review and approval by NRC to ensure that public health and safety would continue to be protected. NRC would review and provide prior approval of site-specific cleanup or decommissioning plans and all other documents associated with

radiation safety and environmental monitoring during any cleanup or decommissioning activity (USARHAW, 2020).

The Army developed a site-specific Environmental Radiation Monitoring Plan for PTA. Due to the lack of surface water features, low rainfall, porous soils, lava substrates, lack of groundwater wells near the DU impact locations, and great depth to groundwater, the Army conducts quarterly sediment sampling within an ephemeral stream to detect any off-installation migration of DU from the use of the Davy Crockett Weapon System. The sediment samples are analyzed for total/isotopic uranium ratio via alpha spectrometry. If the uranium-238/uranium-234 activity ratio were to exceed 3.0, then the Army would notify NRC, reanalyze the sediment sample via inductively coupled plasma-mass spectroscopy, and collect additional sediment samples (IMCOM, 2016). The sediment samples are collected at an area along the boundary of TAs 20 and 22. All sediment samples have exhibited uranium-238/uranium-234 activity ratios of less than 3.0 (IMCOM, 2018).

The DOH concurred in 2010 that the current land use of the four ranges does not present a human health risk to users and off-installation populations from the former use of the Davy Crockett Weapon System (HQDA, 2010).

3.5.4.13 Per- and Polyfluoroalkyl Substances

PFAS substances are emerging contaminants that were used in a variety of materials but are most commonly associated with historic use of AFFF on military installations. The Army has been conducting work under CERCLA at all USAG-HI installations to evaluate whether PFAS-containing materials may have been stored, used, or released at each installation, and to evaluate areas of potential interest that may require further investigation through a Preliminary Assessment / Site Inspection. ~~The Army is in the process of finalizing the Preliminary Assessment / Site Inspection for PTA, and based on information obtained through available records, interviews, and site reconnaissance, no PFAS-containing materials are known or suspected to have been used on the State-owned land.~~The Preliminary Assessment / Site Inspection for PTA identified the Landing Zone Rob helicopter crash site (in TA 1) as the only area of potential interest for PFAS-containing materials within the State-owned land. Response efforts associated with this site included the use of 3,000 gallons of water and 90 gallons of AFFF. Analysis of the four soil samples collected from the helicopter crash site did not detect PFAS-containing materials. Additionally, interviews conducted for the Preliminary Assessment / Site Inspection for PTA identified no specific evidence confirming AFFF was used in response to the other fire responses at PTA, including wildland fire responses (USACE, 2023).

When AFFF must be used for emergency response or when there is an accidental release on a military installation, the military departments are required to treat the release as a spill and follow the existing site-specific SPCCP ~~Plan~~ and procedures to contain and recover the AFFF to the extent practicable; dispose of these materials in coordination with installation environmental staff to minimize releases to the environment; and report the usage as described in the DA Memo for the *Response and Reporting of Aqueous Film Forming Foam Usage, and Accidental Releases/Spills on Military Installations and National Guard Facilities* (DA, 2022).

3.5.4.14 Existing Management Measures

The Army follows SOPs for activities on PTA ranges. These SOPs are outlined in the *Pohakuloa Training Area Range Operations Standard Operating Procedures* and the USAG-PTA *External Standard Operating Procedures*. Both SOPs provide military personnel training at PTA with requirements for range operations, maintenance, and clearing. Specifically, the *Pohakuloa Training Area Range Operations Standard Operating Procedures* identifies the regulations, precautions, responsibilities, and instructions for using, working, or occupation of range facilities and maneuver areas at PTA and includes procedures for range access and scheduling; general range safety and restrictions; digging and excavation requirements; range operations and clearing procedures; air and airborne operations; procedures for use of ~~training areas~~TAs, observation posts, and AHAs; and requirements for special use munitions, artillery, mortars, and burn pan operations. The USAG-PTA *External Standard Operating Procedures* identifies procedures, rules, and restrictions for units training at PTA and includes responsibilities; administrative forms; range operations, maintenance, and clearing; base operations; communications; public works procedures; conservation management restrictions; environmental compliance requirements; digging and excavation requirements; airfield and aircraft operations guidance and requirements; logistics (e.g., fuel and ammunition supply); emergency services; safety requirements (e.g., fire prevention, handling of ammunition and explosives, speed limit); and convoy routes and procedures. **Appendix E** contains further detail on the existing management measures outlined in these SOPs. Compliance with the SOPs is tracked by the PTA Range Control personnel and safety officers in charge. Additionally, PTA uses several checklists that range users must review and sign stating that they understand the requirements for range operations and clearing. The checklists include Range Checklist Procedures, Live-Fire Range Opening Sheet, and Maneuver Training Area Opening Sheet.

Any medical waste generated from ongoing activities is handled in accordance with USAG-HI Policy, *Management of Class VII Medical Supply Items* (USAG-HI, 2018b).

Guidance and procedures for using, storing, handling, and disposing of hazardous substances and hazardous wastes at PTA include USAG-HI and USAG-PTA SPCCPs~~ Plans~~, *USAG-HI IPMP*, and *Installation Hazardous Waste Management Plan* (USAG-HI Regulation 200-4). Procedures for handling MEC (includes UXO) when it could harm historic properties are in the 2018 Section 106 PA for PTA.

3.5.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.5.6** to assess potential significant impacts on the natural, cultural, and human environment due to the use, generation, handling, and disposal of hazardous substances and hazardous 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 in the ROI for the environmental analysis.

The criteria considered to assess whether an alternative 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 Parts 110, 112, 116, and 117 (CWA)] such that existing management plans and procedures are not sufficient to mitigate the risk and additional measures must be established.

- Impact(s) to contaminated sites or the progress of remediation activities to a degree that would require consequential regulatory re-negotiation of selected site remedies or substantial delays to existing remediation plans.
- An increase in the use or generation of hazardous substances and hazardous wastes~~, including military munitions and MEC,~~ to a crucial level such that existing management plans and procedures, waste handling contracts, and disposition alternatives must be substantially altered.
- Exposure of military personnel or the public to areas likely containing MEC or DU.
- Imminent or chronic human health risks associated with hazardous substances and hazardous wastes.

3.5.6 Environmental Analysis

~~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.~~The cleanup and restoration activities for State-owned land not retained would be triggered by and conducted after expiration of the current lease and therefore are not part of the Proposed Action. These activities would be completed in accordance with applicable future cleanup and restoration requirements and standard processes (i.e., requirements and standard processes at the time the activities are initiated). These future cleanup and restoration requirements, standard processes, and associated costs are unknown.

3.5.6.1 Alternative 1: Maximum Retention

Land Retained

Lease Impacts:

***General Hazardous Substances and Hazardous Wastes*.** Under Alternative 1 via lease, no changes in use, generation, handling, or disposal of hazardous substances and hazardous wastes would occur, and no contaminated sites or remediation activities would be impacted; therefore, no new impacts on the environment associated with hazardous substances and hazardous wastes would occur. Continued long-term, minor, adverse impacts on the environment would occur during a new lease from continued use, generation, handling, disposal, and transportation of hazardous substances and hazardous wastes due to ongoing activities within the State-owned land retained, including continued training, continued use of the AST at Building 601, and continued maintenance and repair of U.S. Government-owned utilities throughout the State-owned land, including those in the State-owned land not retained. The Army would continue to truck hazardous substances and POLs from Kawaihae Harbor to PTA and to truck used POLs, used hazardous substances, and hazardous wastes from PTA to either Hilo or Kawaihae Harbor for shipping off-island to the U.S. mainland or other areas for recycling, reuse, or disposal, as necessary, in accordance with federal and state regulations.

The continued long-term, minor, adverse impacts on the environment from pollutant migration due to erosion and runoff from training would have a less than significant impact as stormwater runoff is infrequent and tends to rapidly infiltrate into crevices of the highly permeable lava flows. Due to the depth of groundwater beneath the State-owned land, continued adverse impacts on groundwater infiltrated

from surface water containing pollutants from training would be less than significant. No new adverse impacts increasing the risk of endangerment or exposure to the public or environment would occur.

There are no structures with PCBs on the State-owned land. No structures potentially containing asbestos or LBP would be remodeled or demolished during the lease, thus requiring abatement, within the State-owned land retained because the Proposed Action is a real estate action (i.e., administrative action) that does not include construction, modernization, or changes in ongoing activities in the retained State-owned land. Consequently, there would be no impacts on the environment from PCBs, ACMs, or LBP.

The Army would continue to adhere to federal and state laws and regulations and Army requirements (i.e., AR 200-1 and Army Pamphlet 710-7) and would continue existing management measures on State-owned land retained as described under **Section 3.5.4.14**, which would continue to limit the risks of a spill or release of a hazardous substance; limit adverse impacts on contaminated sites and remediation activities; and manage the use, generation, handling, and disposition of hazardous substances and hazardous wastes. In summary, impacts for State-owned land retained under Alternative 1 via lease would not exceed the capabilities of existing management plans and procedures, waste handling contracts, and disposition alternatives, nor would it require regulatory re-negotiation of selected site remedies or substantially delay existing remediation plans.

Military Munitions and MEC. No new impacts on the environment from military munitions or MEC would occur during a new lease because use and management of military munitions and generation and management of MEC would not change. Continued long-term, minor, adverse impacts on the environment associated with military munitions and MEC would occur from continued transportation of military munitions from Kawaihae Harbor to PTA, storage of military munitions on the State-owned land retained, use of military munitions on the State-owned land retained (including BAX Target V-10 and FPs noted in the 2017 Phase I ECOP), and generation of MEC on the State-owned land retained and the impact area from firing military munitions from the State-owned land retained into the impact area during a new lease.

Implementation of Alternative 1 via lease would enable the continuation of ongoing live-fire training exercises on the State-owned land retained throughout the term of a new lease. These exercises would continue to be performed in accordance with range operations procedures. The types, quantities, storage, and expenditures of military munitions on the State-owned land retained would not change.

Military munitions use during training would continue to have a minor potential to impact soil and groundwater quality. Potential lead and other contaminants associated with the use of military munitions would continue to accumulate in soils at FPs and ranges, and surface water flow and wildfires would continue to represent potential pathways for contaminant mobilization. ~~b~~Because there are limited surface water and groundwater pathways on the State-owned land and impact area, which is U.S. Government-owned land, and the Army would continue to follow range ~~debris cleanup~~management procedures, the risk of contaminants mobilizing is limited.

The State-owned land retained would remain an operational range for the foreseeable future, deferring site restoration under the Military Munitions Response Program until after range closure. The Army would continue to manage military munitions and MEC on the roadways and State-owned land retained, including the deactivation and removal of UXO, by adhering to federal and state laws and regulations; DoD Manual 4140.72; *The Army Sustainable Range Program*; the 2018 Section 106 PA for PTA; and existing

management measures as described in **Section 3.5.4.14**. No military personnel or members of the public would be exposed to areas likely containing MEC. The Army would continue removing or deactivating live and blank ammunition upon completion of a training exercise and would continue removing spent munitions items, wood boxes, and other trash prior to departing a training area or range facility in accordance with the *Pōhakuloa Training Area Range Operations Standard Operating Procedures* and the USAG-PTA *External Standard Operating Procedures*.

It is assumed that DLNR would continue to implement the COMP or develop and implement a revised lease compliance monitoring plan to confirm lease compliance, particularly with respect to military munitions and MEC.

Radioactive Materials. No impacts on the environment from radioactive materials would occur due to lease of and continuation of ongoing activities within the State-owned land retained under Alternative 1 because no radioactive materials would be used or disturbed and current management procedures would continue to be followed. No radioactive materials have been identified on the State-owned land. Retention of approximately 22,750 acres of the State-owned land via lease would not change the Army's DU management practices on PTA during a new lease, including at the portion of the former Davy Crockett Weapon System Range on the State-owned land (Range 13 on TA 9) where DU-containing spotting rounds formerly were fired.

During a new lease, the Army would continue to follow PTA's NRC license for the possession and management of DU and follow approved Safety and Environmental Radiation Monitoring plans, including the site-specific Environmental Radiation Monitoring Plan for PTA, to monitor potential DU migration. The Army would continue to comply with NRC regulations and standards for protecting the public and the environment from future health risks from radiation and would continue to be subject to NRC inspections and periodic reviews, including on the State-owned land retained. The Army would continue to follow DoDD 4715.11, which prohibits the firing of high-explosive munitions into the DU impact locations. Alternative 1 would not result in exposure of military personnel or members of the public to areas likely containing DU. As such, no new impacts would occur from the continued management of existing DU. **Section 3.6** provides details regarding DU impacts on air quality.

Fee Simple Title Impacts: No new impacts on the environment would occur under fee simple title retention. Continued impacts on the environment from fee simple title retention would be the same as the continued impacts from lease retention.

Under fee simple title, the Army would continue ongoing activities on the State-owned land retained. No new impacts on the environment would occur, but continued long-term, minor, adverse impacts on the environment from ongoing use, generation, handling, and disposal of hazardous substances and hazardous wastes; ongoing transportation, storage, and use of military munitions; and ongoing generation of MEC would occur.

The Army would continue to adhere to applicable federal laws and regulations, state laws and regulations (to the extent practicable), DoD Manual 4140.72, Army requirements (e.g., AR 200-1; *The Army Sustainable Range Program*; Army Pamphlet 710-7), the 2018 Section 106 PA for PTA, and existing management measures on State-owned land retained as described in **Section 3.5.4.14**.

The State-owned land retained would remain an operational range for the foreseeable future, deferring site restoration under the Military Munitions Response Program until after range closure. The Army would continue removing or deactivating live and blank ammunition upon completion of a training exercise and would continue removing ~~solid waste~~ spent munitions items, wood boxes, and other trash prior to departing a training area or range facility in accordance with the *Pōhakuloa Training Area Range Operations Standard Operating Procedures* and the USAG-PTA *External Standard Operating Procedures*.

Under the provisions of existing law, the Army retains responsibility for the cleanup ~~and restoration~~ of ~~former training areas~~closed ranges.

Land Not Retained

***General Hazardous Substances and Hazardous Wastes*.** New long-term, negligible, beneficial impacts on the environment would occur from ending the transportation, use, generation, handling, and disposal of hazardous substances and hazardous wastes associated with ongoing activities on the approximately 250 acres of State-owned land not retained. The State-owned land not retained is rarely used for military training; therefore, the beneficial impacts would be negligible. No DoD vehicles would traverse, and no pesticides or herbicides would be used within, the State-owned land not retained, leading to no potential exposure from these actions.

The State-owned land not retained does not currently contain any known or suspected hazardous substances or hazardous wastes; therefore, no lease compliance actions or cleanup and restoration activities are expected. Additionally, there are no structures on the State-owned land not retained, so there would be no impacts on the environment associated with PCBs, ACM, or LBP.

Due to the lack of activities involving hazardous substances and hazardous wastes, Alternative 1 for State-owned land not retained would not exceed the capabilities of existing management plans and procedures, waste handling contracts, and disposition alternatives, nor would it require regulatory re-negotiation of selected site remedies or substantially delay existing remediation plans because there are no known or suspected contaminated sites within the State-owned land not retained.

Military Munitions and MEC. ~~No impacts on the environment from military munitions and MEC would occur from ending ongoing activities on the State-owned land not retained because this area is not used for the storage of military munitions, does not contain FPs, is not known to contain MEC, and is not currently used for live-fire training exercises. No military personnel or members of the public would be exposed to areas likely containing MEC.~~

~~There is the potential for MEC to be found anywhere on the State-owned land because of the prolonged history of PTA for live-fire military training. Therefore, f~~Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct various lease compliance actions~~,~~ such as removing any weapons and spent shells within the State-owned land not retained~~, to the extent feasible~~. After the current lease expires, the State-owned land not retained would no longer be an operational range and would be removed from the Army's inventory of operational ranges. At that time, the Army would conduct site restoration in accordance with the Military Munitions Response Program, CERCLA, and the terms of the lease to address MEC on the State-owned land not retained due to Army training during and prior to the current lease. ~~Additionally, the Army would follow Army regulations to determine how and when cleanup and restoration activities (to the extent practicable) for any existing~~

~~MEC within the State-owned land not retained would occur under CERCLA. Actions required under CERCLA would be coordinated with the DOH. These actions would result in new short-term, negligible, adverse impacts on the environment from handling and disposition of any MEC on the State-owned land not retained, and new long-term, negligible, beneficial impacts on the environment from removal and cleanup (to the extent practicable) of any MEC from the State-owned land not retained after expiration of the current lease.~~These actions would result in new short-term, minor to moderate, adverse impacts on the environment from the handling and disposition of military munitions and MEC on the State-owned land not retained. These actions also would result in new long-term, minor to moderate, beneficial impacts on the environment from the removal of military munitions and the cleanup and restoration of the State-owned land not retained after expiration of the current lease. The lease compliance actions and the cleanup and restoration 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 land not retained; 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 not retained due to the DoD's live-fire military training at PTA. No military personnel or members of the public would be exposed to areas likely to contain MEC.

Radioactive Materials. No impacts on the environment from radioactive materials would occur within the State-owned land not retained under Alternative 1. The approximately 250 acres of State-owned land that would not be retained under Alternative 1 do not include the former firing location for the Davy Crockett Weapon System Range on Range 13 on TA 9 or any other range where DU-containing spotting rounds formerly were fired. Alternative 1 would not result in exposure of military personnel or the public to areas likely containing DU. Consequently, no impacts from the former use of DU on PTA would occur on the State-owned land not retained.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.5.4.14**.

Level of Significance: Alternative 1 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.5.5**.

3.5.6.2 Alternative 2: Modified Retention

Land Retained

Lease Impacts:

***General Hazardous Substances and Hazardous Wastes*.** Under Alternative 2 via lease, the Army would retain all U.S. Government-owned utilities and the vast majority of the facilities, infrastructure, and State-owned land (86 percent); therefore, the Army would be able to continue to conduct similar levels of ongoing activities during a new lease as under Alternative 1. Consequently, Alternative 2 would result in the same continued long-term, minor, adverse impacts on the environment from hazardous substances and hazardous wastes due to retention of State-owned land via lease as under Alternative 1. The continued impacts would occur from ongoing activities such as training, storage and use of POLs, and maintenance and repair of U.S. Government-owned utilities throughout the State-owned land, including those in the State-owned land not retained.

Like Alternative 1, under Alternative 2, no structures containing asbestos, LBP, or PCBs would be remodeled or demolished during the lease within the State-owned land retained, and the Army would continue to truck hazardous substances and POLs from Kawaihae Harbor to PTA and to truck used POLs, used hazardous substances, and hazardous wastes from PTA to either Hilo or Kawaihae Harbor for shipping off-island to the U.S. mainland or other areas for recycling, reuse, or disposal, as necessary, in accordance with federal and state regulations.

The Army would continue to adhere to federal and state laws and regulations, Army requirements (e.g., AR 200-1 and Army Pamphlet 710-7), and existing management measures on State-owned land retained as described under **Section 3.5.4.14**, which would continue to limit the risks of a spill or release of a hazardous substance; limit adverse impacts on contaminated sites and remediation activities; and manage the use, generation, handling, and disposition of hazardous substances and hazardous wastes. In summary, impacts for State-owned land retained under Alternative 2 via lease would not exceed the capabilities of existing management plans and procedures, waste handling contracts, and disposition alternatives, nor would it require regulatory re-negotiation of selected site remedies or substantially delay existing remediation plans.

Military Munitions and MEC. Under Alternative 2, the Army would continue to conduct similar levels of ongoing activities during a new lease as under Alternative 1. Consequently, Alternative 2 would result in the same continued long-term, minor, adverse impacts on the environment from military munitions and MEC due to retention of State-owned land via lease as under Alternative 1.

Like Alternative 1, under Alternative 2, the Army would continue to manage military munitions and MEC on the State-owned land retained, including the deactivation and removal of UXO, by adhering to federal and state laws and regulations; DoD Manual 4140.72; *The Army Sustainable Range Program*; the 2018 Section 106 PA for PTA; and existing management measures. The State-owned land retained would remain an operational range for the foreseeable future, deferring site restoration under the Military Munitions Response Program until after range closure. No military personnel or members of the public would be exposed to areas likely containing MEC. The Army would continue to truck military munitions from Kawaihae Harbor to PTA in accordance with federal and state regulations.

It is assumed that DLNR would continue to implement the COMP or develop and implement a revised lease compliance monitoring plan to confirm lease compliance, particularly with respect to military munitions and MEC.

Radioactive Materials. Like Alternative 1, no impacts on the environment from radioactive materials would occur due to lease of and continuation of ongoing activities within the State-owned land retained under Alternative 2. No radioactive materials have been identified on the State-owned land. Retention of the approximately 19,700 acres of State-owned land via lease would not change the Army's DU management practices on PTA during a new lease, including at the portion of the former Davy Crockett Weapon System Range on the State-owned land (Range 13 on TA 9) where DU-containing spotting rounds formerly were fired.

During a new lease, the Army would continue to follow PTA's NRC license for the possession and management of DU and would continue to follow approved Safety and Environmental Radiation Monitoring plans, including the site-specific Environmental Radiation Monitoring Plan for PTA, to monitor potential DU migration. The Army would continue to comply with NRC regulations and standards for

protecting the public and the environment from future health risks from radiation and would continue to be subject to NRC inspections and periodic reviews, including on the State-owned land retained. The Army would continue to follow DoDD 4715.11, which prohibits the firing of high-explosive munitions into the DU impact locations. Alternative 2 would not result in exposure of military personnel or members of the public to areas likely containing DU. As such, no new impacts would occur from the continued management of existing DU. **Section 3.6** provides details regarding DU impacts on air quality.

Fee Simple Title Impacts: No new impacts on the environment would occur under fee simple title retention. Like Alternative 1, Alternative 2 continued impacts on the environment from fee simple title retention would be the same as Alternative 2 continued impacts from lease retention.

Under fee simple title, the Army would continue ongoing activities on the State-owned land retained. No new impacts on the environment would occur, but continued long-term, minor, adverse impacts on the environment from ongoing use, generation, handling, and disposal of hazardous substances and hazardous wastes; ongoing transportation, storage, and use of military munitions; and ongoing generation of MEC would occur.

Land Not Retained

General Hazardous Substances and Hazardous Wastes. Like Alternative 1, the State-owned land not retained under Alternative 2 is rarely used for military training and does not contain any known or suspected hazardous substances or hazardous wastes; therefore, Alternative 2 would result in the same new long-term, negligible, beneficial impacts from ending ongoing activities as under Alternative 1.

Military Munitions and MEC. ~~Like Alternative 1, the State-owned land not retained under Alternative 2 is not used for the storage of military munitions, is not currently used for live-fire training exercises, and does not contain any known MEC; however, it does include three FPs, but they are currently not used for live-fire training exercises. Therefore, no impacts on the environment from military munitions and MEC would occur from ending ongoing activities on the State-owned land not retained. No military personnel or members of the public would be exposed to areas likely containing MEC.~~

~~There is the potential for MEC to be found anywhere on the State-owned land because of the prolonged history of PTA for live-fire military training. Therefore, f~~Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct various lease compliance actions such as removing any weapons and spent shells within the State-owned land not retained~~, to the extent feasible~~. After the current lease expires, the State-owned land not retained would no longer be an operational range and would be removed from the Army's inventory of operational ranges. At that time, the Army would conduct site restoration in accordance with the Military Munitions Response Program, CERCLA, and the terms of the lease to address MEC on the State-owned land not retained due to Army training during and prior to the current lease. ~~Additionally, the Army would follow Army regulations to determine how and when cleanup and restoration activities (to the extent practicable) for any existing MEC within the State-owned land not retained would occur under CERCLA. Actions required under CERCLA would be coordinated with the DOH. These actions would result in new short-term, negligible, adverse impacts on the environment from handling and disposition of any MEC on the State-owned land not retained, and new long-term, negligible, beneficial impacts on the environment from removal and cleanup (to the extent practicable) of any MEC from the State-owned land not retained after expiration of the current lease.~~These actions would result in new short-term, minor to moderate, adverse impacts on the

environment from the handling and disposition of military munitions and MEC on the State-owned land not retained. These actions also would result in new long-term, minor to moderate, beneficial impacts on the environment from the removal of military munitions and the cleanup and restoration of the State-owned land not retained after expiration of the current lease. The lease compliance actions and the cleanup and restoration 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 land not retained; 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 not retained due to the DoD's live-fire military training at PTA. No military personnel or members of the public would be exposed to areas likely to contain MEC.

Radioactive Materials. Like Alternative 1, no impacts on the environment from radioactive materials would occur within the State-owned land not retained under Alternative 2. The State-owned land not retained does not include the former firing location for the Davy Crockett Weapon System Range on Range 13 on TA 9 or any other range where DU-containing spotting rounds formerly were fired. Alternative 2 would not result in exposure of military personnel or members of the public to areas likely containing DU. Consequently, no impacts from the former use of DU on PTA would occur on the State-owned land not retained.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.5.4.14**.

Level of Significance: Alternative 2 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.5.5**.

3.5.6.3 Alternative 3: Minimum Retention and Access

Land Retained

Lease Impacts:

***General Hazardous Substances and Hazardous Wastes*.** Under Alternative 3 via lease, the Army would continue ongoing activities on the State-owned land retained (approximately 10,100 acres) and would lose use of some facilities (1 AHA, 2 landing zones, and approximately 30 FPs), some infrastructure, and approximately 66 percent of the State-owned land; therefore, ongoing activities within the State-owned land would be moderately reduced. Consequently, Alternative 3 would result in continued long-term, negligible to minor, adverse impacts on the environment from moderately reduced continued use, generation, handling, disposal, and transportation of hazardous substances and hazardous wastes due to ongoing activities within the State-owned land retained, including continued training, continued use of the AST at Building 601, continued maintenance and repair of U.S. Government-owned utilities throughout the State-owned land including those in the State-owned land not retained, and continued use, maintenance, and repair of 11 miles of select roads and training trails and firebreaks/fuel breaks along most of those 11 miles of select roads and training trails in the State-owned land not retained.

Like Alternatives 1 and 2, under Alternative 3, no structures containing asbestos, LBP, or PCBs would be remodeled or demolished during the lease within the State-owned land retained, and the Army would continue to truck hazardous substances and POLs from Kawaihae Harbor to PTA and to truck used POLs,

used hazardous substances, and hazardous wastes from PTA to either Hilo or Kawaihae Harbor for shipping off-island to the U.S. mainland or other areas for recycling, reuse, or disposal, as necessary, in accordance with federal and state regulations.

The Army would continue to adhere to federal and state laws and regulations, Army requirements (i.e., AR 200-1 and Army Pamphlet 710-7), and existing management measures on State-owned land retained as described under **Section 3.5.4.14**, which would continue to limit the risks of a spill or release of hazardous substances; limit adverse impacts on contaminated sites and remediation activities; and manage the use, generation, handling, and disposition of hazardous substances and hazardous wastes. In summary, impacts for State-owned land retained under Alternative 3 via lease would not exceed the capabilities of existing management plans and procedures, waste handling contracts, and disposition alternatives, nor would it require regulatory re-negotiation of selected site remedies or substantially delay existing remediation plans.

Military Munitions and MEC. Under Alternative 3, the Army would continue ongoing activities on the State-owned land retained and would lose the use of some facilities (1 AHA, 2 landing zones, and approximately 30 FPs), infrastructure, and approximately 66 percent of the State-owned land; therefore, ongoing activities within the State-owned land would be moderately reduced. Consequently, Alternative 3 would result in continued long-term, negligible to minor, adverse impacts on the environment from military munitions and MEC, including the use of BAX Target V-10 and many of the FPs noted in the 2017 Phase I ECOP, due to retention of and continued training on State-owned land during a lease. These impacts would be less than those under Alternatives 1 and 2 due to less storage of military munitions on the State-owned land retained, transportation of fewer military munitions to PTA, less use of military munitions on the State-owned land retained, and less generation of MEC on the State-owned land retained and the impact area.

Like Alternatives 1 and 2, under Alternative 3, the Army would continue to manage military munitions and MEC on the State-owned land retained, including the deactivation and removal of UXO, by adhering to ~~federal and state laws and regulations;~~ DoD Manual 4140.72; *The Army Sustainable Range Program*; the 2018 Section 106 PA for PTA; and existing management measures. The State-owned land retained would remain an operational range for the foreseeable future, deferring site restoration under the Military Munitions Response Program until after range closure. No military personnel or members of the public would be exposed to areas likely containing MEC.

It is assumed that DLNR would continue to implement the COMP or develop and implement a revised lease compliance monitoring plan to confirm lease compliance, particularly with respect to military munitions and MEC. The Army would continue to truck military munitions from Kawaihae Harbor to PTA in accordance with federal and state regulations, but fewer military munitions would be trucked and used compared to Alternatives 1 and 2.

Radioactive Materials. Like Alternatives 1 and 2, no impacts on the environment from radioactive materials would occur due to lease of and continuation of ongoing activities within the State-owned land retained under Alternative 3 because no radioactive materials would be used or disturbed and current management procedures would continue to be followed. No radioactive materials have been identified on the State-owned land. Retention of approximately 10,100 acres of State-owned land via lease would not change the Army's DU management practices on PTA during a new lease, including at the portion of

the former Davy Crockett Weapon System Range on the State-owned land (Range 13 on TA 9) where DU-containing spotting rounds formerly were fired.

During a new lease, the Army would continue to follow PTA's NRC license for the possession and management of DU and would continue to follow approved Safety and Environmental Radiation Monitoring plans, including the site-specific Environmental Radiation Monitoring Plan for PTA, to monitor potential DU migration. The Army would continue to comply with NRC regulations and standards for protecting the public and the environment from future health risks from radiation and would continue to be subject to NRC inspections and periodic reviews, including on the State-owned land retained. The Army would continue to follow DoDD 4715.11, which prohibits the firing of high-explosive munitions into the DU impact locations. Alternative 3 would not result in exposure of military personnel or members of the public to areas likely containing DU. As such, no new impacts would occur from the management of existing DU. **Section 3.6** provides details regarding DU impacts on air quality.

Fee Simple Title Impacts: No new impacts on the environment would occur under fee simple title retention. Like Alternatives 1 and 2, Alternative 3 continued impacts on the environment from fee simple title retention would be the same as Alternative 3 continued impacts from lease retention.

Under fee simple title, the Army would continue ongoing activities on the State-owned land retained. No new impacts on the environment would occur, but continued long-term, negligible to minor, adverse impacts from ongoing use, generation, handling, and disposal of hazardous substances and hazardous wastes; ongoing transportation, storage, and use of military munitions; and ongoing generation of MEC would occur.

Land Not Retained

***General Hazardous Substances and Hazardous Wastes*.** New long-term, negligible to minor, beneficial impacts on the environment would occur from ending the transportation, use, generation, handling, and disposal of hazardous substances and hazardous wastes associated with ongoing activities on the State-owned land not retained as well as associated activities within the U.S. Government-owned land and outside PTA. No DoD vehicles would traverse, and no pesticides or herbicides would be used within, the State-owned land not retained, leading to no potential exposure from these actions. The State-owned land not retained is only moderately used for training; therefore, the beneficial impacts would be up to minor.

Following current lease expiration, the Army would conduct lease compliance actions and follow Army regulations to determine how and when cleanup and restoration activities for hazardous substances and hazardous wastes would occur under CERCLA. Actions required under CERCLA would be coordinated with the DOH. The State-owned land not retained includes the Former Debris Pile (on TA 21). New short-term, minor, adverse impacts and new long-term, minor, beneficial impacts on the environment could occur from conducting lease compliance actions and cleanup and restoration activities for hazardous substances and hazardous wastes within the State-owned land not retained after expiration of the current lease. The short-term, minor, adverse impacts would result from handling and disposal of hazardous substances and hazardous wastes removed from or remediated at the Former Debris Pile (on TA 21). These hazardous substances and hazardous wastes would be managed through the regulatory requirements discussed in **Section 3.5.2** and established planning documents. The long-term, minor, beneficial impacts would occur

from the removal and cleanup of hazardous substances and hazardous wastes at the Former Debris Pile (on TA 21).

The Army would adhere to federal and state laws and regulations, Army requirements, and existing management measures as described in **Section 3.5.4.14** during decommissioning of the Former Debris Pile, which would limit the risks of a spill or release of hazardous substances, limit adverse impacts on contaminated sites and remediation activities, and manage the use, generation, handling, and disposition of hazardous substances and hazardous wastes. In summary, impacts for State-owned land not retained under Alternative 3 would not exceed the capabilities of existing management plans and procedures, waste handling contracts, and disposition alternatives, nor would it require regulatory re-negotiation of selected site remedies or substantially delay existing remediation plans.

Military Munitions and MEC. New long-term, negligible to minor, beneficial impacts on the environment would occur from ending ongoing activities on the State-owned land not retained, including storage of military munitions at an AHA on the State-owned land not retained, use of military munitions on the State-owned land not retained, and generation of MEC on the State-owned land not retained and the impact area from firing military munitions from the State-owned land not retained into the impact area. Additionally, there would be less transportation of military munitions from Kawaihae Harbor to PTA due to reduced use of military munitions at PTA.

The 2017 Phase I ECOP for the State-owned land identified the TAs, FPs, and ranges and the Former Bazooka Range (TA 17) as specific sites on the State-owned land not retained where MEC may be present; however, there is the potential for MEC to be found anywhere on the State-owned land because of the prolonged history of PTA for live-fire military training.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct various lease compliance actions such as removing weapons and spent shells within the State-owned land not retained~~, to the extent feasible~~. After the current lease expires, the State-owned land not retained would no longer be an operational range and would be removed from the Army's inventory of operational ranges. At that time, the Army would conduct site restoration in accordance with the Military Munitions Response Program, CERCLA, and the terms of the lease to address MEC on the State-owned land not retained due to Army training during and prior to the current lease. ~~Additionally, the Army would follow Army regulations to determine how and when cleanup and restoration activities (to the extent practicable) for MEC within the State-owned land not retained would occur under CERCLA. Actions required under CERCLA would be coordinated with the DOH.~~ These actions would result in new short-term, minor to moderate, adverse impacts on the environment from the handling and disposition of military munitions and MEC on the State-owned land not retained. These actions also would result in ~~and~~ new long-term, minor to moderate, beneficial impacts on the environment from the removal of military munitions and the cleanup and restoration ~~(to the extent practicable)~~ of ~~any MEC from~~ the State-owned land not retained after expiration of the current lease. The lease compliance actions and the cleanup and restoration 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 land not retained~~over time as they are approved and budgeted for~~; 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 not retained due

to the DoD's ~~prolonged history of PTA for~~ live-fire military training at PTA. No military personnel or members of the public would be exposed to areas likely to contain~~ing~~ MEC.

Radioactive Materials. Like Alternatives 1 and 2, no impacts on the environment from radioactive materials would occur within the State-owned land not retained under Alternative 3. The State-owned land not retained does not include the former firing location for the Davy Crockett Weapon System Range on Range 13 on TA 9 or any other range on PTA where DU-containing spotting rounds formerly were fired. Alternative 3 would not result in exposure of military personnel or members the public to areas likely containing DU. Consequently, no impacts from the former use of DU on PTA would occur on the State-owned land not retained.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.5.4.14**.

Level of Significance: Alternative 3 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.5.5**.

3.5.6.4 No Action Alternative

***General Hazardous Substances and Hazardous Wastes*.** New long-term, moderate, beneficial impacts on the environment would occur from ending the transportation, use, generation, handling, and disposal of hazardous substances and hazardous wastes from ongoing activities on the State-owned land, associated activities at the Cantonment and BAAF, associated activities outside PTA, and activities within the impact area and training ranges to the south that would be inaccessible due to lack of land access. The Army would no longer have access among the Cantonment and BAAF, impact area and training ranges, and Keʻāmuku parcel. The reduction in training capabilities would be greatly reduced and would decrease DoD use of Kawaihae Harbor. No DoD vehicles would traverse, and no pesticides or herbicides would be used within, the State-owned land, impact area, or training ranges to the south, leading to no potential for exposure from these actions.

Following current lease expiration, the Army would conduct lease compliance actions and follow Army regulations to determine how and when cleanup and restoration activities for hazardous substances and hazardous wastes would occur under CERCLA. Actions required under CERCLA would be coordinated with the DOH. The State-owned land includes an AST (at the boundary of TAs 4 and 5), FARP 18 (on TA 5), BAX (that overlaps areas on TAs 7 and 8), and Former Debris Pile (on TA 21), all of which would require decommissioning. Additionally, the Current Burn Pan Area is immediately south of TA 13 (adjacent to, but not on, State-owned land) and would need to be decommissioned because it would no longer be used due to loss of the State-owned land. New short-term, moderate, adverse impacts and new long-term, moderate, beneficial impacts on the environment could occur from conducting lease compliance actions and cleanup and restoration activities for hazardous substances and hazardous wastes within the State-owned land after expiration of the current lease. The short-term, moderate, adverse impacts would result from handling and disposal of hazardous substances and hazardous wastes removed from or remediated at the State-owned land. These hazardous substances and hazardous wastes would be managed through the regulatory requirements discussed in **Section 3.5.2** and established planning documents. The new long-term, moderate, beneficial impacts would occur from the removal and cleanup of hazardous substances and hazardous wastes and decommissioning of the AST (at the boundary of TAs 4 and 5), FARP 18 (on TA 5), BAX (that overlaps areas on TAs 7 and 8), Current Burn Pan Area (immediately south

of TA 13; adjacent to but not on State-owned land), and Former Debris Pile (on TA 21) after expiration of the current lease. The lease compliance actions and cleanup and restoration activities would occur over time as they are approved and budgeted for; therefore, they would not exceed the capabilities of existing management plans and procedures, waste handling contracts, and disposition alternatives. Actions required under CERCLA would be coordinated with the DOH.

The Army would adhere to federal and state laws and regulations, Army requirements, and existing management measures as described in **Section 3.5.4.14**, which would limit the risks of a spill or release of hazardous substances, limit adverse impacts on contaminated sites and remediation activities, and manage the use, generation, handling, and disposition of hazardous substances and hazardous wastes. In summary, impacts under the No Action Alternative would not exceed the capabilities of existing management plans and procedures, waste handling contracts, and disposition alternatives, nor would it require regulatory re-negotiation of selected site remedies or substantially delay existing remediation plans.

The current land use controls and long-term monitoring actions for Former Landfill POTA-06 on the State-owned land would remain in place. The Army would maintain ongoing management of Former Landfill POTA-06 pending an agreement allowing the Army access for necessary inspection and management. When the current lease expires, maintenance of the landfill and land use controls may be negotiated in the transfer of the State-owned land.

Military Munitions and MEC. New long-term, moderate, beneficial impacts on the environment would occur from ending ongoing activities on the State-owned land as well as activities within the impact area and training ranges to the south that would be inaccessible due to lack of land access, including military munitions storage at the ASP and two AHAs on State-owned land and one AHA on U.S. Government-owned land to the south; use of military munitions on the State-owned land as well as the training ranges to the south; and generation of MEC on the State-owned land as well was the impact area and training ranges to the south. Following the end of the current lease, no military munitions would be transported from Kawaihae Harbor to PTA. The 2017 Phase I ECOP for the State-owned land identified the TAs, FPs, and ranges; Former Bazooka Range (on TA 17); Former Tank Gunnery Range (on TA 12); and Potential Former Burn Pan (on TA 9) as specific sites where MEC may be present; however, there is the potential for MEC to be found anywhere on the State-owned land because of the prolonged history of PTA for live-fire military training.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct various lease compliance actions such as removing weapons and spent shells within the State-owned land~~, to the extent feasible~~. After the current lease expires, the State-owned land would no longer be an operational range and would be removed from the Army's inventory of operational ranges. At that time, the Army would conduct site restoration in accordance with the Military Munitions Response Program, 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. ~~Additionally, the Army would follow Army regulations to determine how and when cleanup and restoration activities (to the extent practicable) for MEC within the State-owned land would occur under CERCLA. Actions required under CERCLA would be coordinated with the DOH.~~ These actions would result in new short-term, minor to moderate, adverse impacts on the environment from the handling and disposition of military munitions and MEC on the State-owned land. ~~and~~ These actions also would result in new long-term, minor to moderate, beneficial impacts on the environment from the removal of military munitions and the cleanup and restoration ~~(to the extent~~

~~practicable)~~ of MEC from the State-owned land after expiration of the current lease. The lease compliance actions and cleanup and restoration 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 land~~over time as they are approved and budgeted for~~; 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 ~~prolonged history of PTA for~~DoD's live-fire military training at PTA. No military personnel or members of the public would be exposed to areas likely to contain MEC.

Radioactive Materials. New short-term, minor, adverse impacts and new long-term, minor, beneficial impacts on the environment would occur from cleanup and restoration activities. The Army would decommission the former firing location for the Davy Crockett Weapon System Range on the State-owned land (i.e., the FP for Range 13 on TA 9) and perform additional DU investigation and cleanup protocols, if needed. The short-term, adverse impacts would result from handling and disposition of any DU removed from or remediated at the State-owned land. The long-term, beneficial impacts would occur from the removal and cleanup of any DU from the State-owned land. Decommissioning would be coordinated with the NRC to ensure that public health and safety would continue to be protected if cleanup is needed. The No Action Alternative would not change the Army's DU management practices at the portion of Range 13 on U.S. Government-owned land (i.e., the impact location).

The Army would continue to follow PTA's NRC license for the possession and management of DU and would continue to follow approved Safety and Environmental Radiation Monitoring plans, including the site-specific Environmental Radiation Monitoring Plan for PTA, to monitor potential DU migration. The Army would continue to comply with NRC regulations and standards for protecting the public and the environment from future health risks from radiation and would continue to be subject to NRC inspections and periodic reviews. The Army would continue to follow DoDD 4715.11, which prohibits the firing of high-explosive munitions into the DU impact locations. The No Action Alternative would not result in exposure of military personnel or members of the public to areas likely containing DU. As such, no new impacts would occur on the management of existing DU at the remainder of the four ranges formerly used for the Davy Crockett Weapon System. The current sampling location for monitoring potential DU migration is on State-owned land; therefore, Army would need to negotiate access with the State to conduct the sampling or negotiate an alternative sampling location with NRC. **Section 3.6** provides additional discussion regarding DU impacts on air quality.

~~**Potential**~~ **Mitigation Measures:** The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended. No mitigation measures are recommended for the lease compliance actions and cleanup and restoration activities beyond the existing management measures discussed in **Section 3.5.4.14**.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.5.5**.

3.6 Air Quality and Greenhouse Gases

On April 19, 2024, the Army issued a draft EIS that was prepared pursuant to the then-governing regulations, ~~Executive Orders (~~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.

The EIS states that there are no data inputs reasonably available to support greenhouse gas (GHG) 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 contains such language, and because the language was provided to the public for comment, the Army addresses greenhouse gas emissions and climate change here.

3.6.1 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 and weather conditions.

~~Greenhouse gases (~~GHG~~s)~~ are 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. 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 (CO_2), methane, and nitrous oxide. CO_2 is the primary GHG emitted by human activities in the U.S., with the largest source generated from fossil fuel combustion. 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.

3.6.2 Regulatory Framework

Under the Clean Air Act, the USEPA has established national ambient air quality standards (NAAQS) for several different air pollutants that are considered harmful to public health and the environment. These pollutants, referred to as criteria pollutants, are sulfur dioxide (SO_2), nitrogen dioxide, carbon monoxide (CO), ozone (O_3), suspended particulate matter [measured less than or equal to 10 microns in diameter (PM_{10}) and less than or equal to 2.5 microns in diameter ($PM_{2.5}$)], and lead. CO, SO_2, lead, and some particulates are emitted directly into the atmosphere from emissions sources. O_3, nitrogen dioxide, and some particulates are formed through atmospheric chemical reactions that are influenced by weather, ultraviolet light, and other atmospheric processes. Volatile organic compounds and nitrogen oxide emissions are used to represent O_3 generation because they are precursors to O_3. Since the phase-out of leaded fuels in the 1970s and 1980s, lead emissions have been negligible from the types of emission sources under this Proposed Action. As such, they are not included in this air quality analysis.

The NAAQS protect against adverse health and welfare impacts. Areas that are and have historically been in compliance with the NAAQS or have not been evaluated for NAAQS compliance are designated as attainment areas. Areas that violate a federal air quality standard are designated as nonattainment areas. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas and are required to adhere to maintenance plans to ensure continued attainment.

Under the USEPA General Conformity Rule, federal agencies must work with state, tribal, and local governments in nonattainment and maintenance areas to ensure that air emissions from federal actions conform to the air quality plans established in the applicable state or tribal implementation plan. The General Conformity Rule does not apply in areas designated as attainment.

The Hawaiʻi DOH, Clean Air Branch (CAB) ~~also~~ regulates and monitors air pollutants under HAR Chapter 11-59, Ambient Air Quality Standards, and HAR Chapter 11-60.1, Air Pollution Control, and regulates fugitive dust under HAR Section 11-60.1-33, Fugitive Dust. The CAB has established its own ambient air quality standards for the criteria pollutants, and these standards are stricter than the NAAQS for some pollutants. The CAB also has promulgated an additional air quality standard for hydrogen sulfide. Additional Hawaiʻi Air Pollution Control regulations are found in HRS Chapter 342B. Although not directly related to air quality, HRS Chapter 342C addresses O_3 layer protection, and Act 17 of Session Laws of Hawaiʻi 2018 requires this EIS to consider sea level rise. The Hawaiʻi ~~greenhouse~~ GHG emission reduction plan cited in HAR Section 11-60.1-~~201~~204 is not applicable to PTA because it is for sources that emit at least 100,000 tons per year of carbon dioxide equivalent (CO_2e), whereas PTA only has the potential to emit less than 2,600 tons per year of CO_2e and its actual emissions are much less.

Army Directive 2020-08, *U.S. Army Installation Policy to Address Threats Caused by Changing Climate and Extreme Weather,* requires Army installations to assess, plan for, and adapt to the projected impacts of changing climate and extreme weather by adding the results of climate change prediction analysis tools into all facility and infrastructure-related plans, policies, and procedures. *The Army Climate Resilience Handbook*, dated August 2020, instructs Army planners on the process to systematically assess climate exposure impact risk and incorporate these findings into the planning process. The Army also has implemented an Army Climate Strategy (DA-ASAIEE, 2022) and follows the DoD Climate Adaptation Plan (DoD-OUSDAS, 2021). The Army uses the Army Climate Assessment Tool to identify potential climate change threats and rank the relative risk each threat presents to a given Army installation in 2050 and 2085. The Army Climate Assessment Tool also includes summaries of regional climate change impacts as developed by the U.S. Global Change Research Program.

This EIS addresses air quality impacts in accordance with EO 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*; the Army's March 4, 2021, memorandum titled *Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in Army NEPA Reviews*; and CEQ's January 2023 interim guidance titled *National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change*. 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 land as well as from indirect activities such as manufacturing and shipping equipment and materiel and troop movements to and from PTA) and their associated social costs has not been performed because there are no data inputs reasonably available to support such calculations for a real estate transaction such as the Proposed Action. In this context, reasonably available means the Army does not

have GHG emission data specifically for ongoing activities on the State-owned land and cannot reasonably estimate such data ~~without substantial time and error~~.

3.6.3 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 from the criteria pollutant emissions under the Proposed Action is the island of Hawaiʻi.

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. Due to the vast variability of climate on the island of Hawaiʻi, the ROI for the effects of climate change is PTA.

3.6.4 Existing Conditions

Regional Air Quality. The State 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 Hawaiʻi because there is limited opportunity for locally generated air pollutants to accumulate.

Volcanic activity is the greatest influencer of air quality on the island of Hawaiʻi, and the DOH, CAB currently operates 11 air monitoring stations on the island to measure SO_2 and $PM_{2.5}$, which are the most common criteria pollutants emitted from volcanoes. These monitoring stations also monitor compliance with national and state ambient air quality standards. No monitoring stations are located within PTA, and the nearest monitoring station is in Hilo, approximately 25 miles from PTA (DOH-CAB, 2021).

Based on ambient air monitoring results, the USEPA has designated the entire island of Hawaiʻi as unclassified/attainment for all criteria pollutants (USEPA, 2020b). This designation means the General Conformity Rule is not applicable for federal actions occurring on PTA. The monitoring stations on the island of Hawaiʻi show no recent exceedances of the SO_2 and $PM_{2.5}$ national and state ambient air quality standards (DOH-CAB, 2021).

***Air Emission Sources at PTA*.** Air emission sources at PTA include exhaust from military vehicles, aircraft flight operations, liquefied petroleum gas-fired boilers servicing four buildings, and ten internal combustion engines; dust from vehicle use on gravel and dirt roads and near-ground helicopter and tilt-rotor aircraft operations; and military munitions and burn pan use (USAG-HI, 2011). Additionally, a mobile rock crushing facility is occasionally brought in from Schofield Barracks Military Reservation and operated at PTA. The installation's potential and actual air emissions were last enumerated in the 2010 air pollutant emission summary. These emissions have not appreciably changed since 2010 because installation activities have remained largely consistent and no additional major facilities have been constructed. These emissions are outlined in **Table 3-19**. Potential emissions are the maximum allowable emissions from a source, while actual emissions are the measured emissions that the source produced. These emissions are from stationary sources (i.e., boilers and engines) and military munitions use and do not include mobile emissions sources.

Air emission sources associated with training and other activities within the State-owned land include exhaust from military vehicles and aircraft flight operations, dust from vehicle use on gravel and dirt roads and near-ground helicopter and tilt-rotor aircraft operations, military munitions use, and a 45-kilowatt

(kW) (60-horsepower) internal combustion engine for an emergency generator at Building 601. This engine has a permitted potential to operate for up to 500 hours per year but in actuality operates for approximately 18 hours per year (USAG-HI, 2011).

Table 3-19: Potential and Actual Emissions from Pōhakuloa Training Area (2010)

	Nitrogen Oxide	SO_2	CO	Volatile Organic Compounds	PM_{10}	CO_2e
Potential Emissions (tpy)	9.46	0.42	10.12	0.68	10.24	2,567.55
Actual Emissions (tpy)	0.70	0.01	3.77	0.02	4.86	36.17

Key: tpy = tons per year

Source: USAG-HI, 2011

To remedy landfill POTA-06, which is on the State-owned land in TA 6, the Army at one time monitored methane emissions from the landfill. After eight sampling events indicated that no methane was being produced from the landfill, the DOH approved the elimination of methane monitoring in May 2012 (USAEC & USAG-HI, 2014).

Fugitive dust is small particulate matter that is suspended in the air from soil that has been disturbed by wind or human activities. A short-term air monitoring program was performed at PTA during January 2006 to January 2007 to determine the impact of fugitive dust at PTA. The predominant sources of fugitive dust emissions at PTA are maneuver activities on unpaved roads and trails and rotor downwash from helicopter and tilt-rotor aircraft. Areas with less vegetative cover are more susceptible to fugitive dust production than highly vegetated areas and paved surfaces. Seven monitoring stations were located on the installation to monitor total suspended particulate matter and PM_{10}. The results from each monitoring station indicated levels of airborne particulate matter well below the USEPA and Hawai‘i 24-hour PM_{10} ambient air quality standard of 150 micrograms per cubic meter. The sampling concluded that there was a less than a 0.1 percent chance that the federal and state ambient air quality standard for PM_{10} would be reached or exceeded (USACE-POH & USAG-HI, 2007). The fugitive dust monitoring was discontinued in 2007 because a year of monitoring showed the levels to be well below the state and federal limit. While activities within the State-owned land have changed some since the fugitive dust monitoring was performed in 2006 and 2007, the type and quantity of the activities have not appreciably changed, so current fugitive dust generation is expected to be comparable to the 2006 to 2007 monitoring event. There are no planned changes to training activities or frequency in the State-owned land. To control fugitive dust, the Army follows the requirements in HAR Section 11-60.1-33.

DU. As noted in **Section 3.5**, the Army used the Davy Crockett Weapon System at PTA from 1962 to 1968. The system used a 20-millimeter spotting round (M101) to show where the weapon system was aimed. The body of the spotting round was made of a DU alloy. The system was fired from four ranges on PTA, and one of the four ranges is partially on the State-owned land (i.e., Range 13 on TA 9). The spotting round was a low velocity projectile that typically broke into large fragments upon impact, with limited dispersal. It did not produce sub-micron-sized DU particles common with modern DU penetrators used in kinetic energy munitions. The spotting rounds did not aerosolize on impact and did not generate a cloud of DU-rich dust particles. When exposed to the environment for prolonged periods, DU metal fragments oxidize or “rust” into friable, yellowish to blackish-colored particles. These particles are 3 to 6 times denser than soil particles and not easily mobilized by wind (USACE-POH & USAG-HI, 2017a; NDCEE, 2008). As noted in

Section 3.5.4.12, visual surveys have found no indications of DU-containing materials on the State-owned land.

The Army completed a 1-year airborne uranium monitoring program in 2009 to determine if the decay and vaporization of DU fragments had impacted local air quality. The monitoring program collected 210 air samples from three sites upwind and downwind of PTA to provide a basis of comparison. The monitoring program concluded that the DU had not impacted air quality at PTA or in the surrounding area because the total airborne uranium levels in the collected particulate matter samples were within the range of naturally occurring uranium in Hawaiian soils and rock and were several orders of magnitude below U.S. and international chemical and radiological health guidelines (USACE-POH & USAG-HI, 2010). Consequently, DU at PTA does not present an air quality human health concern to DoD personnel, PTA workers, or the public.

***Climate Change*.** The findings of the U.S. Global Change Research Program, as summarized by the Army Climate Assessment Tool, has determined that ongoing global climate change has the potential to increase average temperatures, alter precipitation patterns, raise sea level, and increase the risk of extreme drought and flooding within the State and other Pacific Islands. As a result, the availability of freshwater, potential for coastal flooding, stability of ecosystems and biodiversity, and the health of indigenous populations could be adversely impacted from ongoing climate change (Army, 2021).

Extreme drought has the potential to result in increased wildfires, which would impact local air quality. Wildfires at PTA are frequent, and the average yearly wildfire occurrence at PTA from 2012 through ~~2017~~ 2023 was ~~37~~ 41 per year. Between 1975 and August 2024, a~~A~~pproximately ~~10~~ 17 percent of wildfires recorded at PTA occurred on State-owned land, and approximately ~~90~~ 83 percent occurred on U.S. Government-owned land. Most of the recorded wildfires ~~that occur~~ at PTA are small with ~~92~~ 91 percent being 1 acre or less in size and ~~77~~ 83 percent being ~~smaller than~~ 0.1 acre or less. Since 1975, there have been ~~15~~ 29 recorded wildfires greater than ~~approximately~~ 100 acres at PTA, with ~~60~~ 55 percent of these fires occurring from military activities (USAG-PTA, 2021~~eg~~). Wildfires reduce vegetative cover, which can exacerbate fugitive dust production during high wind conditions.

The Army Climate Assessment Tool concludes that drought and riverine flooding are, by far, the greatest climate change threats to PTA. Drought is predicted to be the greatest threat in 2050, and riverine flooding the greatest threat in 2085. Both threats stem from changes to precipitation patterns. Increased energy demand, land degradation, heat, and historically extreme weather are lesser threats to PTA. Coastal flooding is not a threat to PTA given that the installation is several thousand feet above sea level (Army, 2021); see **Section 3.8**.

The Army has implemented measures at PTA to reduce GHG emissions to help achieve the goals identified in GHG guidance such as EO 13990. These measures include operating more than 450 solar panels at 16 small arms ranges on PTA to power range towers and pop-up targets with solar-sourced electricity rather than relying on electricity from gasoline-fueled generators (USAG-PTA PAO, 2008). Additionally, the Army has committed to electrification of its non-tactical vehicle fleet department-wide, including at PTA and the State-owned land (DA-ASAIEE, 2022).

3.6.4.1 Existing Management Measures

PTA manages fugitive dust via (1) erosion control and stabilization techniques (revegetation, erosion control structures, site hardening, dust palliatives) under the Land Rehabilitation and Maintenance component of the ~~Integrated Training Management~~ITAM Program (USAG-HI & USARPAC, 2013), (2) adherence to Unified Facilities Criteria 3-250-09FA, *Aggregate Surfaced Roads and Airfields Areas*, which has dust control requirements for aggregate surfaced roads and airstrips of airfields at Army installations, and (3) BMPs such as maintenance of roads and training trails, maintenance of vegetative cover, periodic application of water to control dust, and modifying training during high risk conditions. The ITAM ~~Integrated Training Management~~ Program Land Rehabilitation and Maintenance project BMPs are assessed annually during Range and Training Land Assessment reviews (DA, 2021b). PTA also adheres to the PTA IWFMP ~~*Standard Operating Procedures Wildland Fire U.S. Army Garrison Pohakuloa*~~ (USAG-PTA, 2021~~e~~g) to prevent wildfires and USAG-HI Policy Memorandum 27, *Open Burn Policy*, to prohibit activities that emit air pollutants. USAG-HI Policy Memorandum 27 prohibits open burning on all USAG-HI property but provides exceptions for residential barbeques. Lastly, air emissions from reciprocating internal combustion engines for electrical generators are managed in accordance with USAG-HI's *Electrical Generator Control Policy*, which requires all generators on USAG-HI property to be tracked by the DPW Environmental Division and included in USAG-HI air emissions inventories. Specific air quality SOPs and other management documents are presented in **Appendix E**.

3.6.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.6.6** to assess potential significant impacts on air quality and GHG emissions. Due to the lack of information regarding the emissions ~~generated within just~~ associated with ongoing activities within the State-owned land, most of which is from mobile sources and military munitions, the air quality analysis is a qualitative assessment of the changes that would occur under the alternatives based on a generalization of the level of military activities that occur within various portions of the State-owned land (e.g., most training is conducted in the central portion of the State-owned land, some training is conducted in the eastern and western portions of the State-owned land, and little training is conducted in the northern and far eastern portions of the State-owned land).

The criteria considered to assess whether an alternative 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; and/or
- Creation of a violation of any federal or state air regulation.

The criteria considered to assess whether an alternative would result in potential significant impacts 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 Proposed Action alternatives with greater GHG emissions would have a greater contribution to the cumulative impact of ongoing global climate change.

- Consideration of impacts on the Proposed Action alternatives from ongoing changes to climate patterns. Such impacts would be significant if future climate patterns impaired or precluded an aspect of a Proposed Action alternative.

3.6.6 Environmental Analysis

3.6.6.1 Alternative 1: Maximum Retention

Land Retained

Lease Impacts:

Air Emissions. Under Alternative 1, continued long-term, minor, direct and indirect, adverse impacts on air quality would occur from continuation of ongoing activities within the State-owned land retained under a new lease. All existing air emissions sources within the State-owned land retained would remain and emit criteria pollutants at identical levels as current conditions. No changes to ambient air quality would occur from the continuation of these air emissions. Alternative 1 would continue to be consistent with all federal, state, and local air regulations including HAR Chapter 11-59, HAR Chapter 11-60.1, and HRS Chapters 342B and 342C.

Training and other activities on the State-owned land retained would continue at similar levels, and exhaust from military vehicles and aircraft flight operations, dust from vehicle use on gravel and dirt roads and near-ground helicopter and tilt-rotor aircraft operations, and emissions and dust from military munitions use would not increase or decrease compared to current conditions. Additionally, exhaust and dust would continue to be produced from military vehicles and equipment used to access and perform maintenance and repair on U.S. Government-owned utilities throughout the State-owned land not retained. The land at Building 601 would be retained; therefore, the 45kW internal combustion engine at Building 601 would continue to operate for approximately 18 hours per year.

Fugitive dust would continue to be produced from maneuver activities on unpaved roads and trails and helicopter and tilt-rotor aircraft activities. The Army would continue to follow the requirements for control of fugitive dust in HAR Section 11-60.1-33. PTA would continue to manage fugitive dust via (1) erosion control and stabilization techniques (revegetation, erosion control structures, site hardening, dust palliatives) under the Land Rehabilitation and Maintenance component of the ~~Integrated Training Management~~ITAM Program (USAG-HI & USARPAC, 2013), (2) adherence to Unified Facilities Criteria 3-250-09FA, *Aggregate Surfaced Roads and Airfields Areas*, which has dust control requirements for aggregate surfaced roads and airstrips of airfields at Army installations, and (3) BMPs such as maintenance of roads and training trails, maintenance of vegetative cover, periodic application of water to control dust, and modifying training during high risk conditions. ~~Integrated Training Management~~The ITAM Program Land Rehabilitation and Maintenance project BMPs would continue to be assessed annually during Range and Training Land Assessment reviews.

As noted in **Section 3.6.4**, the USEPA has designated the island of Hawai‘i as unclassified/attainment for all criteria pollutants (USEPA, 2020b). This designation means the USEPA’s General Conformity Rule is not applicable for Alternative 1.

DU. Under Alternative 1, there would be no impacts on air quality from DU. Monitoring for airborne uranium concluded that the past use of DU had not impacted air quality at PTA or in the surrounding area,

and the total airborne uranium levels in the collected particulate matter samples were within the range of naturally occurring uranium in Hawaiian soils and rock and were several orders of magnitude below U.S. and international chemical and radiological health guidelines. As such, Alternative 1 would have no impact on airborne uranium levels. The State-owned land retained under Alternative 1 includes the portion of the range on the State-owned land where DU-containing spotting rounds formerly were fired from (i.e., Range 13 on TA 9).

Alternative 1 would not change the Army's DU management practices on PTA. **Section 3.5** contains further details on DU management practices and potential impacts.

***Climate Change*.** Under Alternative 1, continued long-term, minor, direct and indirect, adverse impacts from GHG emissions would occur from continuation of ongoing activities within the State-owned land retained under a new lease. Alternative 1 would not change emissions of GHGs within the State-owned land retained. These GHG 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 the internal combustion engine at Building 601, and military munitions use. Additionally, GHG emissions would continue to be produced from military vehicles and equipment used to access and perform maintenance and repair on U.S. Government-owned utilities throughout the State-owned land not retained. Indirect 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, agricultural processes, manufacturing and shipping equipment and materiel, and troop movements—would also continue to produce GHG emissions. The continued production of identical levels of GHGs would not meaningfully contribute to the potential impacts of global or local climate change.

Ongoing changes to climate patterns in Hawai'i are described in **Section 3.6.4**. These changes are unlikely to impair or preclude any aspect of Alternative 1. The State-owned land is not near the shoreline; therefore, an increase in sea level would not increase the potential for coastal flooding on the State-owned land. Changes to the stability of ecosystems and biodiversity and the health of indigenous populations would 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 riverine flooding at PTA from changes to regional temperature and precipitation patterns would be unlikely to preclude retention and continued military use of the State-owned land; however, the increased potential for drought may result in increased wildfires, which would adversely impact local air quality. Wildfires reduce vegetative cover, which can exacerbate fugitive dust production during high wind conditions. No climate change mitigation or adaptation measures would be required.

Fee Simple Title Impacts: No new impacts on air quality or from GHG emissions would occur under fee simple title retention. Under Alternative 1, continued long-term, minor, direct and indirect, adverse impacts on air quality and from GHG emissions would occur from continuation of ongoing activities within the State-owned land retained under fee simple title.

Land Not Retained

Air Emissions. Under Alternative 1, new long-term, negligible, beneficial impacts would occur from the end of ongoing activities within the State-owned land not retained. The 250 acres of State-owned land not retained are rarely used for military training; therefore, the beneficial impacts would be negligible. The Army would continue to follow the requirements for control of fugitive dust in HAR Section 11-60.1-

33 on adjacent State-owned land retained and U.S. Government-owned land, to the extent practicable. PTA would continue BMPs to manage fugitive dust, as described under lease, on adjacent State-owned land retained and U.S. Government-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 and cleanup and restoration activities for hazardous substances and hazardous wastes, including MEC, within the State-owned land not retained after expiration of the current lease.~~ 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, CERCLA, and the terms of the lease. These lease compliance ~~activities~~ actions and cleanup and restoration activities could result in new short-term, negligible, adverse impacts on air quality. These impacts would occur from emissions of vehicles and equipment used to conduct the activities, and the impacts would be negligible due to the lack of facilities and infrastructure and limited use of the State-owned land not retained. These impacts would not be significant because the new emissions would not be enough to adversely affect the ambient air quality for the island of Hawai'i, threaten the island's attainment status, or violate any federal or state air regulation.

DU. Under Alternative 1, there would be no impacts on air quality from DU.

Climate Change**.** Under Alternative 1, new long-term, negligible, beneficial impacts would occur from the end of ongoing activities, including GHG emissions, within the State-owned land not retained.

~~Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities for hazardous substances and hazardous wastes, including MEC, within the State-owned land not retained after expiration of the current lease.~~ 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, CERCLA, and the terms of the lease. These lease compliance ~~activities~~ actions and cleanup and restoration activities could result in new short-term, negligible, adverse impacts from GHG emissions. These impacts would occur from emissions of vehicles and equipment used to conduct the activities, and the impacts would be negligible due to the lack of facilities and infrastructure and limited use of the State-owned land not retained. Ongoing changes to climate patterns would not impair or preclude the State's ability to manage the State-owned land not retained.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.6.4.1**.

Level of Significance: Alternative 1 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.6.5**.

3.6.6.2 Alternative 2: Modified Retention

Land Retained

Lease Impacts:

Air Emissions. The approximately 19,700 acres that would be retained under Alternative 2 contain all buildings and most of the unpaved roads and maneuver area on the State-owned land. As such, most air

emissions currently emitted on the State-owned land would continue to be emitted under Alternative 2. Consequently, continued long-term, minor, direct and indirect, adverse impacts on air quality would occur from continuation of ongoing activities within the State-owned land retained.

Training and other activities on the State-owned land retained would continue at similar levels; therefore, exhaust from military vehicles and aircraft flight operations, dust from vehicle use on gravel and dirt roads and near-ground helicopter and tilt-rotor aircraft operations, and military munitions use would not increase or decrease. Additionally, exhaust and dust would continue to be produced from military vehicles and equipment used to access and perform maintenance and repair on U.S. Government-owned utilities throughout the State-owned land not retained. No changes to ambient air quality would occur from the continuation of these air emissions. The land retained under Alternative 2 includes Building 601; therefore, the 45kW internal combustion engine at Building 601 would continue to operate for approximately 18 hours per year. Fugitive dust would continue to be produced from maneuver activities on unpaved roads and trails and helicopter and tilt-rotor aircraft activities. The Army would continue to follow the requirements for control of fugitive dust described in detail for Alternative 1. Alternative 2 would be consistent with all federal, state, and local air regulations including HAR Chapter 11-59, HAR Chapter 11-60.1, and HRS Chapters 342B and 342C.

As noted in **Section 3.6.4**, the USEPA has designated the island of Hawai‘i as unclassified/attainment for all criteria pollutants (USEPA, 2020b). This designation means the USEPA’s General Conformity Rule is not applicable for Alternative 2.

DU. No impacts on air quality with respect to DU would occur under Alternative 2. Monitoring for airborne uranium concluded that the past use of DU had not impacted air quality at PTA or in the surrounding area, and the total airborne uranium levels in the collected particulate matter samples were within the range of naturally occurring uranium in Hawaiian soils and rock and were several orders of magnitude below U.S. and international chemical and radiological health guidelines. As such, Alternative 2 would have no impact on airborne uranium levels. The State-owned land retained under Alternative 2 includes the portion of the range on the State-owned land where DU-containing spotting rounds formerly were fired from (i.e., Range 13 on TA 9).

Alternative 2 would not change the Army’s DU management practices on PTA. **Section 3.5** contains further details on DU management practices and potential impacts.

***Climate Change*.** Continued long-term, minor, direct and indirect, adverse impacts from GHG emissions would occur from continuation of ongoing activities within the State-owned land retained during a new lease. Because ongoing activities on the State-owned land retained would continue at similar levels as currently conducted, Alternative 2 would result in the continued emission of similar levels of GHGs as currently emitted. These GHG 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 the internal combustion engine at Building 601 and military munitions use. Additionally, GHG emissions would continue to be produced from military vehicles and equipment used to access and perform maintenance and repair on U.S. Government-owned utilities throughout the State-owned land not retained. Indirect activities not occurring on the State-owned land retained—such as off-site energy production, agricultural processes, manufacturing and shipping equipment and materiel, and troop movements—would also continue to produce GHG emissions. The continued production of similar levels of GHGs would not meaningfully contribute to the potential impacts of global or local climate change.

Ongoing changes to climate patterns in Hawai‘i are described in **Section 3.6.4**. These changes are unlikely to impair or preclude any aspect of Alternative 2. The State-owned land is not near the shoreline; therefore, an increase in sea level would not increase the potential for coastal flooding on the State-owned land. Changes to the stability of ecosystems and biodiversity and the health of indigenous populations would 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 riverine flooding at PTA from changes to regional temperature and precipitation patterns would be unlikely to preclude retention and continued military use of the State-owned land retained; however, the increased potential for drought may result in increased wildfires, which would adversely impact local air quality. Wildfires reduce vegetative cover, which can exacerbate fugitive dust production during high wind conditions. No climate change mitigation or adaptation measures would be required.

Fee Simple Title Impacts: No new impacts on air quality or from GHG emissions would occur under fee simple title retention. Under Alternative 2, continued long-term, minor, direct and indirect, adverse impacts on air quality and from GHG emissions would occur from continuation of ongoing activities within the State-owned land retained.

Land Not Retained

Air Emissions. New long-term, negligible, beneficial impacts on air quality would occur from the reduction in air emissions resulting from ending ongoing activities within the State-owned land not retained. Ending ongoing activities within the State-owned land not retained also would negligibly reduce military activities on certain U.S. Government-owned land—particularly the impact area, training ranges, and the Cantonment and BAAF—resulting in a similar negligible reduction in air emissions from ending such activities. The 3,300 acres of State-owned land not retained are rarely used for military training; therefore, the beneficial impacts would be negligible. The Army would continue to follow the requirements for control of fugitive dust in HAR Section 11-60.1-33 on adjacent State-owned land retained and U.S. Government-owned land, to the extent practicable. PTA would continue BMPs to manage fugitive dust, as described under lease, on adjacent State-owned land retained and U.S. Government-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 and cleanup and restoration activities for hazardous substances and hazardous wastes, including MEC, within the State-owned land not retained after expiration of the current lease.~~ 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, CERCLA, and the terms of the lease. These lease compliance ~~activities~~ actions and cleanup and restoration activities could result in new short-term, negligible, adverse impacts on air quality. These impacts would occur from emissions of vehicles and equipment used to conduct the activities, and the impacts would be negligible due to the lack of facilities and infrastructure and limited use of the State-owned land not retained. These impacts would not be significant because the new emissions would not be enough to adversely affect the ambient air quality for the island of Hawai‘i, threaten the island's attainment status, or violate any federal or state air regulation.

DU. No impacts on air quality with respect to DU would occur under Alternative 2. No DU ranges are within the State-owned land not retained.

***Climate Change*.** New long-term, negligible, beneficial impacts would occur from the end of ongoing activities, including GHG emissions, within the State-owned land not retained.

~~Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities for hazardous substances and hazardous wastes, including MEC, within the State-owned land not retained after expiration of the current lease.~~ 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, CERCLA, and the terms of the lease. These lease compliance ~~activities~~ actions and cleanup and restoration activities could result in new short-term, negligible, adverse impacts from GHG emissions. These impacts would occur from emissions of vehicles and equipment used to conduct the activities, and the impacts would be negligible due to the lack of facilities and infrastructure and limited use of the State-owned land not retained. Ongoing changes to climate patterns would not impair or preclude the State's ability to manage the State-owned land not retained.

~~Potential~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.6.4.1**.

Level of Significance: Alternative 2 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.6.5**.

3.6.6.3 Alternative 3: Minimum Retention and Access

Land Retained

Lease Impacts:

Air Emissions. The approximately 10,100 acres that would be retained under Alternative 3 contain all buildings, most unpaved roads, most of the training and support facilities, and about half of the maneuver areas on the State-owned land. As such, air emissions from training and other activities currently emitted on the State-owned land would be moderately reduced under Alternative 3. Consequently, continued long-term, negligible to minor, direct and indirect, adverse impacts on air quality would occur from continuation of ongoing activities within the State-owned land retained.

Training and other activities would continue on the State-owned land retained; therefore, even with the loss of approximately 12,900 acres of State-owned land not retained, exhaust from military vehicles and aircraft flight operations, dust from vehicle use on gravel and dirt roads and near-ground helicopter and tilt-rotor aircraft operations, and military munitions use only would decrease moderately. Additionally, exhaust and dust would continue to be produced from military vehicles traversing, maintaining, and repairing the 11 miles of select roads and training trails and firebreaks/fuel breaks and associated access along most of the 11 miles, and military vehicles and equipment used to access and perform maintenance and repair on U.S. Government-owned utilities throughout the State-owned land not retained. No changes to ambient air quality would occur from the continuation of these air emissions. The State-owned land retained under Alternative 3 includes Building 601; therefore, the 45kW internal combustion engine at Building 601 would continue to operate for approximately 18 hours per year. Fugitive dust would continue to be produced from maneuver activities on unpaved roads and trails and helicopter and tilt-rotor aircraft activities. The Army would continue to follow the requirements for control of fugitive dust

described in detail for Alternative 1. Alternative 3 would be consistent with all federal, state, and local air regulations including HAR Chapter 11-59, HAR Chapter 11-60.1, and HRS Chapters 342B and 342C.

As noted in **Section 3.6.4**, the USEPA has designated the island of Hawai‘i as unclassified/attainment for all criteria pollutants (USEPA, 2020b). This designation means the USEPA's General Conformity Rule is not applicable to Alternative 3.

DU. No impacts on air quality with respect to DU would occur under Alternative 3. Monitoring for airborne uranium concluded that the past use of DU had not impacted air quality at PTA or in the surrounding area, and the total airborne uranium levels in the collected particulate matter samples were within the range of naturally occurring uranium in Hawaiian soils and rock and were several orders of magnitude below U.S. and international chemical and radiological health guidelines. As such, Alternative 3 would have no impact on airborne uranium levels. The State-owned land retained under Alternative 3 includes the portion of the range on the State-owned land where DU-containing spotting rounds formerly were fired from (i.e., Range 13 on TA 9).

Alternative 3 would not change the Army's DU management practices on PTA. **Section 3.5** contains further details on DU management practices and potential impacts.

Climate Change**.** GHG emissions from Army training and other activities within the State-owned land would be moderately reduced under Alternative 3 due to the loss of approximately 12,900 acres of State-owned land not retained. Consequently, continued long-term, negligible to minor, direct and indirect, adverse impacts from GHG emissions would occur from continuation of ongoing activities within the State-owned land retained. GHG 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 the internal combustion engine at Building 601, and military munitions use. Additionally, GHG emissions would continue to be produced from military vehicles traversing, maintaining, and repairing the 11 miles of select roads and training trails and firebreaks/fuel breaks and associated access along most of the 11 miles, and military vehicles and equipment used to access and perform maintenance and repair on U.S. Government-owned utilities throughout the State-owned land not retained. Indirect activities not occurring on the State-owned land retained—such as off-site energy production, agricultural processes, manufacturing and shipping equipment and materiel, and troop movements—would also continue to produce GHG emissions. The continued production of moderately reduced levels of GHGs would not meaningfully contribute to the potential impacts of global or local climate change.

Ongoing changes to climate patterns in Hawai‘i are described in **Section 3.6.4**. These changes are unlikely to impair or preclude any aspect of Alternative 3. The State-owned land is not near the shoreline; therefore, an increase in sea level would not increase the potential for coastal flooding on the State-owned land. Changes to the stability of ecosystems and biodiversity and the health of indigenous populations would 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 riverine flooding at PTA from changes to regional temperature and precipitation patterns would be unlikely to preclude retention and continued military use of the State-owned land retained; however, the increased potential for drought may result in increased wildfires, which would adversely impact local air quality. Wildfires reduce vegetative cover, which can exacerbate fugitive dust production during high wind conditions. No climate change mitigation or adaptation measures would be required.

Fee Simple Title Impacts: No new impacts on air quality and from GHG emissions would occur under fee simple title retention. Under Alternative 3, continued long-term, negligible to minor, direct and indirect, adverse impacts on air quality and from GHG emissions would occur from continuation of ongoing activities within the State-owned land retained.

Land Not Retained

Air Emissions. New long-term, negligible, direct and indirect, beneficial impacts on air quality would occur from the reduction in air emissions resulting from ending ongoing activities within the State-owned land not retained. Ending ongoing activities within the State-owned land not retained also would negligibly reduce military activities on U.S. Government-owned land (particularly the impact area, training ranges, and the Cantonment and BAAF) and at areas outside PTA due to less convoys and other transportation to and from PTA, all of which would result in a similar negligible reduction in air emissions from ending such activities. The 12,900 acres of State-owned land not retained is moderately used for military training; therefore, the beneficial impacts would be negligible. The Army would continue to follow the requirements for control of fugitive dust in HAR Section 11-60.1-33 on adjacent State-owned land retained and U.S. Government-owned land, to the extent practicable. PTA would continue BMPs to manage fugitive dust, as described under lease, on adjacent State-owned land retained and U.S. Government-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 and cleanup and restoration activities for hazardous substances and hazardous wastes, including MEC, within the State-owned land not retained after expiration of the current lease.~~ 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, CERCLA, and the terms of the lease. These lease compliance ~~activities~~ actions and cleanup and restoration activities could result in new short-term, negligible to minor, adverse impacts on air quality. These impacts would occur from emissions of vehicles and equipment used to conduct the activities, and the impacts would be negligible to minor due to the limited number of facilities and infrastructure and moderate use of the State-owned land not retained. These impacts would not be significant because the new emissions would not be enough to adversely affect the ambient air quality for the island of Hawai'i, threaten the island's attainment status, or violate any federal or state air regulation.

DU. No impacts on air quality with respect to DU would occur under Alternative 3. No DU ranges are within the State-owned land not retained.

Climate Change. New long-term, negligible, beneficial impacts would occur from the end of ongoing activities, including GHG emissions, within the State-owned land not retained, negligibly reduced military activities within U.S. Government-owned land, and less convoys and other transportation to and from PTA.

~~Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities for hazardous substances and hazardous wastes, including MEC, within the State-owned land not retained after expiration of the current lease.~~ 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, CERCLA, and the terms of the lease. These lease compliance ~~activities~~ actions and cleanup and restoration activities could result in new short-term, negligible to minor, adverse impacts

from GHG emissions. These impacts would occur from emissions of vehicles and equipment used to conduct the activities, and the impacts would be negligible to minor due to the limited number of facilities and infrastructure and moderate use of the State-owned land not retained. Ongoing changes to climate patterns would not impair or preclude the State's ability to manage the State-owned land not retained.

~~Potential~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.6.4.1**.

Level of Significance: Alternative 3 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.6.5**.

3.6.6.4 No Action Alternative

Air Emissions. New short-term, minor, adverse impacts on air quality could occur from completion of lease compliance actions and cleanup and restoration activities for hazardous substances and ~~hazardous wastes, including~~ MEC~~,~~ within the State-owned land after expiration of the current lease. These impacts would occur from emissions of vehicles and equipment used to conduct the activities. These impacts would not be significant because the new emissions would not be enough to adversely affect the ambient air quality for the island of Hawai'i, threaten the island's attainment status, or violate any federal or state air regulation.

New long-term, minor, direct and indirect, beneficial 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, reduce its ability to conduct and sustain training and operations on certain U.S. Government-owned land (particularly the impact area, training ranges, and the Cantonment and BAAF), and consequently result in less convoys and other transportation to and from PTA. More than half of PTA's unrestricted maneuver area would not be retained. As a result, the Army would reduce training activities on PTA beginning in 2029, which would reduce the amount of criteria pollutant emissions produced from PTA. Exhaust from military vehicles and aircraft flight operations, dust from vehicle use on gravel and dirt roads and near-ground helicopter and tilt-rotor aircraft operations, and air emissions from military munitions use would decrease compared to current conditions. The Army would continue to follow the requirements for control of fugitive dust in HAR Section 11-60.1-33 on U.S. Government-owned land, to the extent practicable. PTA would continue BMPs to manage fugitive dust on adjacent U.S. Government-owned land. The No Action Alternative would be consistent with all federal, state, and local air regulations including HAR Chapter 11-59, HAR Chapter 11-60.1, and HRS Chapters 342B and 342C.

The land at Building 601 would not be retained, so the 45kW internal combustion engine at Building 601 would be deactivated and would no longer operate for approximately 18 hours per year. The engine would be removed from PTA's potential to emit and air operating permits. The other existing stationary air emission sources at PTA are on U.S. Government-owned land and are assumed to remain and emit criteria pollutants at identical levels as current conditions; however, the reduction in PTA's ability to sustain training on certain U.S. Government-owned land may result in other boilers and internal combustion engines on PTA being deactivated.

The reduction in air emissions from PTA would result in new long-term, minor, beneficial impacts on ambient air quality. Because the island of Hawai'i already has good air quality, the reduction in air emissions from PTA would have only a minor impact. As noted in **Section 3.6.4**, the USEPA has designated

the island of Hawai‘i as unclassified/attainment for all criteria pollutants (USEPA, 2020b). This designation means the USEPA’s General Conformity Rule is not applicable for federal actions such as the No Action Alternative.

DU. No impacts on air quality with respect to DU would occur under the No Action Alternative. Monitoring for airborne uranium concluded that the past use of DU had not impacted air quality at PTA or in the surrounding area, and the total airborne uranium levels in the collected particulate matter samples were within the range of naturally occurring uranium in Hawaiian soils and rock and were several orders of magnitude below U.S. and international chemical and radiological health guidelines. As such, the No Action Alternative—which includes the Army no longer retaining the portion of the range on the State-owned land where DU-containing spotting rounds formerly were fired from (i.e., Range 13 on TA 9)—would have no impact on airborne uranium levels. **Section 3.5** contains details on range decommissioning.

***Climate Change*.** ~~Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities for hazardous substances and hazardous wastes, including MEC, within the State-owned land after expiration of the current lease.~~ 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, CERCLA, and the terms of the lease. These lease compliance ~~activities~~ actions and cleanup and restoration activities could result in new short-term, negligible, adverse impacts from GHG emissions. These impacts would occur from emissions of vehicles and equipment used to conduct the activities.

New long-term, minor, direct and indirect, beneficial impacts from GHG emissions would result under the No Action Alternative. The No Action Alternative would result in reduced emission of GHGs from the elimination of Army training and other activities within the State-owned land and impact area and training ranges, reduction in activities at the Cantonment and BAAF, removal of the internal combustion engine at Building 601, and reduction in convoys and other transportation to and from PTA. This reduction in GHG emissions would not meaningfully reduce the severity of global or local climate change given the extremely limited contribution of PTA’s GHG emissions to global and local GHG inventories.

Ongoing changes to climate patterns in Hawai‘i are described in **Section 3.6.4**. These changes are unlikely to impair or preclude any aspect of the No Action Alternative. The State-owned land is not near the shoreline; therefore, an increase in sea level would not increase the potential for coastal flooding on the State-owned land. Changes to the stability of ecosystems and biodiversity and the health of indigenous populations would not impact the State’s ability to manage the State-owned land after the Army’s current lease ends. Additionally, increased potential for drought and riverine flooding at PTA from changes to regional temperature and precipitation patterns would be unlikely to impair or preclude the State’s ability to manage the State-owned land, and no climate change mitigation or adaptation measures would be required.

~~**Potential**~~ **Mitigation Measures:** The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended. No mitigation measures are recommended for the lease compliance actions and cleanup and restoration activities for hazardous substances and ~~hazardous wastes, including~~ MEC~~,~~ beyond the existing management measures discussed in **Section 3.6.4.1**.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.6.5**.

3.7 Noise

3.7.1 Definition

Sound is vibration of air, a term used to describe pressure variations that are sensed by humans and wildlife. Noise is generally defined as unwanted sound and can negatively affect the health and well-being of humans and wildlife. Noise can be steady or impulsive, continuous or intermittent; it can vary in frequency and sources that can be relatively nondescript or readily identifiable. Human and wildlife receptor response to increased sound levels varies according to the source type, characteristics of the sound source, time of day, receptor sensitivity, and distance between source and receptor.

Sound pressure level is measured in decibels (dB) and is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Sound measurements are frequently filtered because the human ear does not hear all frequencies equally. A-weighted and C-weighted frequencies are used to put less weight on frequencies human ears do not hear well, and more weight on those human ears do. A-weighted decibels (dBA) approximate frequency response to adjust for human ear functions for higher frequency sounds (USAG-HI, 2017b). C-weighted decibels are used for low-frequency sounds (USAPHC, 2010). Noise beyond comfort levels can affect humans and wildlife, and their responses vary depending on multiple factors, including noise level, distance, noise regularity, noise perception, and species sensitivity (Shannon et al., 2016). Typical day-to-day sounds and their dBA levels are provided in **Table 3-20**.

Table 3-20: 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, 1997

Noise Metrics

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 cause wildlife to move rapidly, fly in avoidance behavior or be prone to unexpected predation.

The sound pressure level noise metric describes steady noise levels, although very few noises are, in fact, constant; therefore, additional metrics have been developed to describe noise:

- **Day-night Sound Level** is the average noise level over 24 hours with a 10 dB penalty added to the nighttime levels (10:00 p.m. to 7:00 a.m.).
- **Maximum Sound Level** is the maximum sound level measured in a single event where sound levels change with time.
- **A-Weighted Day-Night Average Sound Level** evaluates human response or annoyance to noise, typically aircraft and ground transportation. Represents a 24-hour average noise level.
- **C-Weighted Day-Night Average Sound Level** is used to evaluate human response or annoyance to impulsive noise such as blasts, commonly associated with large caliber ammunition and explosives. Represents a 24-hour average noise level.
- **Peak Sound Level (dBP)** is a single-event sound level that has not been frequency weighted (USAPHC, 2020).

3.7.2 Regulatory Framework

The Noise Control Act of 1972 (42 U.S.C. Section 4901 *et seq*.) directs federal agencies to comply with applicable federal, state, and local noise control regulations to the fullest extent consistent with agency missions. Other noise laws include the Aviation Safety and Noise Abatement Act, the Control and Abatement of Aircraft Noise, and the Sonic Boom Act.

In Hawaiʻi, noise pollution regulations are found in HRS Chapter 342F. The Hawaiʻi DOH, Indoor and Radiological Health Branch regulates noise in accordance with HAR Chapter 11-46, Community Noise Control, which limits sound generated by new or expanded developments. It provides for the prevention, control, and reduction of noise pollution. HAR Section 11-46-3 defines maximum permissible sound levels for three classifications of land use (Zone A, Zone B, and Zone C) by zoning district and provides for the reduction and control of excessive noise sources. **Table 3-21** outlines the maximum sound level at the property boundary for permanent stationary sources according to land use (DOH-IRHB, 2020). The Proposed Action does not involve introduction of, or modifications to, stationary sources; therefore, HAR Chapter 11-46 does not apply, so the table is provided for informational purposes only.

Table 3-21: Hawaiʻi Maximum Permissible Sound Levels

Land Use[a]	Maximum Permissible Sound Levels[b]	
	Daytime dBA (7 a.m. – 10 p.m.)	Nighttime dBA (10 p.m. – 7 a.m.)
Zone A: Residential, conservation, preservation, public space, or similar land use.	55	45
Zone B: Multi-family dwellings, business, commercial, hotel, resort, or similar use.	60	50
Zone C: Agriculture, county, industrial, or similar use.	70	70

[a] For mixed zoning districts, the primary land use designation is used to determine the permissible sound level.

[b] Sound limits for impulsive noise is 10 dBA above the maximum permissible sound levels shown.

The DoD has been developing programs to evaluate noise on installations since the 1970s, including the Installation Compatible Use Zone (ICUZ) and the 2010 Hawai'i Statewide Operational Noise Management Plan (SONMP), which was developed by the U.S. Army Public Health Command (USAPHC) to address major noise sources, including airfield noise. AR 200-1, *Environmental Protection and Enhancement*, categorizes noise exposure on communities into three noise zones and one subdivision zone based on noise-sensitive land uses (e.g., schools, housing, medical facilities), as follows:

- 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 taken into consideration.
- Zone I – Noise-sensitive land uses are generally acceptable.
    - Zone I subdivision – The Land Use Planning Zone (LUPZ) is 5 dB lower than Zone II. Within this area, noise-sensitive land uses are generally acceptable (DA, 2007).

These zones are used for land use planning guidance for noise abatement planning (**Table 3-22**). The perceptibility of military actions is summarized in **Table 3-23** based on peak noise levels for complaint management.

Table 3-22: Noise Limits for 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 (dBP)	
LUPZ	60 - 65	57 - 62	N/A	Generally Compatible
I	< 65	< 62	< 87	Generally Compatible
II	65 - 75	62 - 70	87 - 104	Generally Not Compatible
III	> 75	> 70	> 104	Not Compatible

Source: DA, 2007

Table 3-23: Complaint Risk Guidelines

Perceptibility[a]	dBP	Risk of Receiving Noise Complaints
May be audible	< 115	Low
Noticeable, Distinct	115 - 130	Moderate
Very loud, may startle	> 130	High

[a] Perceptibility is subjective. The classifications are based on how a typical person might describe the event.

Source: USAPHC, 2020

3.7.3 Region of Influence

The ROI for noise analysis is the area within and surrounding the State-owned land at PTA in which humans and wildlife may suffer annoyance or disturbance from noise sources from PTA. For most common noises, noise disturbances are limited to 0.5 mile from the noise source; high-intensity noises, such as those generated by aircraft and military munitions, may extend several miles from the source. The ROI extends into surrounding areas on and around PTA that might be affected by aircraft conducting training on PTA or military munitions noise.

Aircraft entering and exiting restricted area R-3103, or transiting to PTA airspace, are discussed in-depth in **Section 3.7.4** and **Section 3.13**.

3.7.4 Existing Conditions

Existing sources of noise on and adjacent to PTA include military munitions, military vehicles and aircraft, and road traffic. In most instances, military vehicles and convoy traffic are mildly disruptive but do not generate enough noise to warrant further analysis (USAPHC, 2010).

Military Munitions

The primary training features that generate military munitions noise on the State-owned land include the BAX, MOUT, and 107 FPs. Other sources of military munitions noise at PTA include the impact area and training ranges to the south of the State-owned land. A noise model assessment for military munitions was completed on PTA by the USAPHC in 2020. Per AR 200-1, the USAPHC modeled annual average C-weighted day-night average noise level contours for large caliber weapons based on noise energy averaged over 250 days. A Blast Noise Version 2 modeling program was used to account for the PTA terrain when creating the noise models (USAPHC, 2020).

The baseline noise model indicates that, except for a small area on the northern portion of the State-owned land, Zone III remains within the PTA boundary. The LUPZ, Zone I, and Zone II extend beyond the PTA boundaries up to 0.6 mile in certain areas (**Figure 3-11**). Noises that extend beyond the installation boundaries overlap with uninhabited forest reserve areas. There are no noise-sensitive lands impacted (USAPHC, 2020).

While land use guidelines indicate compatibility with baseline conditions, certain weather situations that may occur at any time of the year (i.e., low cloud cover, high humidity, variable winds) may allow noise to travel further than the baseline condition model shows. These weather conditions may be more likely during the rainy season (November through March) but can occur at any time of the year. During neutral weather events, dBP between 115 and 130 dB extends less than 0.9 mile, at the maximum, beyond the PTA boundary; dBP above 130 dB extends marginally beyond the southeastern boundary line (**Figure 3-12**). During certain weather conditions, dBP between 115 and 130 dB extends, at a maximum, 4.3 miles from the installation boundary; dBP above 130 dB extends less than 0.8 miles at any point beyond the installation's boundary (**Figure 3-13**). Noises that extend beyond the installation boundaries overlap with uninhabited forest reserve areas. There are no noise-sensitive lands impacted (USAPHC, 2020).

The PTA region is an unpopulated area with a proportionately low traffic volume on DKI Highway, Route 190, and Waikōloa Road; thus, PTA ambient noise levels are low except during training events.

Aircraft

The primary training features that generate aircraft noise from training activities associated within the State-owned land include Cooper Air Strip, FARPs, landing zones, and drop zones, as well as air support activities. Other sources of aircraft noise include the BAAF and the Keʻāmuku parcel landing and drop zones north of the State-owned land.

There have been no noise model surveys completed for aircraft at PTA. Aircraft noise associated with the facilities listed here originate from four main sources: take-off and landing from BAAF, FARPs, and landing zones; UAVs launched from Cooper Air Strip; aircraft entering and exiting R-3103; and aircraft transiting from the ocean to, or from, PTA airspace.

Flight operations exceeding ambient noise levels generally occur during aircraft operations within airfield approach and departure corridors. Because aircraft noise levels increase the closer an aircraft gets to the ground, the most intense aircraft noise levels are associated with the airfield and adjacent staging and parking areas. All BAAF noise zones for aircraft take-off and landing and all UAV noises originating from Cooper Air Strip within the State-owned land are contained within the PTA boundaries (DN, 2012; USAG-PTA, 2018a).

Precautionary measures have been put into place to minimize any impacts on local neighborhoods and residents for transiting aircraft. All transiting aircraft pilots and crew receive a briefing from the BAAF Air Traffic and Airspace Chief designed to minimize noise impacts and disruption to local communities. The briefing specifies the flight route to PTA devised specifically to avoid populated areas as much as possible. Additionally, aircraft are directed to fly at 2,000 feet above ground level (AGL) or above during transition to and from PTA airspace, unless low cloud cover necessitates flying lower for safety reasons (USAG-PTA, 2020e). For restricted area R-3103 usage, all aircraft are required to enter and exit the airspace at 2,000 feet AGL per the USAG-PTA *External Standard Operating Procedures* (USAG-PTA, 2018a).

Noise Impacts on Communiti~~es~~y, ~~and~~ Wildlife, and Plants

As noted in **Section 3.7.1**, noise beyond comfort levels can affect humans and unhabituated wildlife with varying degrees of response based on multiple factors. The nearest local community is outside the northern boundaries of the Keʻāmuku parcel, significantly to the north of PTA's noise model contours; however, Keʻāmuku parcel landing and drop zones were not a part of the 2020 noise model. These communities are not expected to be impacted except by occasional unusual weather events that may increase military munitions or aircraft noise. While there is always a risk of noise complaints, based on the 2020 modeling, the risk is considered minimal.

Noise generated from ongoing activities at PTA can cause unhabituated wildlife startle, alarm, and alert behaviors, potentially causing rapid movement or flight in avoidance behavior. This could increase the risk of wildlife being struck by live-fire, abandoning nest or young, receiving auditory damage, or increasing energy expenditure and food demands (USFWS, 2013). It is also possible that habituation to noise or distraction caused by noise could cause wildlife to be less aware of surroundings and more prone to predation. The most likely, detectable response of wildlife could be a temporary change in behavior such as flushing or some other startle response. The 2020 USAPHC noise modeling calculated noise levels generated by various military munitions including large arms and high explosive charges. Models incorporated noise sources, sound propagation and directivity, PTA terrain, and weather conditions

(USAPHC, 2020). Wildlife noise impacts are based on perception and are species-specific. Because very little noise impact research has been done on PTA species, PTA NRP staff used surrogate species to evaluate impacts on vertebrate species and noted that some species may react and startle. 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., 1998, Bunkley & Barber, 2015; Goudie & Jones, 2005). Other studies, including a monarch flycatcher study done on Schofield Barracks and Makua Military Reservation, have noted that birds and other wildlife have been documented as becoming habituated to aircraft overflights and other noises (e.g., artillery training) after continuous or frequent exposure (Knight and Gutzwiller, 1995; Shannon et al., 2016; USAG-HI, 2001). Therefore, most wildlife in the vicinity are expected to be habituated to noise associated with training activities.

While plant species don't experience noise the way human and wildlife receptors do, their response to sound vibrations has been studied in recent years. Phytoacoustics, the study of sound detection and emission of plants, has been the subject of recent research (Barber et al., 2010; Ware et al., 2015; Khait et al., 2019; Ali et al., 2023). Most 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). Phillips et al., (2021) documented that long-term noise exposure to natural gas well noise (95 dBA at 1 mile) has negative impacts on seedling recruitment and vegetation diversity. There are no known plant noise or vibrational studies 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 PTA are expected to be habituated to noise associated with training activities. See **Section 3.3.4.4** for additional information on wildlife and plant responses to noise and **Section 3.3.6** for analysis of wildlife, plants, and noise.

3.7.4.1 Existing Management Measures

The Army issues a monthly training advisory to the public informing the local community, stakeholders, and elected officials of upcoming training events that may be louder and more noticeable to the public. Additionally, for stand-alone, large-scale, joint or Army exercises, a separate advisory is issued to highlight increased levels of training and to increase the public's general awareness. Such advisories are issued 24 hours prior to training activities. These advisories are provided via email, radio, newspapers, and various boards (e.g., neighborhood boards, Native Hawaiian Advisory Council). These advisories are also sent to individuals who have requested to be added to the Training Advisory subscription list (USAG-HI PAO, 2022).

To abate aircraft noise impacts, transiting aircraft pilots and crew receive a briefing from the BAAF Air Traffic and Airspace Chief designed to minimize noise impacts and disruption to local communities. The briefing specifies the flight route to PTA devised specifically to avoid populated areas as much as possible. 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 observe the no-fly zones around PTA. Additional existing management measures addressing noise are presented in **Appendix E**.

3.7.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.7.6** to assess potential significant impacts associated with noise. The 2020 USAPHC Environmental Noise Consultation baseline condition models referred to in **Section 3.7.4** were used to evaluate significance criteria based on State-owned land use compatibility and whether any impacts would occur based on AR 200-1. The criteria considered to assess whether an alternative would result in potential significant impacts associated with noise are based on the Army's zone criteria listed below:

- Negligible or Minor impacts:
  - Zone I noise impacts (aircraft noise less than 65 dBA day-night average sound level (DNL) or small arms noise less than 87 dBP sound level)
- Moderate impacts:
  - Zone II noise impacts (aircraft noise between 65 and 75 dBA DNL or small arms noise between 87 and 104 dBP sound level)
- Significant impacts:
  - Zone III noise impacts (aircraft noise above 75 dBA DNL or small arms noise greater than 104 dBP sound level).

Any noise at or above 75 dBA at a noise-sensitive receptor (e.g., school, hospital, daycare, assisted living facility, residential housing area, unhabituated wildlife) 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, 2017b).

Source: USAPHC, 2020

Figure 3-11: Pōhakuloa Training Area Baseline Military Munitions Conditions Noise Zones

Source: USAPHC, 2020

Figure 3-12: Pōhakuloa Training Area Military Munitions Single Event Peak Levels: Neutral Weather Conditions

Source: USAPHC, 2020

Figure 3-13: Pōhakuloa Training Area Single Event Peak Levels: Weather Conditions That Enhance Sound Propagation

3.7.6 Environmental Analysis

3.7.6.1 Alternative 1: Maximum Retention

Land Retained

Lease Impacts: Under Alternative 1, there would be no new impacts but there would be continued long-term, minor, adverse noise impacts from ongoing activities (as discussed in **Section 3.7.4**) within the State-owned land retained and from vehicle noise to access, maintain, and repair U.S. Government-owned utilities throughout the State-owned land under a new lease. This means LUPZ, Zone I, and Zone II noise levels would continue to extend up to 0.6 mile beyond the PTA boundary; however, the noise zone overlaps occur over uninhabited forest reserve areas, and no noise-sensitive lands would be impacted. The Army would continue operations in accordance with federal, state, and county noise ordinances and guidance including the SONMP and ICUZ. Additionally, public notifications would continue, and transiting aircraft pilots and crew would continue to receive a briefing from the BAAF Air Traffic and Airspace Chief designed to minimize noise impacts and disruption to local communities and neighborhoods as aircraft transit to and from PTA. Noise generated from ongoing activities could continue to cause wildlife startle, potentially causing rapid movement or flight avoidance behavior. 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 the noise sources are expected to be habituated to noise associated with ongoing activities or to avoid those areas. The majority of protected plant species are outside the noise contours; therefore, there are no anticipated noise impacts to protected species. Additionally, there is not sufficient research on tropical vegetation to support conclusions about noise impacts on vegetation. See **Section 3.3.4.4** for additional information on wildlife and plant responses to noise.

Under lease, the Army would continue to adhere to federal and state laws and regulations and would continue existing management measures discussed in **Section 3.7.4.1** and **Appendix E**.

Fee Simple Title Impacts: Under Alternative 1, there would be no new impacts under retention via fee simple title. Continued long-term, minor, adverse noise impacts would remain from continuation of ongoing activities on the State-owned land retained and access, maintenance, and repair of U.S. Government-owned utilities throughout the State-owned land.

Under fee simple title, the Army would continue to adhere to federal laws and regulations, would conform to state laws and regulations to the extent practicable, and would continue existing management measures discussed in **Section 3.7.4.1** and **Appendix E**.

Land Not Retained

The approximately 250 acres of State-owned land not retained are used minimally by PTA; therefore, the elimination of training and other activities within this area would result in new long-term, negligible, beneficial impacts from noise due to potential reduction of noise and disruptions to PTA wildlife. ~~Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities for hazardous substances and hazardous wastes that~~ 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, CERCLA, and the terms of the lease. The site restoration could result in new short-

term, negligible, adverse impacts from noise within the State-owned land not retained. BMPs and SOPs in **Appendix E** would be implemented to minimize noise impacts.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.7.4.1** and the BMPs and SOPs discussed in **Appendix E**.

Level of Significance: Alternative 1 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.7.5**.

3.7.6.2 Alternative 2: Modified Retention

Land Retained

The Army would retain and continue ongoing activities on approximately 19,700 acres of the State-owned land. The State-owned land retained would include Cooper Air Strip, the BAX, MOUT, 104 FPs, six landing zones, one drop zone, and two FARPs. The Army would also continue to permit and coordinate ongoing activities by other PTA users on the State-owned land retained. LUPZ, Zone I, and Zone II noise levels would continue to extend up to 0.6 mile beyond the PTA boundary; however, the overlaps would continue to occur over uninhabited forest reserve areas, and no noise-sensitive lands would be impacted.

Under lease, the Army would continue to adhere to federal and state laws and regulations and would continue existing management measures discussed in **Section 3.7.4.1** and **Appendix E**.

Lease Impacts: Alternative 2 would result in no new impacts but there would be continued long-term, minor, adverse noise impacts from ongoing activities within the State-owned land retained and from vehicle noise to access, maintain, and repair U.S. Government-owned utilities throughout the State-owned land under a new lease. Any noise impacts would occur over uninhabited forest reserve areas; therefore, there would be up to minor, adverse noise impacts similar to those described in Alternative 1.

Under lease, the Army would continue to adhere to federal and state laws and regulations and would continue existing management measures discussed in **Section 3.7.4.1** and **Appendix E**.

Fee Simple Title Impacts: There would be no new impacts under retention via fee simple title. Continued long-term, minor, adverse noise impacts would remain from continuation of ongoing activities on the State-owned land retained and from vehicle noise to access, maintain, and repair U.S. Government-owned utilities throughout the State-owned land.

Under fee simple title, the Army would continue to adhere to federal laws and regulations, would conform to state laws and regulations to the extent practicable, and would continue existing management measures discussed in **Section 3.7.4.1** and **Appendix E**.

Land Not Retained

By the lease expiration date, the Army would stop all training and other activities within the State-owned land not retained. The Army would lose three FPs within TA 16 in the land not retained, but because these FPs are north of DKI Highway, they are not used for live-fire and do not generate munitions noise. The State-owned land not retained is used minimally by PTA; therefore, the elimination of training and other

activities within this area would result in new long-term, negligible, beneficial impacts due to decreased noise that would result in a potential reduction of noise and disruptions to PTA wildlife.

~~Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities for hazardous substances and hazardous wastes that~~ 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, CERCLA, and the terms of the lease. The site restoration could result in new short-term, negligible, adverse impacts from noise within the State-owned land not retained. BMPs and SOPs in **Appendix E** would be implemented to minimize noise impacts.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.7.4.1** and the BMPs and SOPs discussed in **Appendix E**.

Level of Significance: Alternative 2 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.7.5**.

3.7.6.3 Alternative 3: Minimum Retention and Access

Land Retained

The Army would retain and continue ongoing activities on approximately 10,100 acres within the State-owned land retained. The State-owned land retained would include Cooper Air Strip, the BAX, MOUT, approximately 78 FPs, four landing zones, one drop zone, two FARPs, and 11 miles of roads and training trails. The Army would also continue to permit and coordinate ongoing activities by other PTA users on the State-owned land retained. LUPZ, Zone I, and Zone II noise levels would continue to extend up to 0.6 mile beyond the PTA boundary; however, the overlaps occur over uninhabited forest reserve areas, and no noise-sensitive lands would be impacted.

Under lease, the Army would continue to adhere to federal and state laws and regulations and would continue existing management measures discussed in **Section 3.7.4.1** and **Appendix E**.

Lease Impacts: Alternative 3 would result in no new impacts but there would be continued long-term, minor, adverse noise impacts from ongoing activities within the State-owned land retained and from vehicle noise to access, maintain, and repair U.S. Government-owned utilities throughout the State-owned land under a new lease. Any noise impacts would occur over uninhabited forest reserve area; therefore, there would be up to minor, adverse noise impacts from ongoing activities the same as those described in Alternative 1.

Under lease, the Army would continue to adhere to federal and state laws and regulations and would continue existing management measures discussed in **Section 3.7.4.1** and **Appendix E**.

Fee Simple Title Impacts: There would be no new impacts under retention via fee simple title. Continued long-term, minor, adverse noise impacts would remain from continuation of ongoing activities on the State-owned land retained and from vehicle noise to access, maintain, and repair U.S. Government-owned utilities throughout the State-owned land.

Under fee simple title, the Army would continue to adhere to federal laws and regulations, would conform to state laws and regulations to the extent practicable, and would continue existing management measures discussed in **Section 3.7.4.1** and **Appendix E**.

Land Not Retained

By the lease expiration date, the Army would stop all training and other activities within the State-owned land not retained, which includes approximately 12,900 acres, approximately 29 FPs, and two landing zones, as well as associated activities within U.S. Government-owned land and outside PTA. The permanent loss of use of two landing zones and approximately 29 FPs within the State-owned land not retained would result in new long-term, negligible to minor~~ to moderate~~, beneficial impacts ~~associated with noise impacts, with~~ from potential reduction of noise and disruptions to PTA wildlife. There would be new long-term, negligible, adverse impacts on State-owned land not retained from a reduced noise buffer between ongoing activities within the land retained and public use areas (land not retained). In some instances, noises from ongoing activities, such as use of the FPs (and associated noises at the impact area) and aircraft operations, would extend onto the State-owned land not retained.

~~Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities for hazardous substances and hazardous wastes, including MEC, that~~ 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, CERCLA, and the terms of the lease. The site restoration could result in new short-term, negligible, adverse impacts from noise within the State-owned land not retained. BMPs and SOPs in **Appendix E** would be implemented~~options~~ to minimize noise impacts ~~would be the same as the strategies discussed under Alternative 2.~~

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.7.4.1** and the BMPs and SOPs discussed in **Appendix E**.

Level of Significance: Alternative 3 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.7.5**.

3.7.6.4 No Action Alternative

The No Action Alternative would eliminate the Army's ability to perform training on the State-owned land and reduce its use of and ability to sustain training and operations on certain U.S. Government-owned land, particularly the impact area, southern training ranges, and the Cantonment and BAAF, which would result in new long-term, minor to moderate, beneficial impacts associated with reduced noise from the elimination of ongoing activities within the State-owned land and reduced activities on portions of U.S. Government-owned land. This would result in potential reduction of noise and disruptions to PTA wildlife.

There would be continued long-term, negligible, adverse impacts on State-owned land ~~not retained~~ from a reduced noise buffer between ongoing activities within ~~the land retained~~ U.S. Government-owned land and public use areas (State-owned land). In some instances, noises from ~~ongoing~~ remaining PTA activities, such as aircraft operations, would extend onto the State-owned land not retained. Additionally, there would be continued short-term, negligible, adverse impacts associated with noise generated from the operation of FARPs located on U.S. Government-owned land adjacent to State-owned land~~ not retained~~.

~~Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities for hazardous substances and hazardous wastes, including MEC, that~~ 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, CERCLA, and the terms of the lease. The site restoration could result in new short-term, negligible, adverse impacts on noise within the State-owned land ~~not retained~~. BMPs and SOPs in **Appendix E** would be implemented ~~options~~ to minimize noise impacts ~~would be the same as the strategies discussed under Alternative 2~~.

~~**Potential**~~ **Mitigation Measures:** The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended. No mitigation measures are recommended for the ~~lease compliance actions and cleanup and restoration activities~~ site restoration beyond the existing management measures discussed in **Section 3.7.4.1**.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.7.5**.

3.8 Geology, Topography, and Soils

3.8.1 Definition

Geologic resources refer to all aspects of the soils and geological environments, including substrate types, composition and characteristics, physiography, topography, and soils. Discussions of geology and soils also cover geologic processes, such as erosion, faulting, and volcanic eruptions, and geologic hazards such as earthquakes and slope failure. These are presented in this section as they pertain to the Proposed Action.

3.8.2 Regulatory Framework

This subsection discusses the regulatory framework pertinent to PTA for potential impacts on geology, topography, and soil.

The Farmland Protection Policy Act (7 CFR Part 658) defines farmland as prime or unique farmland or farmland of statewide or local importance and sets out criteria developed by the Secretary of Agriculture in cooperation with other federal agencies, pursuant to Section 1541(a) of the Farmland Protection Act [7 U.S.C. Section 4202(a)], to assess land and determine whether it is farmland and whether farmland that is identified requires conservation and protection. As required by Section 1541(b) of the Act, and codified at 7 U.S.C. Section 4202(b), federal agencies are (a) to use the criteria to identify, quantify, and take into account the adverse effects of their programs on the preservation of farmland, (b) to consider alternative actions, as appropriate, that could lessen adverse effects, and (c) to ensure that their programs, to the extent practicable, are compatible with the state and units of local government and private programs and policies to protect farmland. Guidelines to assist agencies in using the criteria are included in 7 CFR Part 658. USDA may make available to states, units of local government, individuals, organizations, and other units of the federal government valuable information in restoring, maintaining, and improving the quantity and quality of farmland.

The Hawaii Department of Agriculture, with assistance from the USDA ~~Natural Resources Conservation Service (~~NRCS~~)~~ and the UH College of Tropical Agriculture, developed the Agricultural Lands of Importance

to the State of Hawaii (ALISH) Classification System in 1977. The ALISH Classification System was developed to identify three classes of agriculturally important lands for the State as part of a national effort to inventory important farmlands. Lands not considered for classification within this system are developed urban lands over 10 acres, natural or artificial bodies of water over 10 acres, public use lands, forest reserves, lands with slopes in excess of 35 percent, and military installations except for undeveloped areas over 10 acres. The ALISH Classification System identifies three categories of land (equivalent NRCS categories in parentheses): Prime Agricultural Lands (Prime Farmlands), Unique Agricultural Lands (Unique Farmlands), and Other Important Lands (Additional Farmland of Statewide and Local Importance). The criteria for classification of Prime Agricultural Lands are identical to the criteria established by the NRCS for national application (USDA, 2008).

HRS Chapter 205, Land Use Commission, establishes policy for "important agricultural lands" in Hawaiʻi. The State is required to conserve and protect agricultural lands, promote diversified agriculture, increase agricultural self-sufficiency, and assure the availability of agriculturally suitable lands. Each county is to identify and map potential important agricultural land within its jurisdiction using an inclusive public involvement process. Landowner incentives, such as tax credits and loan guarantees, encourage voluntary designation of lands as important agricultural land where lands meet specific criteria.

The Army Sustainable Range Program identifies policy and guidance for planning, programming, funding, and executing the ITAM Program. The ITAM Program comprises five major component programs: Range and Training Land Assessment, Land Rehabilitation and Maintenance (LRAM), Training Requirement Integration, Sustainable Range Awareness, and Sustainable Range Program GIS. Data collected by the ITAM Program include topographic features, soil characteristics, and surface disturbance, which are used to estimate soil erosion, ground cover, and disturbance and monitoring for impacts from and/or associated with training. The Army continually funds and implements USAG-HI-wide land management practices and procedures described in the ITAM annual work plan to minimize impacts on the land. Restoration of artillery FPs has been the major area of emphasis for the LRAM program on PTA. The ongoing activities facilitated by implementation of the Proposed Action would continue to comply with the ITAM. These programs are further discussed in **Section 3.8.4.4**.

In accordance with 32 CFR Part 651, Environmental Analysis of Army Actions (Army Regulations 200-2) and HRS Chapter 343, consideration of sea level rise is to be evaluated in an EIS based upon the best available scientific data. Sea level rise related to the State-owned land is discussed in **Section 3.8.4.3**. GHG emissions are discussed in **Section 3.6**.

3.8.3 Region of Influence

The ROI for areas of geology and/or soils that are disturbed or have potential vulnerabilities to natural hazards that the Proposed Action would impact includes all areas located within the State-owned land and the corridors of the military vehicle roads.

3.8.4 Existing Conditions

3.8.4.1 Geologic Setting and Topography

The island of Hawaiʻi consists of five volcanoes that formed as a result of the northwest movement of the Pacific tectonic plate at a speed of approximately 4 inches per year over a fixed thermal anomaly in the underlying mantle (a "hot-spot"). The island of Hawaiʻi, the largest and youngest of the islands in the

Hawaiian Island chain, was formed by the lava flows of five progressively older volcanoes: Kohala (extinct for a little over 100,000 years); Mauna Kea (the tallest volcano and presently dormant); Hualālai (last eruption 1800 to 1801); Mauna Loa (active, with the last eruption in November 2022); and Kīlauea (active).

The State-owned land at PTA is in the Humuʻula Saddle area between Mauna Loa to the south and Mauna Kea to the northeast. South of the DKI Highway, the surface topography of the State-owned land gradually rises from west to east, with an elevation of approximately 4,200 feet on the west and approximately 6,800 feet on the east (**Figure 3-14**). North of the DKI Highway, Mauna Kea's slope rises from approximately 5,600 feet on the western edge of the State-owned land to an elevation of approximately 7,600 feet on the northern edge. Overall, the land within PTA gently slopes in a south-westerly direction at less than 5 percent with few trees or deep gullies present on the land (USAG-PTA, 2020c).

Mauna Loa is encroaching on Mauna Kea's southern flank, and, as a result, the southern portion of the State-owned land is made up of Mauna Loa lavas overlying and interspersed with the older Mauna Kea surface (USGS, 2007). The surface contact between older (4,000 to 200,000 years before present Mauna Kea) lava flows (USGS, 1997) and younger, generally Holocene-era (750 to 5,000 years before present) lava flows originating from Mauna Loa's southwest-rift zone (USGS, 1996) runs through the State-owned land at PTA. Large portions of the State-owned land at PTA are covered by lava flows that erupted from Mauna Loa during the nineteenth and twentieth centuries. The Mauna Kea lava flows in the area were erupted during both the basaltic and hawaiitic post-shield eruptive stages of volcanism termed the Hamakua and Laupahoehoe Volcanics, respectively, while the basaltic flows from Mauna Loa that cover the southern portion of the ~~property~~ State-owned land are termed the Kau Basalt (HGS, 1987) (**Figure 3-15**).

The Mauna Kea surface underlying the State-owned land at PTA consists of weathered ʻaʻā lava flows, finely divided rock fragments derived from glacial weathering and outwash, and ash (USAG-HI & USARPAC, 2013). The prehistoric and historic Mauna Loa lava flows consist of pāhoehoe and ʻaʻā lava types. Pāhoehoe lava is characterized by a smooth, billowy, and folded or ropy surface. The composition of ʻaʻā lava is similar to pāhoehoe but is characterized by a rough, jagged, sharp, and uneven surface and forms steep-sided, jumbled piles of sharp plates and boulders (USDA & UH, 1973). Small to large cinder cones associated with individual eruptive events of Laupahoehoe Volcanics are also present across the State-owned land.

3.8.4.2 Soils

Soils in the State-owned land are poorly developed due to the low rainfall in the area and the relatively young geologic age of the lava flow units. Much of the land surface is covered by the sparsely vegetated basaltic rock in the early stages of decomposition and soil formation. Soils on State-owned land are generally coarse to medium textured and excessively drained. The soils that developed atop the Mauna Kea lavas were initially classified by USDA as Keʻekeʻe Loamy Sand with 0 to 6 percent slopes, Huikau Extremely Stony Loamy Sand, 12 to 20 percent slopes, and Very Stony Land (USDA & UH, 1973). The areas classified by USDA as Very Stony Land are associated with the alluvial fans that developed at the base of Mauna Kea. The Huikau Extremely Stony Loamy Sand and Keʻekeʻe Loamy Sand soils are characterized by slow runoff, rapid permeability, and low shrink-swell potential. The southern portion of the State-owned land is primarily covered by ʻaʻā and pāhoehoe lava types with little or no soil cover and isolated Cinder Land pockets (USDA & UH, 1973). An extensive lava tube system (System C) underlies the ~~site~~ a portion of the State-owned land (Godby, 2003).

Several quarries are located within the State-owned land (**Figure 3-16**). PTA maintains the Ahi Quarry site near the Ahi Puʻu in TA 13 on State-owned land. The Ahi Quarry has a vein of "blue rock" that stretches to an unknown extent beneath surface lava flows. Blue rock has highly desirable characteristics of hardness, abrasion resistance, and tensile strength; therefore, it is an outstanding engineering and construction resource (USACE-POH & USAG-HI, 2019c). Other quarries ~~located~~ within the State-owned land include the Puʻu Ahi/Cinder Pit in TA 9 and the volcanic glass quarry complex. This Pre-Contact quarry has over 500 quarry features of cultural importance (**Table 3-15, Section 3.4**). Some of the volcanic glass quarry complex has been recently covered with lava (**Figure 3-16**).

The lease for State-owned land permits the Army to use rock and similar materials from the premises for construction on site (**Section 3.2.4.1**). A BO prepared by the USFWS recommends rock from onsite locations be utilized to minimize inadvertent transport of invasive plant species. A 2010 amendment to General Lease No. S-3849 expressly allows the U.S. Government to use coral, rock and similar materials that occur naturally on the State-owned land for specified, approved construction projects. The stone and cinder quarries used by the Army do not include the archaeological quarry sites (**Table 3-15**).

Table 3-24 contains a breakdown of the relative acreage of the 24 refined soil units present within the State-owned land at PTA obtained from the USDA NRCS "Web Soil Survey" (**Figure 3-17**). The top seven lava units present within the State-owned land (covering 85 percent of the land) consist of either ʻaʻā lava types or ʻaʻā lava forms that are either well-drained or excessively drained lands.

The USDA NRCS classifies ~~these~~ the soils within the State-owned land~~s~~ as "Not Prime Farmland." There is no unique farmland or farmland of statewide importance listed for the soils within the State-owned land. According to the Statewide GIS for important agricultural land last updated October 2020, the State-owned land at PTA is not designated as important agricultural land under HRS Chapter 205. The majority of the State-owned land is not evaluated, and small portions of the State-owned land with TAs 9, 11, 12, 14, 15, 16, and 20 are identified by ALISH as unclassified.

3.8.4.3 Natural Hazards

Volcanic and Earthquake Hazards

The island of Hawaiʻi is geologically active, with historic volcanic eruptions recorded on three of the five volcanoes that comprise the island. Mauna Loa and Kīlauea are both considered active volcanoes. Hualālai last erupted from 1800 to 1801. Mauna Kea last erupted about 4,000 years ago and is considered dormant (USGS, 2021a). Flows from Mauna Loa that have entered the State-owned land boundary last occurred in 2022. Potential hazards related to volcanic activity include lava flows, tephra falls, volcanic gases, pyroclastic surges, ground fractures and subsidence, earthquakes, and tsunamis (Mullineaux et al., 1987). The 1868 and 1975 earthquakes generated destructive tsunamis along the coast (Mullineaux et al., 1987; USGS, 1997); however, tsunamis would not ~~be expected to~~ reach PTA due to its elevation.

Figure 3-14: Topography of State-Owned Land

Figure 3-15: Surface Geology in Vicinity of State-Owned Land

Figure 3-16: Quarries Located within the State-Owned Land

Table 3-24: Breakdown of Soil Units Present Within the State-Owned Land			
Map Unit Symbol	**Unit Name**	**Acres in State-owned Land**	**Percent on State-owned Land**
10	Lava flows, ʻaʻā, 2 to 20% slopes	913	4.0
12	Lava flows, pāhoehoe, 2 to 20% slopes	27	0.1
158	Lava flows-Napuu complex, 2 to 20% slopes	25	0.1
164	Lava flows-Kekake complex, 2 to 20% slopes	21	0.1
165	Puuiki-Lava flows complex, 2 to 10% slopes	46	0.2
167	Lava flows-Puuiki complex, 2 to 20% slopes	203	0.9
177	Lava flows-Kamawai complex, 2 to 20% slopes	1,560	6.8
332	Lava flows-Kahaumanu complex, 2 to 20% slopes	201	0.9
357	Akahipuu very cobbly medial silt loam, 10 to 20% slopes	334	1.4
802	Puu Pa complex, 2 to 20% slopes	4,041	17.5
805	Kemole extremely stony medial very fine sandy loam, dry 2 to 12% slopes	136	0.6
806	Kilohana medial very fine sandy loam, 10 to 20% slopes	6	0.0
807	Kilohana medial loamy sand, 20 to 40% slopes	1	0.0
812	Kemole extremely stony medial very fine sandy loam, dry, 12 to 20% slopes	131	0.6
813	Kilohana medial very fine sandy loam dry, 10 to 20% slopes	23	0.1
814	Lapa extremely cobbly medial fine sandy loam, 20 to 40% slopes	454	2.0
816	Kemole-Waimea complex, dry, 2 to 12% slopes	4,413	19.1
817	Kemole extremely stony medial very fine sandy loam, cry, 35 to 70% slopes	526	2.3
823	Pohakulehu-Lapa complex, 20 to 40% slopes	133	0.6
828	Kemole-Waimea extremely cobbly substratum complex, 12 to 20% slopes	1,252	5.4
832	Keekee ashy loamy sand, 0 to 6% slopes	3,073	13.3
839	Huikau very gravelly ashy sandy loam, 30 to 50% slopes	163	0.7
840	Pohakulehu-Lanapohaku complex, 12 to 20% slopes	1,648	7.1
841	Alaone-Keekee complex, 2 to 6% slopes	198	0.9
New Lava Flow	Very Hazardous, Sharp, New Lava	3,443	15.4
	TOTAL	**22,971917**	**100.0**

Figure 3-17: Soil Units Within State-Owned Land

USGS recognizes nine Lava Hazard Zones on the island of Hawaiʻi, based on historical records of eruptions and seismic events (USGS, 1992). **Figure 3-18** shows the various Lava Hazard Zones, numbered from one to nine, in order of decreasing relative risk present on the island of Hawaiʻi. Zone 1 is the hazard zone with the highest volcanic risk and includes those areas where lava covers more than 25 percent of the land since 1800. Zone 1 areas occur adjacent to major rift zones of Mauna Loa and Kīlauea. Zone 2 represents lava flow inundations of 15 to 25 percent coverage since 1800, and 25 to 75 percent coverage in the last 750 years. Zone 3 represents inundations of areas with 1 to 5 percent lava cover since 1800, and 15 to 75 percent cover in the last 750 years. Zone 2 occurs adjacent to and downslope from active rift zones. In contrast, Zone 3 is slightly less hazardous because of its greater distance from recently active vents or due to the area's topography, which reduces the inundation risk of the area. Zone 4 represents areas with approximately 5 percent lava cover since 1800, and less than 15 percent cover in the last 750 years and includes all of Hualālai and portions of Mauna Loa that are not classified as Zone 1 to 3. Zones 5 to 9 are areas that have not been covered by lava since 1800 and are protected by topography or covered by very little lava in the last 750 years (Mullineaux et al., 1987). The State-owned land at PTA is ~~located~~ in Lava Hazard Zones 2, 3, and 8. The southeastern portion of the property is ~~located~~ in Zone 2; the southwestern portion of the property is ~~located~~ in Zone 3; and the northern portions of the property ~~located~~ on the upslope of Mauna Kea are ~~located~~ in Zone 8 (USGS, 1992).

USGS has recently prepared a more detailed lava inundation zone map for Mauna Loa Volcano, which combines more detailed geologic mapping and modeling of lavas movement across the existing surface topography on the volcano to predict areas that could be overrun by erupted lava from various probable source vent locations on Mauna Loa (USGS, 2017). These more detailed maps suggest that PTA would be affected by the Puako Inundation Zone, which extends within a half-mile of the Cantonment and crosses the shoreline south of Kawaihae Harbor.

The earthquake record since 1823 shows that each year Hawaiʻi averages about one 5.0 magnitude ~~of 5.0~~ or greater earthquake (USGS, 2021b). There have been some 40 earthquakes greater than 6.0 magnitude in ~~the~~ Hawaiʻi since 1823, with 35 of these earthquakes occurring on or just offshore the island of Hawaiʻi (Klein et al., 2001). Earthquakes of greater than 6.0 magnitude can cause considerable localized damage while quakes with magnitudes of 7.0 or above typically cause widespread property damage. Hazards associated with earthquakes include ground shaking, fractures, liquefaction, landslides and tsunamis (Mullineaux et al., 1987).

~~The majority of~~Most seismic activity on the island of Hawaiʻi is concentrated around the rift zones of the active volcanoes of Kīlauea and Mauna Loa. Earthquakes in the rift zones often occur just before or during volcanic eruptions in response to magma movement beneath the Earth's surface. The two largest recent earthquakes in Hawaiʻi with magnitudes greater than 7.0 occurred in 1868 (the great Kaʻū earthquake, magnitude 7.9) and 1975 (the Kalapana earthquake, magnitude 7.4) and are believed to have been caused by the movement of magma into the rift zones of Mauna Loa and Kīlauea (PTWC, 2018). One relatively recent quake of 6.9 in magnitude occurred in the Hawaiʻi Eastern rift zone near the south flank of Kīlauea on May 4, 2018, and according to USGS, was related to the new lava outbreaks at the volcano and resulted in the Hilina Slump, the south flank of the Kīlauea Volcano on the southeast coast of the island of Hawaiʻi, moving approximately 2 feet. The earthquake produced a minor tsunami that reached a maximum height of 15.7 inches in Kapoho, 7.9 inches in Hilo, and 5.9 inches in Honuʻapo (PTWC, 2018). There have been no historic earthquakes of greater than 6.0 magnitude in the Saddle Region between Mauna Loa and Mauna Kea. However, the State-owned land (along with much of the island of Hawaiʻi) is located within the highest-rated seismic hazard area delineated by USGS in their National Seismic Hazard Map.

Figure 3-18: Lava Flow Hazard Zone Map, Island of Hawai'i

USGS has prepared National Seismic Hazard Maps showing the horizontal ground acceleration in firm rock, as a percentage of the acceleration of gravity, for a given probability of exceedance within a given number of years. Acceleration is the rate of change in speed or direction of an object, and it is what makes buildings come apart in a strong earthquake. A 10 percent probability of exceedance in the next 50 years means there is a 10 percent chance that a more significant event would occur in the next 50 years. PTA is in an area in which there is a 10 percent probability that an earthquake would cause a ground acceleration of more than 40 to 60 percent of gravity in the next 50 years, with the likely size of the earthquake increasing to the south, in the direction of Kīlauea and the south coast (USGS, 1997). In the firm rock areas of the State-owned land on PTA, there is an estimated 10 percent chance that ground accelerations of more than 120 percent of gravity would occur, which would result in an earthquake (USGS, 1998). The intensity of ground shaking, which is influenced by the underlying geologic materials, would be lowest in rocky uplands areas and would probably increase somewhat on the lower slopes, where the alluvial deposits are the thickest.

Sometimes large regional earthquakes (greater than magnitude 6.0) can be considered related to a subsequent eruption or to some type of unrest at a nearby volcano if the volcano is already poised to erupt and meets~~ing~~ two fundamental conditions: (1) enough "eruptible" magma within the volcanic system, and (2) considerable pressure within the magma storage region (USGS, 2021c).

Several existing small structures, constructed mainly between 1984 and 1987 with a maximum square footage of 1,056, located on the State-owned land, are vulnerable to earthquake hazards because they are noncompliant with the updated building codes for structural and seismic resistance.

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. Dry, cohesionless material will come to rest on similar material when the angle of repose generally ranges between 33 and 37 degrees (NPS, 2010). At PTA, areas with slopes greater than 30 percent within the State-owned land are primarily limited to Mauna Kea Volcano's slopes north of Saddle Road. No prominent areas of large-scale slope failure are present within the State-owned land. Earthquakes or vibrations from sonic booms may also trigger these slides (Jibson & Baum, 1999). The rock rubble from these failures accumulates on the floors of the gulches and is ultimately carried downstream by runoff.

Soil Erosion

Soil erosion in the Hawaiian Islands typically occurs in two forms, sheet erosion and gullying (Zschokke, 1931). Sheet erosion is the washing of soil from the ground surface during storm events. The amount of soil erosion depends on the looseness of the soil, the intensity of the rainfall, and the steepness of the slope. Gullying is caused by water flowing downhill in channels, with enough force to make the channels deeper and broader by washing away the soil. Gullies start wherever there is a stream of water flowing-over the ground surface. Soil erosion within the lower portions of the State-owned land is low due to the following characteristics of the area: the general lack of soil (HQDA, 2010), the overall gently sloping topography~~ at the site~~, the low overall rainfall and rainfall intensities that fall on the area, and the low erodibility of the dominant surface material ~~present at the site~~ (e.g., extensive lava fields, stony rocklands, and cinderlands) (USAG-PTA, 2020c). Soil erosion does occur in the steep northern portion of the State-owned land, as evidenced by the presence of alluvial deposits overlying the contact between the older

Mauna Kea lavas and the younger Mauna Loa lavas (USGS, 1997). Dust generation is a problem at FPs where vegetative cover is less than 12 percent (USAG-PTA, 2020c).

Former Landfill POTA-06 (Type A; low-risk, municipal type category) is located within State-owned land on the eastside of Menehune in TA 6 (**Figure 3-19**). The former POTA-06 landfill was opened in 1979 and closed in October 1993 in accordance with HAR Section 11-58.1-17 (USAEC & USAG-HI, 2010). The landfill remains closed to the public. A Preliminary Assessment/Site Investigation was conducted from 1993 to 1996 based on a review conducted in 1992 and PTA's inclusion into CERCLA under USEPA Identification No. HI32 14522234 (USAEC & USAG-HI, 2010). The landfill cap at POTA-06 consists of (from top to bottom): 4 inches of soil erosion layer; 9 inches of armor layer comprised of ʻaʻā lava rock; a 12-inch protective layer of native soil; an impermeable synthetic liner; and grading/daily cover consisting of 18 to 24 inches of native soil. Because an impermeable liner was used, gas produced from the breakdown of the waste is not able to be released naturally; therefore, a gas collection and venting system was needed. Seven landfill gas monitoring points were installed to vent and monitor the amount of methane that the solid waste in the landfill may produce (USAEC & USAG-HI, 2010).

PTA manages fugitive dust through: (1) erosion control and stabilization techniques (revegetation, erosion control structures, site hardening, dust palliatives) under the LRAM component of the ITAM Program (USAG-HI & USARPAC, 2013), (2) adherence to Unified Facilities Criteria 3-250-09FA, Aggregate Surfaced Roads and Airfields Areas, which has dust control requirements for aggregate surfaced roads and airstrips of airfields at Army installations, and (3) BMPs such as maintenance of roads and training trails, maintenance of vegetative cover, periodic application of water to control dust, and modifying training during high risk conditions. BMPs are assessed annually during Range and Training Land Assessment reviews.

Sea Level Rise

According to the U.S. Global Change Research Program, the rising global atmospheric GHG emission concentrations are considerably affecting the Earth's climate, average temperatures and sea levels have risen, and changes in the frequency or intensity of precipitation, wind patterns, and other climate conditions have changed (CEQ, 2021). The Hawaiʻi Sea Level Rise Vulnerability and Adaptation Report, mandated by the Hawaiʻi Climate Change Mitigation and Adaptation Initiative, provides a statewide assessment of Hawaiʻi's vulnerability to sea level rise and recommendations to reduce exposure to sea level rise (HCCMAC, 2017). The report presents results of modeling studies conducted to determine the potential future exposure of the main Hawaiian Islands to coastal hazards and recommends that a planning benchmark of six feet of sea level rise is appropriate for projects with a lifespan beyond mid-century.

Figure 3-19: Landfill POTA-06 Location

The State Sea Level Rise Viewer provides detailed information to view impacted areas at different levels of sea level rise, including 0.5, 1.1, 2.0, and 3.2 feet, as well as 6 feet sea level rise exposure areas (HCCMAC, 2021). These scenarios relate to global sea level rise predictions based on GHG emissions continuing at current levels of increase, ~~and~~ which published scenarios suggest could occur between 2060 and 2100. Ground elevation at the State-owned land is approximately 4,200 feet on the west boundary and approximately 7,600 feet on the north boundary (**Figure 3-14**). These lands are not vulnerable to sea level rise during the next century.

3.8.4.4 Existing Management Measures

All training at PTA, including on State-owned land, adheres to procedures outlined in the IWFMP, IPMP, INRMP, ~~PTA Range Operations SOPs~~*Pōhakuloa Training Area Range Operations Standing Operating Procedures*, USAG-PTA *External* ~~*SOPs*~~*Standard Operating Procedures*, COMP, and the 1964 lease for the State-owned land at PTA. These procedures ensure the minimization of impacts on soil resources during ongoing activities by managing natural resources through conservation and rehabilitation of, and increasing awareness of, natural resources issues, programs, and responsibilities among USAG-PTA employees, tenants, and visitors. Specific soil resource management actions are summarized below and referenced in the relevant document in **Appendix E**.

Mission Support Element - Training lands on PTA are managed and maintained through the Army's ITAM Program, which integrates mission and training requirements with environmental requirements and environmental management practices (DA, 2019b). The ITAM Program goal is to achieve optimum, sustainable use of training lands by implementing an effective land management program. Data collected by the program include topographic features, soil characteristics, and surface disturbances, which are used to estimate soil erosion, ground cover, and disturbance and monitoring for impacts from and associated with training. USAG-HI has developed an ITAM 5-year plan with specific goals and objectives, and annually develops an integrated ITAM Work Plan with individual projects and resource requirements.

LRAM guides repairs, maintenance, and reconfiguration of Army lands to meet maneuver training requirements. It is the crucial enabler for sustaining realistic training conditions and supporting unit mission requirements. One example of an LRAM project includes erosion control and soil stabilization through use of cost-effective technologies such as revegetation, erosion control structures, site hardening, and dust palliatives. Site hardening includes the application of crushed lava on a range or TA to prevent degradation of the surrounding area. Restoration of artillery FPs has been the major area of emphasis for the LRAM program on PTA. In addition, the Army follows the safety protocols in the PTA SOPs and BMPs designed to identify, evaluate, protect, and minimize impacts on soils and geological features through road grading, target repair, and berm recontouring.

One primary method of dust control at PTA and within the State-owned land consists of lignin sulfonate dust palliative. This non-toxic material is derived from tree sap and is a by-product from wood pulping. It is formulated as a liquid and applied topically to surfaces using standard 1,000- to 3,000-gallon water trucks (USAG-HI, 2018a). Depending on traffic volume and site conditions, the dust palliative is applied, as necessary, approximately one to two times per year (USAG-HI, 2018a). Fugitive dust is further discussed in **Section 3.6**.

The erosion potential at Former Landfill POTA-06 within the State-owned land is controlled with a cap designed with an impermeable liner to prevent considerable infiltration into the landfill wastes and to

prevent any erosion from washing contaminated soils off the site (USAEC & USAG-HI, 2010). The landfill is under a Long-Term Management Plan and remains subject to 5-year review under CERCLA (USAEC & USAG-HI, 2010).

The State reserves all ground and surface water, ores, minerals, and mineral rights for the State-owned land at PTA and has the right to permit others to develop and use coral, rock, and similar materials occurring naturally for construction activities. The State amended the PTA lease in 2010 to permit the U.S. Government to develop and use these materials for specific construction activities. The original 1964 lease and the 2010 amendment are provided in **Appendix F**. The Army does not quarry or plan to quarry in any archaeological sites or natural resources conservation units.

The Army complies with the IWFMP ~~SOPs~~ that integrates other installation management programs to reduce the impacts of training-related fires on soil resources (e.g., reducing erosion by limiting areas where heavy equipment can maneuver to the firebreak roads and using bulldozer lines as a last resort) through sound preventative measures and established procedures for the suppression and control of wildfires and the protection of human life, property, training infrastructures, and natural and cultural resources (USAG-PTA, 2021eg ~~USAG-PTA, 2019~~). The Army conducts post-fire analysis to determine the effectiveness of pre-suppression and suppression measures and to determine the effect the fire may have had on natural flora and fauna resources.

3.8.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.8.6** to assess potential significant impacts on geology, topography, soils, and natural hazards. The analysis of natural hazards, geology, and soils focuses on the areas of geology and/or soils that would be disturbed and have potential vulnerabilities to natural hazards. The State-owned land is subject to volcanic eruptions, lava flows, occasional explosive eruptions, volcanic gas venting, and earthquakes due to natural processes. The elevation of the State-owned land is approximately 4,200 feet on the west boundary and approximately 7,600 feet on the north boundary; the State-owned land is not within the 6-foot sea level rise exposure area. Therefore, it is not vulnerable to sea level rise during the next century and is not further discussed, as no impact under any alternative is anticipated. No tsunami impacts are anticipated on the State-owned land due to ~~the~~ its distance from the shoreline and elevation. PTA is not located within lands classified as important agricultural land in accordance with HRS Chapter 205. The ALISH classification for the State-owned land within TAs 9, 11, 12, 14, 15, 16, and 20 is unclassified, and other lands within PTA are not evaluated.

The criteria considered to assess whether an alternative would result in potential significant impacts on geology, topography, soils, and natural hazards include the extent or degree to which an alternative would result in the following:

- Impact(s) to soils or geological features that cause substantial soil erosion or loss; and/or
- An increase of risk to humans or the built environment from natural hazards.

3.8.6 Environmental Analysis

3.8.6.1 Alternative 1: Maximum Retention

Land Retained

Lease Impacts: Under Alternative 1, there would be no new impacts on soils or geological features under a new lease because the Army would continue to conduct the same ongoing activities, adhere to the same federal and state laws and regulations, and implement existing management measures on land retained as described under **Section 3.8.4.4**.

The rate of volcanic eruptions and seismic hazards (i.e., structure damage by ground shaking, subsidence, liquefaction of sand or soil, or strong surface waves making the ground heave and lurch) would not change. Under a new lease, there would be no change to existing volcanic or seismic hazard, or potential exposure to lava inundation, within the State-owned land at PTA (**Section 3.8.4.3**). Therefore, there would be no increased risk to humans or the built environment from geological natural hazards.

Continued long-term, minor, adverse impacts on soils and geological features due to runoff, erosion, and sedimentation impacts would continue from soil disturbances associated with ongoing activities including resource management actions; vegetation clearance along range roads; emergency services; invasive species management; vehicle movements; troop movements; near-ground helicopter and tilt-rotor aircraft operations; access, maintenance, and repair of U.S. Government-owned utilities; and training activities within the State-owned land retained. The soil substrates within the State-owned land are primarily fine, volcanic ash prone to wind erosion and dust generation; however, the soil erosion potential would remain low due to the lack of soil, the overall gently sloping topography, low overall rainfall, low rainfall intensities in the area, and the low erodibility of the dominant surface material present.

Impacts (runoff, erosion, and sedimentation) would continue to be addressed through existing management measures (**Section 3.8.4.4**) and adherence to the established ITAM Program, which assists in the decision-making process that helps to reduce geologic and soil resource impacts. **Sections 3.5** and **3.6** contain details of potential impacts on soils and geological features from hazardous substances and hazardous wastes and fugitive dust, respectively. Current conditions for ore and mineral resources would be unchanged. The erosion potential at Former Landfill POTA-06 is low because it would remain capped and remain subject to a Long-Term Management Plan and 5-year reviews under CERCLA.

Under lease, the Army would continue to adhere to federal and state laws and regulations and would continue existing management measures discussed in **Section 3.8.4.4** and **Appendix E**.

Fee Simple Title Impacts: Impacts under the fee simple title method of retention under Alternative 1 would be the same as the lease method of retention under Alternative 1. 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. No change in environmental resources (i.e., ores and mineral resources) from current conditions would occur. 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 in **Section 3.8.4.4**.

Land Not Retained

Under Alternative 1, new long-term, negligible, beneficial impacts (i.e., less soil erosion) would occur from ceasing ongoing activities. Fugitive dust BMPs consistent with HAR Section 11-60.1-33 would continue to be followed to identify, monitor, and minimize fugitive dust emission originating from U.S. Government-owned land and State-owned land retained at PTA. **Section 3.6** provides further details on fugitive dust BMPs.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities that could result in new short-term, negligible to minor, adverse impacts (such as increased soil disturbance and runoff rates, degradation of soil structure, and decreased nutrient cycling) and new long-term, negligible, beneficial impacts (improved landscape conditions) within State-owned land not retained.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.8.4.4** and **Appendix E**.

Level of Significance: Alternative 1 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.8.5**.

3.8.6.2 Alternative 2: Modified Retention

Land Retained

Lease Impacts: Alternative 2 would result in no new impacts on soils and geological features during a new lease because the Army would continue to conduct the same ongoing activities, adhere to the same federal and state laws and regulations, and implement existing management measures on land retained as described under **Section 3.8.4.4**. As under Alternative 1, there would be no increased risk of geological natural hazards on humans or the built environment. Continued long-term, minor, adverse impacts on soils and geological features would continue from ongoing activities within the land retained as well as access, maintenance, and repair of U.S. Government-owned utilities throughout the State-owned land. As ~~discussed under~~with Alternative 1, the stone and cinder quarries and Former Landfill POTA-06 cap would be retained under Alternative 2.

Fee Simple Title Impacts: Impacts under the fee simple title method of retention would be the same as the lease retention method for Alternative 2. No change in environmental resources (i.e., ores and mineral resources) from current conditions would occur. 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 in **Section 3.8.4.4**.

Land Not Retained

Under Alternative 2, there would be new long-term, negligible, beneficial impacts from ceasing ongoing activities. Fugitive dust BMPs consistent with HAR Section 11-60.1-33 would continue to be followed to identify, monitor, and minimize fugitive dust emissions originating from U.S. Government-owned land and State-owned land retained at PTA. **Section 3.6** provides further details on fugitive dust BMPs.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities. New short-term, negligible to minor, adverse impacts (increased soil disturbances and runoff rates, degradation of soil structure, and decreased nutrient cycling) and new long-term, negligible, beneficial impacts could result from Army lease compliance actions and cleanup and restoration activities within the State-owned land not retained.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.8.4.4** and **Appendix E**.

Level of Significance: Alternative 2 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.8.5**.

3.8.6.3 Alternative 3: Minimum Retention and Access

Land Retained

Lease Impacts: Alternative 3 via lease would result in no new impacts on soils and geological features during a new lease because the Army would continue to conduct the same ongoing activities, adhere to the same federal and state laws and regulations, and implement existing management measures on land retained as described under **Section 3.8.4.4**. As under Alternative 1, there would be no increase in risk of geological natural hazards on humans or the built environment.

Continued long-term, negligible to minor, adverse impacts on soils and geological features would continue from ongoing activities; access, maintenance, and repair of U.S. Government-owned utilities throughout the State-owned land; and use, maintenance, and repair of 11 miles of select roads and training trails and firebreaks/fuel breaks and associated access along most of the 11 miles in the State-owned land not retained. The continued adverse impacts would be less than those for Alternatives 1 and 2 because ongoing activities would be moderately reduced. As ~~discussed under~~with Alternatives 1 and 2, the stone and cinder quarries and the Former Landfill POTA-06 cap would be retained under Alternative 3.

Fee Simple Impacts: Impacts under a fee simple title method of retention would be the same as those described for lease retention method for Alternative 3. No change in environmental resources (i.e., ores and mineral resources) from current conditions would occur. 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 in **Section 3.8.4.4**.

Land Not Retained

Under Alternative 3, there would be new long-term, negligible to minor, beneficial impacts from ceasing ongoing activities within the land not retained, as well as associated activities in the U.S. Government-owned land and outside PTA. Fugitive dust BMPs consistent with HAR Section 11-60.1-33 would continue to be followed to identify, monitor, and minimize fugitive dust emissions originating from U.S. Government-owned land and State-owned land retained at PTA. **Section 3.6** provides further details on fugitive dust BMPs.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities. New short-term, negligible to minor, adverse impacts (increased soil disturbances and runoff rates, degradation of soil structure, and decreased nutrient cycling) and new long-term, negligible to minor, beneficial impacts could result from Army lease compliance actions and cleanup and restoration activities within the State-owned land not retained.

~~Potential~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.8.4.4** and **Appendix E**.

Level of Significance: Alternative 3 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.8.5**.

3.8.6.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at PTA after the lease expires, resulting in new long-term, moderate, beneficial impacts on soil and geological features from ceasing ongoing activities within the State-owned land, associated activities in the U.S. Government-owned land and outside PTA, and the activities within the impact area and training ranges to the south of the State-owned land due to lack of land access.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities. New short-term, minor, adverse impacts (increased soil disturbances and runoff rates, degradation of soil structure, and decreased nutrient cycling) and new long-term, minor, beneficial impacts could result from Army lease compliance actions and cleanup and restoration activities. The adverse and beneficial impacts would be greater than those under Alternative 3 land not retained because more land would be subject to these activities under the No Action Alternative.

~~Potential~~ **Mitigation Measures:** The No Action Alternative does not include proposed Army actions; therefore, no mitigation measures are recommended. No mitigation measures are recommended for the lease compliance actions and cleanup and restoration activities beyond the existing management measures discussed in **Section 3.8.4.4** and **Appendix E**.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.8.5**.

3.9 Water Resources

3.9.1 Definition

Water resources include groundwater, surface water (i.e., streams, lakes, rivers, and wetlands), floodplains, and coastal resources (e.g., estuaries, marine water), 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. No perennial streams, rivers, wetlands, marine waters, or coastal resources occur

within or with a relationship to the State-owned land; thus, these are not discussed further in existing conditions or analyzed in this section.

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 and may percolate into permeable soils or may flow as runoff across impervious or saturated surficial areas. Three types of streams (perennial, intermittent, and ephemeral) are present in Hawaiʻi. 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 geologic formations.

Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters subject to periodic or infrequent inundation from rainfall. The risk of flooding typically depends on the frequency of precipitation events, the size of the watershed above the floodplain, and local ground cover such as vegetation, soil type, and impervious cover within the watershed. 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.

3.9.2 Regulatory Framework

The following policies guide the planning, management, and analyses of potential impacts on water resources at PTA:

The Army Sustainable Range Program (AR 350-19) identifies policy and guidance for planning, programming, funding, and executing the ITAM Program. The Range Complex Mater Plan ITAM Program comprises five major component programs: Range and Training Land Assessment, LRAM, Training Requirement Integration, Sustainable Range Awareness, and SRP Geographic Information System. Data collected by the ITAM Program include topographic features, soil characteristics, and surface disturbance, which are used to estimate soil erosion, ground cover, and disturbance and monitoring for impacts associated with ongoing training. The Army continually funds and implements USAG-HI-wide land management practices and procedures described in the ITAM annual work plan to minimize impacts on the land. Restoration of artillery FPs has been the major area of emphasis for the LRAM Program on PTA. The ongoing activities facilitated by the implementation of the Proposed Action would continue to comply with the ITAM Program.

The CZMA (16 U.S.C. Section 1451 *et seq*.) is the federal law that protects the coastal environment from growing demands associated with residential, recreational, commercial, and industrial uses. CZMA provisions help states develop coastal management programs to manage and balance the coastal zone's

competing uses. In 1977, Hawaiʻi established the CZM Program with HRS Chapter 205A, which requires the review of federal projects on State-owned land for consistency with the Hawaiʻi CZM Program. Under this program, all of the State's lands are considered subject to consistency review. The CZM objectives are to ensure effective management, beneficial use, protection, and development of the Hawaiʻi coastal zone. **Section 5.3** analyzes the Proposed Action's consistency with the CZMA and the State's CZM law.

The Safe Drinking Water Act (SDWA) (42 U.S.C. Section 300f to 300j *et seq*.) is the federal law that protects public drinking water supplies throughout the United States; HAR Chapter 11-20 is the Hawaiʻi equivalent of the SDWA and National Primary Drinking Water Regulations. Under the SDWA, USEPA sets standards for drinking water quality. USEPA's regulations implementing the SDWA requirements are found in 40 CFR Parts 141–149. Federal standards promulgated under the SDWA are also typically used to evaluate or assess groundwater quality. Any federally funded project with the potential to contaminate a designated sole-source aquifer is subject to review by USEPA. The Federal SDWA Groundwater Protection Program is generally implemented at the state level. In Hawaiʻi, the Groundwater Protection Program is managed by the DOH Safe Drinking Water Branch (SDWB), which has prepared groundwater contamination maps for the State (DOH-SDWB, 2021). **Section 3.9.4** describes the existing conditions of groundwater and groundwater quality in the ROI.

The CWA (33 U.S.C. Section 1251–1387 *et seq*.) establishes federal limits, through the ~~National Pollutant Discharge Elimination System (~~NPDES~~)~~ Program, 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 NPDES Program is a permit program that regulates the discharge point (i.e., end of pipe) and nonpoint sources (i.e., stormwater) to waters of the United States. The DOH administers the NPDES Program in Hawaiʻi under HAR Chapter 11-55. HAR Chapter 11-54 regulations specify the water quality condition for "State waters," as defined by HRS Chapter 342D-1, Water Pollution, including coastal waters streams and rivers, and HRS Chapter 342E, Nonpoint Source Pollution Management and Control. The purpose of HRS Chapter 342E is to reduce, control, and mitigate nonpoint source pollution in the State.

Section 404 of the CWA, Water Quality Certifications, authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill into wetlands and other waters of the United States. Any discharge of dredge or fill into waters of the United States requires a permit from USACE. Section 404 does not apply to the ongoing activities or the Proposed Action because the Proposed Action does not include alteration of stream channels or construction of groundwater wells within the State-owned land at PTA. See **Section 3.9.4.1** for additional details.

Under Section 401 of the CWA, the DOH Clean Water Branch is responsible for issuing or denying Section 401 *Water Quality Certifications* for any project or activity that requires a federal license or permit and may result in a water pollutant discharge to State surface waters.

Section 10 of the Rivers and Harbors Act provides for USACE permit requirements for any in-water construction. USACE and some states require a permit for in-water construction. Permits are required for the construction of piers, wharfs, bulkheads, pilings, marinas, docks, ramps, floats, moorings and like structures; construction of wires and cables over the water, and pipes, cables, or tunnels under the water; dredging and excavation; any obstruction or alteration of navigable waters; depositing fill and dredged material; filling of wetlands adjacent or contiguous to waters of the United States; construction of riprap, revetments, groins, breakwaters, and levees; and transportation of dredged material for dumping into

ocean waters. Section 10 does not apply to the Proposed Action because there would be no in-water construction within the State-owned land.

The National Flood Insurance Act (42 U.S.C. Section 4001 *et seq*.) establishes the National Flood Insurance Program (NFIP), a voluntary floodplain management program for communities that is implemented by FEMA. Any action within a FEMA-mapped floodplain in a participating community must follow the community's FEMA-approved floodplain management regulations. EO 11988, *Floodplain Management,* requires federal agencies to avoid, to the extent practicable, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development unless it is the only practicable alternative.

The State Water Code (HRS Chapter 174) was enacted into law by the 1987 State Legislature for the purpose of protecting Hawaiʻi's water resources. It provides for the legal basis and establishment of the State's Commission on Water Resource Management (CWRM). CWRM administers the State Water Code, is the primary steward of the public trust for water resources within Hawaiʻi, and has broad powers and responsibilities to protect and manage water resources. This includes the authority and duty to develop plans and programs to conserve and manage water use within the State's aquifer sectors and systems in which water consumption approaches the aquifer's sustainable yield.

The DOH SDWB is responsible for safeguarding public health by protecting Hawaiʻi's drinking water sources (surface water and groundwater) from contamination to assure that owners and operators of public water systems provide safe drinking water to the community. The SDWB administers these programs through the Underground Injection Control (UIC) Program and the Groundwater Protection Program. The UIC Program serves to protect the quality of Hawaiʻi's underground sources of drinking water from chemical, physical, radioactive, and biological contamination that could originate from injection well activity. The SDWB provides information on DOH's ongoing water quality work in a Water Quality Plan that establishes a framework for comprehensive water resources planning to address water quantity and quality issues in Hawaiʻi.

3.9.3 Region of Influence

The ROI at PTA includes the contributory aquifers located in the Northwest Mauna Loa aquifer sector and the West Mauna Kea aquifer sector, as defined by CWRM. The contributory watersheds are the surface waters that ephemerally occur in the northern portions of the State-owned land and appear during infrequent periods of rainfall. The hydrology of local watersheds is influenced by groundwater (including areas hydrologically downgradient from the State-owned land), ephemeral surface waters, floodplains, and coastal processes. The watersheds in the Hawaiian Islands are relatively small, steep, and have fast-flowing streams with underlying highly permeable volcanic rocks and soils.

CWRM, under DLNR, is the primary steward of the public trust water resources and has broad powers and responsibilities to protect and manage Hawaiʻi's water resources. Hydrologic units for surface water and groundwater have been defined by CWRM for all islands in the State.

3.9.4 Existing Conditions

The following sections describe the occurrence and/or quality of groundwater, surface water, and floodplains that affect the hydrology of the watershed in the ROI for PTA.

3.9.4.1 Groundwater and Watershed

Watersheds on the island of Hawaiʻi are small and generally underlain by permeable volcanic rock and soils. Groundwater develops from the infiltration of rain that falls on the ground surface and the infiltration of surface water flowing as streams through watersheds. On young volcanic surfaces, the permeability of basalts is generally high, and rainfall of sufficient intensity will strike the ground, infiltrate, and slowly percolate downward to an underlying standing water table or basal lens. In areas such as the State-owned land, where buried low-permeability ash layers or volcanic dike systems impede vertical and lateral groundwater flow, groundwater bodies will develop at higher elevations than in the more coastal portions where basal aquifers exist. These high-level aquifers are somewhat isolated from the coastal basal lens systems and have a more restricted aerial extent and lower reserves than the basal lens systems that develop in the coastal portions of the island.

Mink and Lau (1993) developed a classification scheme for the principal aquifers in the State to serve as a framework for groundwater protection; the classification scheme includes Aquifer Codes and Status Codes. The Aquifer Codes incorporate locational and descriptive indices, whereas the Status Codes indicate the developability, utility, quality, uniqueness, and vulnerability to contamination of the groundwater resources. The southern part of the State-owned land at PTA is underlain by the Northwest Mauna Loa aquifer sector and the Anaehoomalu aquifer system, while the northern part is underlain by the West Mauna Kea aquifer sector and Waimea aquifer system. The surficial contact between lava flow units originating from Mauna Loa and Mauna Kea that runs through the State-owned land is the boundary between these two aquifer sectors/systems (**Figure 3-20**).

The Aquifer Codes for the Anaehoomalu and Waimea aquifer systems classify these systems as high-level, unconfined, dike-impounded aquifers. The Status Codes for both aquifers 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 milligrams per liter of chloride; the uniqueness is “irreplaceable”; and the vulnerability to contamination is classified as “High,” due to the classification of both aquifers as unconfined (Mink & Lau, 1993).

The State-owned land at PTA is underlain by high-level and confined groundwater physically isolated from the basal portions of the Northwest Mauna Loa and West Mauna Kea aquifer sectors, which both ultimately discharge along the coastline roughly 17 miles to the west of PTA. The basal portions of these aquifer sectors are estimated to extend roughly 4 to 5 miles inland (Mink & Lau, 1993) and therefore do not reach the State-owned land at PTA.

Potable water for the operation of PTA is purchased from the County of Hawaiʻi Department of Water Supply facility in Waimea and transported to PTA. The closest water production wells to the State-owned land at PTA are located at Waikiʻi Ranch, approximately 5 miles to the north. Waikiʻi well #1 (5239-01) was installed in 1983 at an elevation of 4,260 feet above mean sea level (amsl), drilled to a depth of 65 feet below mean sea level, and reached water at 2,740 feet amsl (BCG & Mink, 1989). The water column in Waikiʻi well #1 exhibits an anomalously large increase in temperature with depth, from 26.1 degrees Celsius (°C) [79 degrees Fahrenheit (°F)] at the water table to 43.3°C (110°F) at the bottom of the boring, likely due to residual heat present in the basement of the volcano. The well has reliably supplied potable water (162 gallons per minute) to a small residential subdivision on the former Waikiʻi Ranchlands since its installation. Waikiʻi well #2 (5239-02) was installed in 1989 about 120 feet north of Waikiʻi well #1 at 4,280 feet amsl, drilled to a depth of 980 feet amsl, and reaches water at 1,509 feet amsl (BCG & Mink,

1989). Both wells are located within an area that is believed to be underlain by Mauna Kea's western rift system; hence, the groundwater in this area is believed to be associated with dike-confined aquifers in the now-buried rift and isolated from the high-level and perched aquifer systems that underlie the State-owned land.

Under the State's exploratory well drilling program, in partnership with the Army, two shallow boreholes were drilled within PTA-controlled properties in the 1960s for the purpose of investigating potential water resources present within the boundaries of PTA lands (USARHAW, 1965). Pōhakuloa Test Hole #1 was drilled in 1965 at a location approximately 0.5 mile to the west of the Gilbert Kahele Recreation Area. This test hole was drilled from an elevation of 6,375 feet to a depth of 5,380 feet amsl. A second test hole, Pōhakuloa Test Hole #2, was drilled from an elevation of 6,000 feet to a depth of 5,650 feet amsl. Neither test hole encountered groundwater (Pierce & Thomas, 2009).

The UH Institute of Geophysics and Planetology, in partnership with the Army, initiated the Humuʻula Groundwater Research Project in 2012 to develop an improved understanding of the County of Hawaiʻi groundwater system to improve management practices of the island's groundwater resources. The project involved drilling two, small diameter boreholes on U.S. Government-owned land to investigate the subsurface hydrogeologic conditions present in the Humuʻula Saddle area (**Figure 3-21**). Borehole PTA-2 was drilled in 2013 to a total depth of 5,786 feet from an approximate surface elevation of 6,300 feet in the Cantonment at PTA. Borehole KMA-1 was drilled in 2017 to a total depth of 5,024 feet near the intersection of Old Saddle Road and the newly constructed section of the DKI Highway that heads towards Kailua-Kona. In 2018, concrete was injected behind the casing of the PTA-2 borehole, which was then surface completed for potential future use as a monitoring well; borehole KMA-1 was sealed with concrete (Thomas, 2019~~USAG-HI, 2021b~~).

Figure 3-20: Aquifers

Figure 3-21: Wells and Springs

The PTA-2 borehole encountered a perched aquifer at approximately 5,600 feet amsl, that extended to depths between 700 and 1,181 feet below ground surface (bgs). Soil cores recovered from this depth interval found that the perching member was composed of a clay-rich ash layer (Thomas, 2019). A second, deeper high-level aquifer was encountered in PTA-2 at an elevation of approximately 4,500 feet amsl, at roughly 1,800 feet bgs. Borehole PTA-2 was continuously saturated from elevation 4,500 feet amsl down to the bottom of the test hole, which was drilled to a depth of approximately 514 feet amsl. PTA-2 was originally going to be drilled to sea level, but increasingly hotter thermal water was encountered in this hole at depths of below approximately 3,000 feet bgs, necessitating termination of this test hole at a shallower depth than originally planned. The water temperature at the bottom of this test hole was approximately 120°C (248°F) (Hurwitz et al., 2021). The deeper high-level aquifer encountered in PTA-2 is believed to underlie much of the Saddle Region based on analysis of magnetotelluric geophysical survey data collected from the Mauna Loa/Mauna Kea Saddle Region (Pierce & Thomas, 2009). The lateral extent of the shallower, perched aquifer encountered in PTA-2 is unknown, but it is believed to be less aerially extensive than the underlying dike-impounded aquifer based on resistivity surveys conducted in the area by the USGS (~~USAG-HI, 2021b~~ Pierce & Thomas, 2009).

The KMA-1 test hole did not observe the upper perched and high-level aquifers encountered in the PTA-2 borehole. This test hole is apparently located just to the west of the high-level aquifer that underlies much of the Saddle Region (~~USAG-HI, 2021b~~Thomas, 2019). Instead, this test hole encountered multiple confined aquifers perched on ash layers during drilling, with hydrostatic pressures of up to 1,500 pounds per square inch measured. The confining layers were composed of ash and other types of explosive deposits (e.g., ignimbrite). These confining layers create a series of vertically segregated, confined aquifers isolated from one another in this region of the flank of Mauna Kea. During the drilling of this test hole, water levels were observed to rise between 600 and 3,500 feet within the test hole upon entering the various confined aquifers encountered.

Carbon-14 age dating conducted on water retrieved from PTA-2 from the regional high-level aquifer that underlies the Saddle area yielded an age of 5,000 years (Thomas, 2019; Spengler, 2020). A similar age of 5,000 years was measured in the groundwater pumped from the Waikiʻi well to the northwest (Spengler, 2020; Okuhata, 2022). The old age of the "fossil" high-level groundwater encountered at PTA and to the northwest at Waikiʻi Ranch supports the hypothesis that minimal direct recharge occurs to these aquifers from infiltration of rain that falls on these lands.

The main, laterally extensive perched groundwater aquifer below the State-owned land is believed to be present at approximately 1,800 feet bgs. A shallower, less laterally extensive perched aquifer was also encountered at between 700 and 1,181 feet bgs at the Cantonment.

3.9.4.2 Groundwater Quality

Groundwater quality data are limited for PTA because of the absence of monitoring wells in the inland area of the island. In general, water quality of the natural fresh water in Hawaiʻi basaltic aquifers is considered good (HQDA, 2008b). During the installation of Borehole PTA-2 (see **Section 3.9.4.1**), an opportunistic sample was collected from the underlying deep aquifer. None of the analytes tested, including organic compounds, inorganic chemicals, microbiological constituents, and radiochemical parameters, were in exceedance of laboratory method detection limits (~~USAG-HI, 2021b~~Thomas, 2019). A groundwater sample could not be collected from the shallower perched aquifer encountered in Borehole PTA-2, due to the unstable nature of the formation at this depth of the test hole (Thomas,

2019~~USAG-HI, 2021b~~). The study recommends additional testing of the shallower perched aquifer encountered in Borehole PTA-2, and instruments were left in place to monitor and record data on the continued recovery of the water table. Further work on the well has been suspended, however, pending the establishment of a new contract for additional studies, and it is unclear whether the recording instruments remain operational (Thomas, 2019).

Since August 1989, DOH SDWB has issued groundwater contamination maps for Hawai'i. According to these maps, most of the well locations where contamination is detected on the island of Hawai'i are located along the eastern coast of the island, and groundwater quality generally diminishes towards the coasts due to increased saltwater intrusion. Detected contamination levels are below federal and State drinking water standards and do not pose a significant risk to humans (DOH SDWB, 2021). The groundwater quality beneath PTA is anticipated to be of higher quality due to its inland distance, compared to the coastal areas where groundwater quality is compromised by saltwater intrusion.

At PTA, surface water runoff that contains nonpoint source pollutants, such as contamination from military munitions use during training activities, has a less than significant impact on groundwater quality because the pollutants are typically highly diluted and tend to be adsorbed or biodegraded during infiltration through soils. Spills and other accidental releases occur infrequently and could have more significant local impacts on groundwater quality if not managed or remediated. Their occurrence cannot be predicted, but SOPs have been established [i.e., training spill response personnel, spill response equipment and supplies, reduction in the use of hazardous chemicals and other waste minimization procedures, and use of engineering controls (such as secondary containment)] to reduce the potential for releases and reduce impacts associated with accidental spills and releases.

3.9.4.3 Surface Water

There are three ephemeral streams located within the far northern border of the State-owned land, the Waikahalulu Gulch (TA 2 and TA 4), Pōhakuloa Gulch (TA 10), and 'Auwaiakeakua Gulch (TA 15 and TA 16), that collect runoff from the southern flank of Mauna Kea (USACE-POH & USAG-HI, 2019c). Ephemeral stream channels, such as those within the State-owned land, quickly dry after rainfall events. Rainfall, fog drip, and occasional frost are the sources of water that sustain plants and animals in the dry land habitat of the State-owned land.

There are no perennial streams, rivers, lakes, or other surface water bodies within the State-owned land due to the low annual rain that falls on the area and the highly porous nature of the relatively young volcanic rocks that cover the majority of the property. The mean annual rainfall recorded at Pōhakuloa (6510) station near the intersection of Calvary Road and DKI Highway is 16.95 inches and at the PTA West station is 22.09 inches, with the maximum monthly rainfall typically occurring between January and March (Giambelluca et al., 2013). Water drains from the surface and flows short distances across the ~~site~~ land via crevices in the lava. Significant rainfall events are associated with synoptic scale weather systems, locally referred to as Kona storms, that infrequently (i.e., couple times per year) impact the area. During significant rainfall events, rain runoff from the south slope of Mauna Kea could exceed the drainage capacity of the area and result in temporary flooding or localized ponding; however, the shallow soils in the area are permeable and the underlying lava flows contain sufficient secondary permeability that infiltration to the subsurface is rapid. Direct recharge to the groundwater systems underlying the State-owned land at PTA is likely limited to infiltration from these infrequent storm events.

The nearest surface water downgradient of PTA is Popoʻo Gulch, an ephemeral stream, which converges with the ʻAuwaiakeakua Gulch approximately 15 miles south of PTA (USACE-POH, 2017). Other surface water bodies ~~in close proximity to~~near PTA are a series of small springs that outcrop along canyon walls and the faces of dry waterfalls on the slopes of Mauna Kea in the Waihū branch of the Pōhakuloa Gulch at elevations of between approximately 8,900 and 10,500 feet (Wentworth & Powers, 1943). Named springs within this set include Hopukani (Houpoʻokāne), Waihū (Waihū a Kāne), and Liloe springs. The closest spring is located a little more than 2 miles north of the northern boundary of Parcel B of the State-owned land. These springs are believed to emanate from small groundwater bodies perched on or contained in sheets and lenses of glacial drift. Water from the uppermost spring is diverted into a roughly 2.5-mile-long water line that routes the spring flow into six storage tanks that supply water to the Gilbert Kahele Recreation Area (**Figure 3-21**). PTA previously used but no longer uses or shares any of the spring water supplied to the Gilbert Kahele Recreation Area.

Lake Waiau, a tropical alpine lake, is located 4.5 miles north of PTA and is hydraulically upgradient at an elevation of 13,020 feet (**Figure 3-21**). The average surface area of this lake is approximately 19,685 square feet and the lake reaches a maximal depth of between 6.5 and 8.2 feet during the springtime. The lake is fed by precipitation, which falls within the 442,910 square feet catchment area of the Puʻu Waiau cinder cone that surrounds the lake. The exact nature of the impermeable layer beneath the lake is uncertain but has been attributed to the presence of either a layer of permafrost, glacial sedimentary deposits, or clay-rich ash beds. The water in Lake Waiau is not used by PTA.

The Hawaiʻi Emergency Management Agency Tsunami Evacuation Map shows the tsunami evacuation area along the coastal waters in the area of Kiholo Bay, which is hydraulically downgradient from the State-owned land at PTA (HEMA, 2021). The State-owned land at PTA is located well beyond the limits of the tsunami evacuation area.

Stormwater runoff infrequently occurs within the State-owned land of PTA because runoff tends to rapidly infiltrate into crevices in the highly permeable lava flows. There are at least seven ephemeral streams that drain surface water off the southwestern flank of Mauna Kea that lie within the same drainage area as PTA. Three of these ephemeral streams are located north of the Cantonment and the northern border of the State-owned land of PTA: Waikahalulu Gulch, Pōhakuloa Gulch, and ʻAuwaiakeakua Gulch. These gulches can transmit significant volumes of stormwater runoff generated during infrequent large storm events that reach the site. The northern portion of the State-owned land is covered by alluvial deposits associated with the transport of sediments from these southern facing, steeply plunging (approximately 24 percent grade) gulches on the slopes of Mauna Kea. The presence of these alluvial deposits is a testament to the volume of stormwater runoff and sediment transported down the slopes of Mauna Kea during these infrequent runoff events.

A drainage report prepared for PTA concluded that most of the area is composed of lava flow and cinder, with very high percolation rates (USAG-HI & USARPAC, 2013). This report concluded that stormwater infrequently flows within PTA. The stormwater that enters or is generated within the developed portions of PTA does not exit the installation.

3.9.4.4 Surface Water Quality

No surface water quality data have been collected from the ephemeral streams within State-owned land. The lack of perennial streams in the area, low annual rainfall, and highly porous rocks prevent regular

monitoring of surface water. According to the 303(d) List of Impaired Waters in Hawai'i prepared under the CWA, none of the streams within the State-owned land are listed as impaired (DOH SDWB, 2021). Additionally, there is little or no water quality information available for the water in Lake Waiau or the spring water on the slopes of Mauna Kea upgradient of PTA.

Maneuver training activities conducted on the State-owned land have the potential to affect surface water by localized increases in erosion and runoff, increasing overland flow, and potentially decreasing percolation to groundwater. Because there are limited surface water and groundwater pathways on State-owned land, there is a minor potential for contaminants (**Section 3.5.4**) to impact soil and groundwater quality.

3.9.4.5 Floodplains

The flood potential of a site is usually determined by the 100-year floodplain, which is defined as the area that has a 1 percent chance of inundation by a flood event in a given year. The FEMA Flood Insurance Rate Map (FIRM) (Panel 4 1551660850F; FIRM index date: September 29, 2017) did not include an updated study to determine flood hazards for the State-owned land. A 2010 FEMA survey classified the State-owned land at PTA to be located in Zone X, which corresponded to an area determined to be outside the 0.2 percent annual chance floodplain. Because the State-owned land is not located within a floodplain, impacts on floodplains are not analyzed further in this section.

3.9.4.6 Existing Management Measures

All training at PTA, including on State-owned land, adheres to procedures outlined in the IWFMP, IPMP, INRMP, ~~PTA Range Operations SOPs~~*Pōhakuloa Training Area Range Operations Standing Operating Procedures*, ~~PTA External SOPs~~USAG-PTA *External Standard Operating Procedures*, COMP, and the 1964 lease for the State-owned land at PTA. These procedures ensure the minimization of impacts on water resources during ongoing activities by managing natural resources through conservation and rehabilitation of natural resources and increasing awareness of natural resources issues, programs, and responsibilities among USAG-PTA employees, tenants, and visitors. Specific water resources management actions are summarized in the following and referenced in the relevant document in **Appendix E**.

The Army complies with the IWFMP ~~SOPs~~ to reduce the impacts of training-related fires on water resources (e.g., reducing erosion and runoff by limiting areas where heavy equipment can maneuver to the firebreak roads and through bulldozer lines as a last resort) through sound preventative measures and established procedures for the suppression and control of wildfires and the protection of human life, property, training infrastructures, and natural and cultural resources (USAG-PTA, 2021e~~g~~). **Section 3.3.4.2** details wildland fire management measures relating to biological resources.

The Army complies with the IPMP to avoid or minimize impacts on water resources by calibrating spray equipment to ensure that the correct amounts of pesticides are applied, reducing the amount of pesticides applied through improved technologies that require less pesticide to achieve the desired objective. The use of non-hazardous materials is utilized where feasible~~,~~ and spraying activities are restricted when the wind speed is greater than 5 mph to control spray drift. These measures, as well as the ongoing removal of small non-domestic animal carcasses (USAG-HI, 2014), minimize potential for adsorption of pesticide chemicals to soil materials that could lead to runoff contamination effects on water resources.

To reduce negative impacts on water quality, the Army implements dust control measures to restrict activities that generate fugitive dust. For example, the Army restricts artillery training to established FPs and ranges, limits off-road maneuver to designated areas, ensures that a minimum of 12 percent ground cover is maintained in off-road maneuver areas, applies palliatives to roads and FPs through the ITAM Program, and coordinates with NRP~~O~~ staff regarding vegetation to reduce fugitive dust associated with the use of training trails in accordance the INRMP (USAG-PTA, 2020c). The Army stakes the boundaries of sensitive areas that may lead to increased levels of fugitive dust or runoff so they can easily identify and avoid these areas during training (USAG-HI, ND). The Army can also implement restrictions on helicopters and tilt-rotor aircraft hovering and landing if soil and atmospheric conditions indicate that excessive dust generation would occur. **Section 3.6.4.1** includes further details on existing fugitive dust control management measures at PTA.

The Army implements additional procedures designed to evaluate, protect, and minimize impacts on water 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 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. 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. The Army minimizes impacts on the watershed from ongoing activities through a number of ITAM Programs, including Training Requirement Integration, and training and policies provided by the DPW Environmental Division. The Army collaborates with the Mauna Kea Watershed Group, the DLNR Division of Forestry and Wildlife, and UH (Hilo and Mānoa) to protect the natural resources at PTA.

The Army obtains NPDES permits from the State when required, including for industrial activities at Ahi Quarry on State-owned land. Pursuant to Sections 304 and 402 of the CWA, BMPs are incorporated in the NPDES permits as permit conditions.

In accordance with the SPCCP and regulatory requirements (USAG-HI, 2012), spills at PTA are fully investigated, characterized, and then remediated. **Section 3.5** and **Section 3.16** contain details on the existing management measures for water resources from hazardous materials, hazardous wastes, ~~including~~ and military munitions. **Section 3.8.4.4** contains details on the existing management measures for the Former Landfill POTA-06 within the State-owned land at PTA.

Additional existing management measures addressing water resources are presented in **Appendix E**.

3.9.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.9.6** to assess potential significant impacts on water resources, specifically direct and indirect impacts on groundwater, surface water, and floodplains. The criteria include the extent or degree to which each alternative would result in the following:

- Degradation of the water quality standards of a surface or marine water 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.
- Non-compliance 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.

3.9.6 Environmental Analysis

3.9.6.1 Alternative 1: Maximum Retention

Land Retained

Lease Impacts: Under Alternative 1 via lease, the Army would continue to conduct the same ongoing activities, adhere to the same federal and state laws and regulations, and implement existing management measures as described under **Section 3.9.4.6** and **Appendix E**. No changes in water use or management measures are proposed; therefore, no new impacts on water resources from such changes would occur. The adverse impacts from ongoing activities would continue to be ~~short~~long-term, localized, and minor. Ongoing activities within the State-owned land, including resource management actions, vegetation clearance along range roads, emergency services, invasive species management, vehicle movements, troop movements, near-ground helicopter and tilt-rotor aircraft operations, accessing U.S. Government-owned utilities for maintenance, and training activities within the State-owned land, would continue to generate localized fugitive dust and erosion, rain runoff, and overland flow resulting in increased sediment and contamination loads in the limited nearby surface waters. These impacts would continue to be addressed through the existing management measures described in **Sections 3.6.4.1** and **3.9.4.6**, **Appendix E**, and adherence to the ITAM Program (**Sections 3.2.4.5** and **3.8.2**).

No impacts on groundwater quality are expected due to low rainfall, a lack of perennial streams, the considerable depth to the groundwater aquifer, and minimal pathways for direct recharge from the rain that falls on the State-owned land that could enable migration or infiltration by contaminants or ~~munitions constituents~~MCs. Additionally, there would be no changes in groundwater access or use; therefore, potential for new effects on groundwater quality from ongoing activities is not considered further. **Section 3.5.4** provides additional discussion on the potential effects from ongoing activities on groundwater and surface water resources.

Under Alternative 1, groundwater extraction from State-owned land at PTA is not proposed or foreseen as the Proposed Action is a real estate action (i.e., administrative action) that does not include construction, modernization, or changes in ongoing activities in State-owned land retained. The Army would continue to import potable water, purchased from the County of Hawai‘i Department of Water Supply facility in Waimea, for the operation of PTA.

~~Under a new lease, the Army would continue to adhere to federal and state laws and regulations and would continue to implement existing management measures on land retained as described in **Section 3.9.4.6** and **Appendix E**.~~

Fee Simple Title Impacts: Impacts under the fee simple title method of retention would be the same as the lease retention method for Alternative 1. The Army would continue to adhere to federal laws and regulations, would conform to state laws and regulations to the extent practicable, and would continue to implement existing management measures on the land retained as described in **Section 3.9.4.6** and **Appendix E**.

Land Not Retained

Under Alternative 1, there would be new long-term, negligible, beneficial impacts from ceasing ongoing activities in the 250 acres of DHHL-administered land not retained. Because this land is rarely used for training, these impacts would be negligible.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities that could result in new short-term, negligible, adverse impacts (dust, erosion, runoff, and potential for spills) and new long-term, negligible, beneficial impacts on water resources. Long-term, beneficial impacts from lease compliance actions such as reforestation could minimize the land area subject to erosion and decrease the sediment load in stormwater runoff.

~~**Potential**~~ **Mitigation Measures***:* No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.9.4.6** and **Appendix E**.

Level of Significance: Alternative 1 would result in less than significant impacts ~~on~~ for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.9.5**.

3.9.6.2 Alternative 2: Modified Retention

Land Retained

Lease Impacts: As with Alternative 1, there would be no new impacts on water resources during a new lease under Alternative 2 because the Army would continue to conduct the same ongoing activities, adhere to the same federal and state laws and regulations, and implement existing management measures on land retained as described under **Section 3.9.4.6** and **Appendix E**. Continued long-term, negligible to minor, adverse impacts on water resources would occur from ongoing activities within the land retained.

Fee Simple Title Impacts: Impacts under the fee simple title method of retention would be the same as the lease retention method. The Army would continue to adhere to federal laws and regulations, would conform to state laws and regulations to the extent practicable, and would continue to implement the existing management measures for land retained described in **Section 3.9.4.6** and **Appendix E**.

Land Not Retained

Impacts under Alternative 2 land not retained would include new, long-term, negligible, beneficial impacts associated with ceasing ongoing activities including in the Palila critical habitat that is rarely used for military training.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities that could result in new short-term, negligible, adverse impacts from soil disturbance potentially leading to temporary increases in erosion or runoff. New long-term, negligible, beneficial impacts from lease compliance actions, such as reforestation, could minimize the land area subject to erosion and over the long-term decrease sediment load in stormwater runoff.

~~Potential~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.9.4.6** and **Appendix E**.

Level of Significance: Alternative 2 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.9.5**.

3.9.6.3 Alternative 3: Minimum Retention and Access

Land Retained

Lease Impacts: Under Alternative 3, there would be no new impacts on water resources. Continued long-term, negligible, adverse impacts on water resources reflect reduced impacts from ongoing activities compared to Alternatives 1 and 2. Under lease, the Army would continue to adhere to federal and state laws and regulations and would continue to implement existing management measures on land retained as described in **Section 3.9.4.6** and **Appendix E**.

Fee Simple Impacts: Impacts under the fee simple title method of retention would be the same as the lease retention method. 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 in **Section 3.9.4.6** and **Appendix E**.

Land Not Retained

Impacts under Alternative 3 land not retained would include new, long-term, negligible to minor, beneficial impacts associated with ceasing ongoing activities that reflect a change in intensity based on training across fewer acres.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities that could result in new short-term, negligible to minor, adverse impacts from soil disturbance potentially leading to temporary increases in erosion or runoff. New long-term, negligible to minor, beneficial impacts from lease compliance actions, such as reforestation that could minimize the land area subject to erosion and over the long-term decrease sediment load in stormwater runoff, could occur from lease compliance actions and cleanup and restoration activities within the State-owned land not retained.

~~Potential~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.9.4.6** and **Appendix E**.

Level of Significance: Alternative 3 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.9.5**.

3.9.6.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land. There would be new long-term, minor to moderate, beneficial impacts on water resources with less erosion associated with the cessation of ongoing activities. Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities that could result in new short-term, minor, adverse impacts and new long-term, minor, beneficial impacts on water resources.

~~Potential~~ **Mitigation Measures:** The No Action Alternative does not include proposed Army actions; therefore, no mitigation measures are recommended. No mitigation measures are recommended for the lease compliance actions and cleanup and restoration activities beyond the existing management measures discussed in **Section 3.9.4.6** and **Appendix E**.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.9.5**.

3.10 Socioeconomics

3.10.1 Definition

Socioeconomics is the relationship between economics and social elements such as population levels and economic activity. There are several factors that can be used as indicators of socioeconomic conditions for a geographic area such as population, median household income, unemployment rates, and employment. Data on employment identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on industrial, commercial, and other sectors of the economy provide baseline information about the economic health of a region. Housing, infrastructure, and public services are also influenced by socioeconomic factors. The U.S. Census Bureau is the principal agency in the United States that collects and provides demographic and economic data.

3.10.2 Regulatory Framework

NEPA Section 102(2), Army's NEPA regulations [32 CFR Part 651, Appendix E (b)(7)], CEQ's Regulations for Implementing NEPA [40 CFR Section 1502.16~~(b)~~], HEPA (HRS Chapter 343), and HAR Chapter 11-200.1 require an approach for planning and decision-making that involves evaluation of actions that may have an impact on the human environment, including on social and economic resources. When it is determined that social, economic, physical, or natural environmental effects are interrelated with a proposed action, analysis under NEPA and HEPA must discuss and give appropriate consideration to those effects on the human environment. There are no specific regulations for managing or evaluating socioeconomic impacts; however, socioeconomic sustainability is considered an important factor in federal decisions.

3.10.3 Region of Influence

The ROI for potential impacts related to socioeconomics is PTA and the County of Hawaiʻi because the entire County of Hawaiʻi economically benefits from activities conducted at PTA. The County of Hawaiʻi encompasses the entire island of Hawaiʻi.

3.10.4 Existing Conditions

Population. In 2019, the estimated population of the County of Hawaiʻi was 199,459, representing approximately 14 percent of the total population for the State. The population of the County of Hawaiʻi grew 7.7 percent from 2010 to 2019. Over the same time period, this growth rate was greater than the growth rates of the State (4.5 percent) and the United States (5.2 percent). **Table 3-25** presents 2010 and 2019 population data for the United States, Hawaiʻi, and the County of Hawaiʻi (USCB, 2010; USCB, 2019a).

Table 3-25: Population in the County of Hawaiʻi, State, and the United States (2010 and 2019)

Location	2010	2019	Percent Change
United States	308,745,538	324,697,795	5.2%
Hawaiʻi	1,360,301	1,422,094	4.5%
County of Hawaiʻi	185,079	199,459	7.7%

Source: USCB, 2010; USCB, 2019a

Employment Characteristics. In 2019, an estimated 88,098 individuals in the County of Hawaiʻi were employed. Additionally, the median household income for the county was estimated at $62,409, compared to the statewide median household income of $81,275. The three largest industries in the County of Hawaiʻi in terms of percentage of the workforce employed were educational services, health care, and social assistance (20 percent); arts, entertainment, and recreation, and accommodation and food services (17 percent); and retail trade (12 percent) (USCB, 2019b). Of these, the arts, entertainment, and recreation, and accommodation and food services and retail trade industries are tourism driven. In December 2020, the Bureau of Labor Statistics reported an 8.9 percent unemployment rate in the County of Hawaiʻi, which is comparable to that of the State (9.0 percent) and higher than that of the United States (6.5 percent) (USBLS, 2021). Permanent personnel at PTA include two active-duty personnel, approximately 120 full-time civilians, and several contractors (USACE-POH, 2019).

Military Activity in the State and County. Military activity has been an important contributor to the State's economy for decades. The DoD Office of Economic Adjustment ranks Hawaiʻi as second in the United States for defense spending (DBEDT, 2021a). In 2021, the DoD had 71,323 personnel (i.e., military and civil service personnel) in Hawaiʻi (DMDC, 2021). In fiscal year 2019, the DoD spent a total of $7.5B in Hawaiʻi, which included $5B in labor income and $2.5B in DoD-funded contracts. DoD personnel represent 16.5 percent of the State's total workforce, making it the largest employer in the State (OLDCC, 2019). The Hawaiʻi Department of Business, Economic Development and Tourism developed an action plan identifying the strengths, weaknesses, opportunities and threats to Hawaiʻi'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, 2021b).

Of the 71,323 DoD personnel in Hawaiʻi in 2021, the Army accounts for 20,524 personnel (i.e., military and civil service personnel) (DMDC, 2021). Of the $2.5B in DoD-funded contracts within the State, approximately $700M was funded by the Army (OLDCC, 2019). Recent Army-specific economic impacts represented 6.7 to 8.5 percent of the State's economy and 0.9 to 2.7 percent of the County of Hawaiʻi's economy. Army expenditures supported 75,920 employees (i.e., military personnel and civilians, to include contractors) in the State, 1,962 of which were in the County of Hawaiʻi. Army expenditures accounted for approximately $4.4B in labor income (i.e., military personnel and civilians, to include contractors) in the State, $92M of which was in the County of Hawaiʻi (USACE-POH, 2019). Army expenditures in the County of Hawaiʻi also include local purchases of potable water, equipment, and other services such as solid waste disposal, porta johns, and custodial services. Additionally, as stated in **Sections 1.1** and **1.2.6**, various DoD, state, and local agencies and groups, as well as international partners, contribute to the local economy by traveling to PTA for training and spending in the County of Hawaiʻi. In fiscal year 2019, approximately 12,000 military personnel trained at PTA during approximately 200,000 troop training days (USAG-PTA, 2020a).

The Army invests over $12M annually in biological and CRM actions within Army training lands in Hawaiʻi that support and enable military training (USAG-HI, 2020b). Within the State-owned land at PTA, the Army manages historic and cultural resources, approximately 5,095 acres of Palila critical habitat, and approximately 8,500 acres (28 miles) of conservation fence units that protect federally listed plant species from ungulates.

Housing. Troops training at PTA are housed in troop billeting (i.e., Quonset huts) within the Cantonment of the installation; therefore, troops coming to PTA for training do not count towards housing statistics for the County of Hawaiʻi. Full-time personnel at PTA are residents of the County of Hawaiʻi and commute to PTA (USACE-POH, 2019). **Table 3-26** presents occupied and vacant housing units in the State and the County of Hawaiʻi (USCB, 2019c). The County of Hawaiʻi has a higher percentage of vacant units than the State.

Table 3-26: Housing Units in Hawaiʻi and County of Hawaiʻi (2019)

Location	Occupied	Vacant	Total Units	Percent Vacant
Hawaiʻi	459,424	69,543	542,674	12.8%
County of Hawaiʻi	69,453	18,371	87,824	20.9%

Source: USCB, 2019c

Public Service, Public Use, and Community Outreach. State and county agencies, such as Hawaiʻi Emergency First Responders, Hawaiʻi Emergency Management, and the Hawaiʻi Police Department, periodically use PTA for training. PTA is also used by non-profit organizations such as the Red Cross, Boy Scouts, Girl Scouts, and Youth Challenge. In addition, the State-owned land at PTA is periodically opened to public recreation activities, provided such activities are consistent with use of lands and do not conflict with the military mission. Public use activities conducted at PTA include archery in TAs 5 and 6; guided hikes; and hunting for birds, pigs, sheep, and goats within specific areas. Additionally, multiple community and regional initiatives are supported by the installation and the USAG-HI Environmental Division. PTA personnel cooperate and coordinate with approximately two dozen groups and agencies.

During scoping, members of the public highlighted various community outreach and volunteer activities conducted by personnel at PTA. These activities include providing opportunities for local fire, police, and National Guard training; being first/secondary responders to car accidents, brush fires, and emergency incidents outside the PTA boundary; maintaining adjacent properties (e.g., Girl Scout Camp Kilohana) by keeping grass and other materials that pose a risk of fire cleared and under control; assisting in cleanup after weather events; and donating manpower and food to the local communities.

3.10.4.1 Existing Management Measures

USAG-HI operates a public website that lists a schedule of upcoming activities, including training and public involvement projects.

USAG-HI supports economic and recreational uses by allowing public access to military lands for recreational uses such as bird watching and other nonconsumptive activities.

3.10.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.10.6** to assess potential significant impacts on socioeconomics. The criteria considered to assess whether an alternative would result in potential significant impacts on socioeconomics include the extent or degree to which an alternative would result in the following:

- Substantial change(s) in the local (i.e., area immediately surrounding PTA) or regional (i.e., County of Hawai‘i) population or demographic distribution
- Substantial change(s) in local or regional economic indicators such as employment, spending, or earning patterns
- Substantial indirect impact(s), such as impacts on housing availability and public facilities.

3.10.6 Environmental Analysis

3.10.6.1 Alternative 1: Maximum Retention

Land Retained

Lease Impacts: Under Alternative 1, the Army would retain approximately 22,750 acres of the 23,000 acres of State-owned land. There would be no changes in the throughput (numbers) of troops training at PTA, and negligible changes to the existing management and maintenance programs (including funds to support Army resource management and public use programs such as biological resources management actions and public hunting access). Therefore, continued long-term, direct and indirect, moderate, beneficial impacts on socioeconomics from the Army’s and other PTA users’ ongoing activities within the State-owned land retained would be maintained. No changes in employment of permanent personnel at PTA would occur under Alternative 1; therefore, no changes in population, housing, and the associated indirect, beneficial impacts currently contributed from permanent personnel spending in the local and regional economy would occur. Public service and community outreach activities conducted by PTA personnel would continue. Additionally, various DoD, state, and local agencies would continue to travel to PTA for training and spend in the local economy, which indirectly results in beneficial socioeconomic impacts.

Fee Simple Title Impacts: Impacts under fee simple title would be the same as those described under a lease because no new impacts on population, housing, or the regional economy would occur from fee simple title retention of the State-owned land retained.

Land Not Retained

By the lease expiration date, the Army would stop all training in the approximately 250 acres of State-owned land not retained. No change in permanent personnel would occur; therefore, no changes in population, housing, and the associated indirect, beneficial impacts currently contributed from permanent personnel spending in the local and regional economy would occur. The Army would no longer fund or manage resource management (i.e., managing historic and cultural resources and critical habitat, and maintaining conservation fence units for protecting critical habitat from ungulates) and public use programs for the State-owned land not retained. The State would be responsible for managing resource management and public use programs within the State-owned land not retained. These changes would result in new long-term, direct and indirect, negligible, adverse impacts from reduction of the socioeconomic (e.g., local spending) benefits currently contributed by military operators at PTA in the State-owned land not retained.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities that could result in new short-term, negligible, beneficial impacts on socioeconomics due to hiring of contractors to perform the actions.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.10.4.1**.

Level of Significance: Alternative 1 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.10.5**.

3.10.6.2 Alternative 2: Modified Retention

Land Retained

Lease Impacts: The training throughput and the benefits described under Alternative 1 would continue on the State-owned land retained. Public service and community outreach activities conducted by PTA personnel would continue. The Army would continue to fund and manage ongoing resource management and public use programs for the State-owned land retained. The Army and other PTA users would continue to contribute long-term, direct and indirect, moderate, beneficial impacts on socioeconomics in the region from ongoing activities within the State-owned land retained.

Fee Simple Title Impacts: Impacts under fee simple title would be the same as those described under a lease because no new impacts on population, housing, or the regional economy would occur from fee simple title retention of the State-owned land retained.

Land Not Retained

By the lease expiration date, the Army would stop all training on the State-owned land not retained. No change in permanent personnel is anticipated; therefore, no changes in population, housing, and the

associated indirect, beneficial impacts currently contributed from permanent personnel spending in the local and regional economy would occur. Less training at PTA would result in fewer local purchases of potable water, equipment, and other services by the Army and other PTA users, as well as fewer indirect benefits associated with local spending by units that train at PTA. The Army would no longer fund or manage resource management and public use programs for the State-owned land not retained. The State would be responsible for managing resource management (i.e., managing historic and cultural resources and critical habitat, and maintaining conservation fence units for protecting critical habitat from ungulates) and public use programs within the State-owned land not retained. These changes would result in new long-term, direct and indirect, negligible, adverse impacts from reduction of the socioeconomic (e.g., local spending) benefits currently contributed by military operators at PTA.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities that could result in new short-term, negligible, beneficial impacts on socioeconomics due to hiring of contractors to perform the actions.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.10.4.1**.

Level of Significance: Alternative 2 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.10.5**.

3.10.6.3 Alternative 3: Minimum Retention and Access

Land Retained

Lease Impacts: Because less of the State-owned land would be retained, beneficial impacts for the land retained would be slightly less than those described under Alternative 2. Public service and community outreach activities conducted by PTA personnel would continue. The Army would continue to fund and manage resource management and public use programs within the State-owned land retained, including maintenance of the firebreaks/fuel breaks located along most of the approximately 11 miles of select roads and training trails proposed for retention. The Army and other PTA users would continue to contribute long-term, direct and indirect, minor to moderate, beneficial impacts on socioeconomic resources in the region from ongoing activities within the State-owned land retained.

Fee Simple Title Impacts: Impacts under fee simple title would be the same as those described under a lease because no new impacts on population, housing, or the regional economy would occur from fee simple title retention of the State-owned land retained.

Land Not Retained

By the lease expiration date, the Army would stop all training on the State-owned land not retained. Relinquishing approximately 12,900 acres of State-owned land back to the State would moderately reduce the capacity to support training at PTA. Reduced training would result in fewer DoD agencies traveling to PTA to train and a potential reduction in support personnel at PTA. These changes would result in a reduction in permanent personnel at PTA and indirect, adverse impacts on population, housing, and less spending in the local economy. The Army would no longer fund or manage resource management (i.e., managing historic and cultural resources and critical habitat, and maintaining conservation fence units for

protecting critical habitat from ungulates) and public use programs within the State-owned land not retained. The State would be responsible for managing resource management and public use programs within the State-owned land not retained. These changes would result in new long-term, direct and indirect, minor to moderate, adverse impacts from reduction of the socioeconomic (e.g., local spending) benefits currently contributed by military operators at PTA.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities that could result in new short-term, negligible, beneficial impacts on socioeconomics due to hiring of contractors to perform the actions.

~~Potential~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.10.4.1**.

Level of Significance: Alternative 3 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.10.5**.

3.10.6.4 No Action Alternative

By the lease expiration date, the Army would stop all training and activities on the State-owned land and would have no land access to the impact area and training ranges to the south of the State-owned land. The No Action Alternative would result in a substantial reduction in training from loss of the State-owned land and loss of land access to the impact area and training ranges. Under the No Action Alternative, the Army would have no ability to train in or access the State-owned land; limited to no ability to train in or access the impact area and training ranges due to lack of land access; limited use of the Cantonment due to loss of the U.S. Government-owned ~~potable water facility and~~ electrical substation located within the State-owned land; and no ability to operate, maintain, or repair utilities and infrastructure in the State-owned land that serve the U.S. Government-owned land at PTA. The Army would no longer fund and manage resource management (i.e., managing historic and cultural resources and critical habitat, and maintaining conservation fence units for protecting critical habitat from ungulates) and public use programs within the State-owned land or impact area and training ranges. Additionally, due to reduced permanent personnel, reduced funding, and the loss of access to U.S. Government-owned ~~potable water and~~ electrical power within the State-owned land, the Army likely would no longer be able to provide community services that extend beyond the installation such as local firefighting support, local emergency services, and community relations events (indirect benefits). Due to the substantially reduced training and operational capabilities at PTA, fewer DoD agencies would travel to PTA to train and fewer permanent personnel would be required at PTA, resulting in new long-term, direct and indirect, significant, adverse impacts on socioeconomics from reduced population and housing demand along with a significant reduction in spending in the local economy in the County of Hawai‘i [e.g., labor (approximately $92M), utilities, equipment, construction, travel, local shopping]. USARHAW expenditures support 75,920 employees and account for approximately $4.4B annually in labor costs in the State (USACE-POH, 2019). If the No Action Alternative were to result in the need to restation USARHAW and/or other military units that rely on PTA, the economic costs would be significant.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions and cleanup and restoration activities that could result

in new short-term, minor, beneficial impacts on socioeconomics due to hiring of contractors to perform the actions.

~~Potential~~ **Mitigation Measures:** The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended for the significant impacts. No mitigation measures are recommended for the lease compliance actions and cleanup and restoration activities beyond the existing management measures discussed in **Section 3.10.4.1**.

Level of Significance: The No Action Alternative would result in significant, adverse impacts based on the significance criteria in **Section 3.10.5**.

3.11 Environmental Justice

On April 19, 2024, the Army issued a draft EIS that was prepared pursuant to the then-governing regulations and ~~Executive Orders (~~EOs~~)~~ regarding environmental justice, including: (1) the EOs listed in **Table 3-27**; (2) NEPA, 42 U.S.C. Section 4321 *et seq.*; (3) the 1978 version of the CEQ NEPA regulations, as amended, at 40 CFR Parts 1500-1508; 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 **Table 3-27** 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 is now 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 in this section appear in other sections as well. For instance, 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 PTA are expected to continue.

Although not mentioned in the title, this section includes analysis of the protection of children. **Table 3-27** cites EO 13045, and that EO remains in effect. As this chapter indicates, no adverse impacts would occur with respect to the protection of children.

3.11.1 Definition

In April 2023, EO 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All,* clarified the 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 effects on children) even if it turns out that effects (on children) are not significant. However, 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).

3.11.2 Regulatory Framework

The Army implements environmental justice analysis requirements in accordance with NEPA, the EOs listed in **Table 3-27**, and existing DoD and Army policies.

Table 3-27: Environmental Justice Executive Orders

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994), rescinded by EO 14173	Directs federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations.
EO 13045, Protection of Children from Environmental Health Risks and Safety Risks (April 21, 1997)	Specifically indicates that environmental justice analysis should consider environmental risks to health or safety that are attributable to products or substances that a child is likely to come into contact with or ingest.
EO 14008, Tackling the Climate Crisis at Home and Abroad (January 27, 2021), rescinded by EO 14154	Amends EO 12898 to create, within the Executive Office of the President, a White House Environmental Justice Interagency Council (Interagency Council) and calls for the Interagency Council to provide recommendations for further updating EO 12898.
EO 13985, Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (January 20, 2021), rescinded by EO 14148	Directs agencies to evaluate whether their policies generate racially inequitable results when implemented and to make necessary changes to ensure underserved communities are properly supported. Acknowledges that this work will require a multi-generational commitment and whole-of-government approach. The 2022 *Department of Defense Equity Action Plan*, pursuant to EO 13985, includes a strategy to advance equity and rectify past harms resulting from environmental and other impacts from defense activities on ancestral lands.
EO 14031, Advancing Equity, Justice, and Opportunity for Asian Americans, Native Hawaiians, and Pacific Islanders (May 28, 2021), rescinded by EO 14148	Seeks to eliminate barriers to equity and justice for these populations.
EO 14091, Further Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (February 16, 2023), rescinded by EO 14148	Builds on EO 13985 by mandating a whole-of-government, multi-generational commitment to extending and strengthening equity-advancing requirements to support underserved community workforces, economy, housing, equity in health (including mental and behavioral health), civil rights, and equal justice under law.

Table 3-27: Environmental Justice Executive Orders	
EO 14096, Revitalizing Our Nation's Commitment to Environmental Justice for All (April 21, 2023), rescinded by EO 14154	Directs all federal agencies to prioritize outreach to communities with environmental justice concerns, which can include all demographics, and possible legacy pollution and systemic treatment. This involves providing and encouraging engagement opportunities for the public to share concerns and participate in decision-making such as revising agency procedures, which is especially encouraged for people affected by federal actions. Those who do not normally engage will be notified and provided tools to further assist in the decision-making process.

3.11.3 Region of Influence

The ROI for environmental justice includes census block groups that abut PTA (**Figure 3-22**), which are most likely to be affected by Army actions. These census block groups include Census Tract 220 Block Group 1, Census Tract 217.02 Block Group 3, Census Tract 215.02 Block Groups 1 and 2, Census Tract 221.02 Block Group 1, and Census Tract 217.04 Block Groups 2, 3, and 4, which constitute most of the northern portion of the County of Hawai'i. The population density within these areas is low, and the total population of the ROI, as of 2019, included 17,541 people and comprised only 8.7 percent of the island's population. In addition to the population residing in those census block groups that abut PTA, 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 around PTA but may be affected by, for example, impacts to historic and cultural resources that they may hold dear to them.

3.11.4 Existing Conditions

3.11.4.1 Population Demographics

The affected environment for environmental justice identifies the presence and proximity of low-income and minority populations in relation to locations that may be adversely affected by the Proposed Action. The U.S. Census Bureau's 2015–2019 American Community Survey provides 5-year estimates of the percentage of the population in each census block group in the ROI that is considered either minority or low-income. The percentages were compared to thresholds and County of Hawai'i averages to determine whether the respective census block groups should be considered environmental justice minority or low-income areas. Geographic Information System analysis was used to map census block groups and illustrate the location of environmental justice 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," and this analysis also compares census block groups in the ROI to the County of Hawai'i average of 16 percent (a more stringent criteria than the 20 percent threshold).

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 minority population in the County of Hawai'i was estimated to be 79.7 percent (USCB, 2019d); therefore, the more stringent benchmark criteria of 50 percent was used in

this analysis, and each census block group with a minority population exceeding 50 percent was considered a minority population area. Minority populations include populations that report their ethnicity as something other than exclusively non-Hispanic White, and may include Native Hawaiian or other Pacific Islander, Asian, Black or African American, Hispanic or Latino, American Indian, or Alaska Native (USCB, 2011).

Children are defined as individuals under the age of 18 years old. Areas with high concentrations of children are identified where children tend to gather or spend substantial amounts of time such as schools. Because EO 13045 is more specific in concerning environmental risks to health or safety that are attributable to products or substances that children are likely to come into contact with or ingest, assessment of impacts to 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, public health and safety, noise, and water resources only. For clarity, the assessment of protection of children is presented in a separate subsection, as opposed to within the discussion of specific resource areas.

Figure 3-22: Environmental Justice and Protection of Children Areas in the Region of Influence

Table 3-28 and **Table 3-29** provide an analysis on whether particular census block groups in the ROI are classified as minority and low-income environmental justice communities, and **Table 3-30** provides analysis on Native Hawaiian populations. All of the census block groups in the ROI are classified as minority population areas because the population of each block group has a minority population that exceeds the 50 percent threshold; none of the block groups, however, have minority population percentages that exceed the County of Hawaiʻi. Only two of the eight census block groups in the ROI are classified as low-income environmental justice communities—Census Tract 221.02 Block Group 1 and Census Tract 217.04 Block Group 4, which are located to the east and west of PTA, respectively. **Figure 3-22** depicts PTA and the surrounding ROI and indicates census block groups and their environmental justice categorization. The closest residential area (Waikiʻi Ranch with a population of 50 to 99 individuals and homes on 10- to 20-acre lots) is approximately 4 miles north of the State-owned land and approximately 8 miles from the more commonly used central portion of the State-owned land. The residentially developed areas of Waikoloa Village and Waimea are each approximately 14 miles from the State-owned land, and Hilo is approximately 25 miles from the State-owned land. Additionally, the locations of schools are presented in **Figure 3-22** to support impact analysis for protection of children. The closest school (Waikoloa Elementary & Middle School) is approximately 14 miles northwest of the State-owned land, and the Girl Scouts Camp Kilohana is approximately 1 mile north of the State-owned land and 4 miles northwest of the more commonly used central portion of the State-owned land.

Table 3-28: Environmental Justice Minority Areas in the ROI (2019)

	Population	Minority Population Percent	Exceed Reference Area Minority Percent?	Meets or Exceeds 50% Criteria?	Environmental Justice Minority Area?
Reference Area - County of Hawaiʻi	**201,513**	**72.7%**	**NA**	**Yes**	**Yes**
Census Tract 215.02, Block Group 1	3,132	61.8%	No	Yes	Yes
Census Tract 215.02, Block Group 2	1,455	63.8%	No	Yes	Yes
Census Tract 217.02, Block Group 3	6,003	79.8%	Yes	Yes	Yes
Census Tract 217.04, Block Group 2	1,643	58.6%	No	Yes	Yes
Census Tract 217.04, Block Group 3	2,342	53.8%	No	Yes	Yes
Census Tract 217.04, Block Group 4	1,256	51.0%	No	Yes	Yes
Census Tract 220, Block Group 1	1,244	67.4%	No	Yes	Yes
Census Tract 221.02, Block Group 1	466	55.8%	No	Yes	Yes

Source: USCB, 2019d

Table 3-29: Environmental Justice Low-income Areas in the ROI (2019)					
	Households	**Percent of Households with Incomes below the Poverty Level**	**Exceed Reference Area Poverty Percent?**	**Exceed 20% Criteria?**	**Environmental Justice Low-income Area?**
Reference Area - County of Hawai'i	**69,453**	**16.0%**	**NA**	**No**	**No**
Census Tract 215.02, Block Group 1	1,150	13.9%	No	No	No
Census Tract 215.02, Block Group 2	573	5.2%	No	No	No
Census Tract 217.02, Block Group 3	1,551	11.3%	No	No	No
Census Tract 217.04, Block Group 2	363	4.7%	No	No	No
Census Tract 217.04, Block Group 3	1,088	3.7%	No	No	No
Census Tract 217.04, Block Group 4	557	16.7%	Yes	No	Yes
Census Tract 220, Block Group 1	446	7.8%	No	No	No
Census Tract 221.02, Block Group 1	224	27.7%	Yes	Yes	Yes

Source: USCB, 2019d

Table 3-30: Native Hawaiian Population in the ROI (2015)				
	Total Population	**Native Hawaiian Alone or in Any Combination**	**Percent Native Hawaiian Alone or in Any Combination**	**Exceeds Reference Area Native Hawaiian Percent?**
County of Hawai'i	**196,428**	**58,647**	**29.9%**	**NA**
Census Tract 215.02	4,445	1,373	30.9%	Yes
Census Tract 217.02	11,118	4,086	36.8%	Yes
Census Tract 217.04	7,713	1,769	22.9%	No
Census Tract 220	3,270	523	16.0%	No
Census Tract 221.02	1,661	ND	ND	ND

Note: Data on Native Hawaiian Alone or in Any Combination are only available at the Census Tract level of detail, and the most recent data available for the tracts immediately surrounding PTA are from 2015. 2020 Census data are not yet available to the tract level.

ND = No data available

NA = Not applicable

Source: USCB, 2015

3.11.4.2 Community and Culture Considerations

Over the long history of military presence on Hawai'i (as described in **Section 1.1.2**), the relationship between the U.S. Armed Forces, USAG-HI, 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 resource procurement, 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 cultural values; and 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. Survey respondents and interviewees in the CIA, as well as commentors on the Draft and Second Draft EISs, stated that the land at PTA is sacred, and that military use degraded this sacred nature 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 the ~~NEPA~~ public scoping and public review and comment periods 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 low amount of money ($1) paid for the entire 65-year term of the lease (DLNR, 1964), which has been viewed as inequitable; and the history of live-fire training and land management culminating in the litigation against DLNR regarding non-fulfillment of its role to monitor and ensure clearance of MEC and training debris on PTA in accordance with the 1964 lease (State of Hawai'i Supreme Court 2019). These factors are discussed in greater detail in **Section 3.2.4.1**.

3.11.4.3 Existing Management Measures

In a commitment to address past harms and strengthen the relationship between the ~~U.S.~~ 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 (USAG-HI 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 people of Hawai'i while meeting the mission and goals of the Army; and to build the partnership between the Native Hawaiian community and the ~~U.S.~~ 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. **Table 3-31** identifies the major engagement activities and ongoing community outreach and support programs in the State of Hawai'i that are applicable to PTA (USARPAC, 2022).

Table 3-31: Major Engagement Activities and Ongoing Community Outreach Efforts	
Hawaii Island Training PA, Annual Report Review Meeting	Per the 2018 Hawaii Island Training PA, implementation progress and application of stipulations are reviewed annually with the Training PA Signatories and 45 consulting parties to provide an update on what actions were conducted under the PA and receive feedback.
Bi-Annual Native Hawaiian Listening Sessions	Per the 2018 Hawaii Island Training PA, Army leaders invite and meet twice annually with approximately 35 Native Hawaiian organizations and ʻohana and their invited constituents that are consulting parties to the PA, to discuss concerns regarding historic properties on PTA from a Hawaiian perspective, which includes properties on the leased lands. Other concerns, issues, and requests are often discussed but are not the target focus of the meetings.
Consulting Parties Engagement	USAG-HI routinely engages in consultation with approximately 33 NHOs and 26 interested parties from the local community on a variety of projects and issues on the island of Hawaiʻi associated with the NHPA and NAGPRA. Comprehensive consultation supports and facilitates traditional cultural practices and stewardship activities by NHOs on Army lands as mitigation for adverse effects resulting from military training.
Cultural Resources Program (USAG-HI)	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 respectfully recover and care for Native Hawaiian iwi kūpuna found during Army projects and to date has honored requests to leave Native Hawaiian iwi kūpuna at discovery locations.
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 Hawaiʻi.
Hawaiʻi 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 directly address concerns and show appreciation for continued cooperation with the community.
Hawaiʻi 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.

Table 3-31: Major Engagement Activities and Ongoing Community Outreach Efforts	
Kahoahoa Dialogue	Centered on cultural practices, history, and language, Army leaders and a diverse set of community stakeholders meet quarterly to find common ground focused on topical issues to build understanding and sustain open dialogue.
Key Leader Engagements	With more than approximately 184,000 acres of land across 22 installations on two of eight islands, 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 and Senior Commander 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	PTA 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, Kahua Paʻa Mua Farm, Hoilina Ranch, Parker Ranch, Civil Air Patrol, Kawaihae Canoe Club/Surfpark, and the Mauna Kea Watershed Alliance.
Monthly Training Advisories	USARHAW publishes monthly training and noise advisories for Oʻahu and PTA. 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	This is 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 outreach events, such as guest lectures at UH 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 three service projects per month, logging more than 4,000 volunteer hours per year.
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 EIS, but also provides insight to the views and positions of the community. All comments received during scoping and the Draft EIS and Second Draft EIS public comment periods ~~for this EIS~~ were considered in the development of this EIS. Refer to **Appendices~~s~~ D** and **M** for additional details on the scoping and public comments received and the Army's responses indicating how public input guided the analysis.

Table 3-31: Major Engagement Activities and Ongoing Community Outreach Efforts	
ʻOhana Partner Network	Brigade-level Army commanders who are assigned as liaisons to key neighborhood boards for communities near Army installations and activities attend and provide updates during these monthly neighborhood board meetings. Participation in these meetings helps units to develop relationships that lead to community service projects locally that build community connections and foster mutual support.
Open House Events	For the first time since implementation of restrictions for the COVID-19 pandemic, USAG-HI opened the installation to the outside community during the Experience PTA Day in May 2022, and April 2023 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.
Pōhakuloa Advisory Council	This is a quarterly forum for the PTA commander to receive advice, opinions, and feedback about critical concerns from key community stakeholders.
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 Hawaiʻi. This project increases individual awareness of, and proactively mitigates some of the adverse effects resulting from, military training.
School Sponsorship Program	To further build community ties, Army units are aligned with and sponsor four 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 M**. Recurring community engagement activities and ongoing outreach meetings were conducted to inform and receive feedback from meeting participants about the Army's proposed land retention. A summary of ATLR EIS community engagement activities is provided in **Appendix M**.

3.11.5 Methodology and Significance Criteria

Analysis of effects on communities with environmental justice concerns in this EIS followed the EOs and policies identified in **Section 3.11.2** as well as the 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 focused 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. To make these determinations, each resource area that has the potential to adversely affect environmental

justice communities was analyzed. In the case that no adverse impacts are identified, a determination of no impact on environmental justice communities was made.

When potential disproportionate adverse impacts on communities with environmental justice concerns were identified, the analysis focused 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) (as explained in **Section 3.11.1**). The criteria considered to assess whether a proposed action would result in potential significant impacts on environmental justice include the following:

- Disproportionate~~ly~~ and adverse ~~high negative~~ effects on minority populations
- Disproportionate~~ly~~ and adverse ~~high negative~~ effects on low-income populations

If an adverse impact would disproportionately impact a low-income or minority community with environmental justice concerns, then the impact, as described in the pertinent resource area, was further 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 the identified environmental justice communities. 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 to 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 the identified environmental justice communities would be less than significant. A similar situation would occur if no population was affected at all for a given resource.

A similar analysis was conducted for protection of children; however, only resources relevant specifically to health and safety risks are addressed. These resources include air quality, hazardous substances and hazardous wastes, human health and safety, noise, and water resources.

3.11.6 Environmental Analysis

The environmental justice analysis for Alternatives 1 through 3 is limited to potential impacts resulting from the Proposed Action ~~and connected actions~~ that would also disproportionately and adversely affect communities with environmental justice concerns. As noted in **Table 3-32**, the potential impacts on biological resources; hazardous substances and hazardous wastes; air quality and greenhouse gases; noise; geology, topography, and soils; water resources; socioeconomics; airspace; electromagnetic spectrum; utilities; 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 ~~and connected actions~~ would result in impacts on land use, historic and cultural resources and 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 through 3.

Table 3-32: Resource Areas With No Disproportionate Adverse Environmental Justice Effects

Resource Area	Reason for No Environmental Justice Effects
Biological Resources	Impacts would be limited to PTA. Due to the distance between the State-owned land and the closest residential area (4 miles), there would be no disproportionate adverse impacts on communities with environmental justice concerns.
Hazardous Substances and Hazardous Wastes	Impacts would be limited to PTA and the roads used to transport hazardous substances and hazardous wastes. Due to the distance between the State-owned land and the closest residential area (4 miles) and because the hazardous substances and hazardous 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 PTA. Given the distance between the State-owned land and the closest residential area (4 miles), no disproportionate adverse impacts on communities with environmental justice concerns are anticipated.
Noise	LUPZ, Zone 1, and Zone 2 noise levels would extend up to 0.6 mile beyond the PTA boundary (north of the State-owned land). Due to the distance between the State-owned land and the closest residential area (4 miles), there would be no disproportionate adverse impacts on communities with environmental justice concerns.
Geology, Topography, and Soils	Impacts would be localized to PTA. Due to the distance between the State-owned land and the closest residential area (4 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. Additionally, there are limited surface water and groundwater pathways on PTA because of low rainfall, a lack of perennial streams, and the considerable depth to the groundwater aquifer. Consequently, no disproportionate adverse impacts on communities with environmental justice concerns are anticipated.
Socioeconomics	Adverse impacts from reduced spending due to the land not retained would include reduction in permanent personnel at PTA and indirect impacts from less spending by personnel working and training at PTA. Overall, no disproportionate adverse impacts on communities with environmental justice concerns are anticipated.
Airspace	The restricted airspace at PTA (R-3103) would continue to be inaccessible to all unauthorized aircraft throughout the region when activated. The Army would continue to coordinate with the FAA and notify the flying community of planned activities to ensure deconfliction and safe flight operations. Consequently, no disproportionate adverse impacts on communities with environmental justice concerns are anticipated.

Table 3-32: Resource Areas With No Disproportionate Adverse Environmental Justice Effects	
Resource Area	**Reason for No Environmental Justice Effects**
Electromagnetic Spectrum (EMS)	EMS emissions would continue to be localized to PTA and not affect off-installation populations; therefore, there would be no disproportionate adverse impacts on communities with environmental justice concerns.
Utilities	The local public utility capacities and services would not be affected; therefore, there would be no disproportionate adverse impacts on communities with environmental justice concerns.
Human Health and Safety	Impacts primarily would be limited to the State-owned land retained. Accident Potential Zones (APZs) I and II and the hazardous cargo pad ESQD arc would extend onto the land not retained. The public is very unlikely to be in these remote areas, 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. Additionally, the closest residential area to the State-owned land is 4 miles away. 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 ~~and connected actions~~ 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.

3.11.6.1 Alternative 1: Maximum Retention

Land Retained

Lease 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 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. As stated in **Section 3.11.4**, 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 land in accordance with the objectives of the public trust for the duration of the lease would result in continued disproportionate, long-term, significant, adverse impacts 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 I**). 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.

There would also be continued long-term, moderate, adverse impacts on recreation due to ongoing restricted public access within the leased State-owned land; new long-term, negligible, adverse impacts on encroachment management; and new long-term, significant, adverse impacts on land tenure that could be reduced to less than significant impacts through State authorization of a special subzone (for the conservation district) that would allow military training. These impacts on recreation, encroachment management, and land tenure 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.

The Army would continue to maintain current policies that allow limited cultural access within the ~~project area~~State-owned land retained. Additionally, the original $1 lease rate for the 65-year term of the PTA lease (1964-2029) would not be repeated. 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 of the State-owned (public trust) land would be used for the protection, conservation, and management of Hawaiʻi's public trust resources for current and future generations, supporting betterment of the conditions of Native Hawaiians and for the public. See **Section 3.2.4.1** for a discussion on State management of proceeds from State-owned land real estate transactions for specific purposes under the Admission Act. Any new land retention method or estate would be negotiated at no less than an equitable, ~~at a~~ fair market ~~rate~~ value in accordance with current federal regulations and Army policy and procedures. Additionally, the Army would continue to participate in the engagement and community outreach measures (at **Section 3.11.4.3**) to support ongoing dialogue, cooperation, and land use and planning discussions with the appropriate local, state, and federal agencies, Native Hawaiians, and surrounding Hawaiian communities.

Historic and Cultural Resources and Cultural Practices

Under Alternative 1, there would be continued adverse impacts to historic and cultural resources from ongoing activities. Additionally, there would be continued long-term, significant, adverse impacts related to ongoing limitations on cultural access to State-owned land retained, which impedes Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs. Because access limitation would disproportionately affect Native Hawaiians, there would be significant impacts on communities with environmental justice ~~communities of~~ concerns.

There could be continued long-term, significant, adverse impacts on cultural practices due to potential training-related wildland fires from ongoing activities within the State-owned land retained and associated activities within U.S. Government-owned land impacting biological resources that are important to the cultural practices of Native Hawaiians. Thus, such fires could adversely affect communities with environmental justice concerns.

Impacts on communities with environmental justice concerns ~~communities~~ and Native Hawaiians from the continued presence of the military installation~~,~~ and continued tenure of DoD control of the land under

a new lease would sustain existing feelings of emotional and psychological stress noted by community members during scoping and the Draft EIS and Second Draft EIS public review periods, as well as an ongoing perception that their sacred and traditionally and culturally important land is under an unjust military occupation.

Section 3.4 determined that cultural practices impacts related to limitations on access for cultural practices would be significant. The proposed mitigation measures include~~s~~ consultation with Native Hawaiians and cultural practitioners. Because there would continue to be some level of limited access, these mitigation measures would not reduce the impact to less than significant. ~~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 scoping, as well as an ongoing perception that their traditional and culturally important land is under an unjust military occupation.~~

A new lease would be negotiated at no less than an equitable, fair market value for land retained. Existing management measures protective of historic and cultural resources would be implemented as specified in **Section 3.4.4.6** to avoid or minimize effects from ongoing military training on the land retained. Additionally, the Army would continue to participate in the engagement and community outreach measures listed in **Section 3.11.4.3** to support ongoing dialogue, cooperation in planning discussions, and outreach activities to promote common ground on issues involving the land, water, people, and culture of Native Hawaiian communities.

Transportation and Traffic

Under Alternative 1, there would be a continuation of adverse impacts on the regional transportation system related to PTA inbound and outbound traffic. These ongoing impacts would affect the surrounding environmental justice minority communities more than others and are, therefore, considered disproportionate. Based on the assessment presented in **Section 3.12**, there would be no new impacts and the continued impacts would be considered minor. Further, the Army would continue to implement measures identified at **Section 3.12.4** to continue to avoid or minimize existing effects on surrounding communities to the extent practicable. Because the disproportionate adverse impact would be minor, the anticipated ongoing traffic and transportation impacts on communities with environmental justice ~~communities~~ concerns would be considered less than significant under Alternative 1.

Fee Simple Title Impacts:

Land Use

Fee simple retention of State-owned land under Alternative 1 would result in less than significant, adverse impacts on recreation and encroachment management. Additionally, there would be new long-term, significant, adverse impacts on land tenure from the transfer of land control and ownership of State-owned land from the State to the U.S. Government. A permanent transition in land ownership from the State to the U.S. Government would constitute a continued loss of ʻāina and result in disproportionate and continued significant impacts on communities with environmental justice ~~communities~~concerns.

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 future use of this land 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, which would result in a disproportionate and significant impact on communities with environmental justice ~~communities~~concerns.

Historic and Cultural Resources and Cultural Practices

There would be continued long-term, significant, adverse impacts related to ongoing limitations on cultural access to State-owned land retained, which impedes Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs. Because access limitation would disproportionately affect Native Hawaiians, there would be significant impacts on communities with environmental justice concerns.

There could be continued long-term, significant, adverse impacts on cultural practices due to potential training-related wildland fires from ongoing activities within the State-owned land retained and associated activities within U.S. Government-owned land impacting biological resources that are important to the cultural practices of Native Hawaiians. Thus, such fires could adversely affect communities with environmental justice concerns.

Impacts on communities with environmental justice concerns and Native Hawaiians from the continued presence of the military installation and continued tenure of DoD control of the land under fee simple title would sustain existing feelings of emotional and psychological stress noted by community members during scoping and the Draft EIS and Second Draft EIS public review periods, as well as an ongoing perception that their sacred and traditionally and culturally important land is under an unjust military occupation.

The land retained would be retained at no less than an equitable, fair market value and the Army would continue to maintain current policies that permit cultural access. New long-term, significant, beneficial impacts would be realized through land sale proceeds that fund Native Hawaiian and public programs. The Army would also continue to consult with Native Hawaiians regarding access to cultural and traditionally important sites and resources.

Transportation and Traffic

Impacts on transportation and traffic under fee simple title would be the same as those described under lease.

Land Not Retained

Under Alternative 1, the Army would not retain approximately 250 acres of the State-owned land at PTA. The State would continue current levels of historic and cultural resource management within the land not retained.

New long-term, significant, beneficial impacts on land tenure would occur through resumption of State control of the DHHL-administered land for the use and benefit of Native Hawaiians and for the public; consequently, the ability to use the land not retained in accordance with the objectives of the public trust

would result in new long-term, significant, beneficial impacts on communities with environmental justice concerns. New long-term, negligible, beneficial impacts on Native Hawaiian communities would be expected from increased public access for recreation; and new short-term, negligible, adverse impacts on historic and cultural resources could occur from lease compliance actions and cleanup and restoration activities. New impacts on cultural practices would include short-term, negligible, adverse impacts from short-term limitations on cultural access due to public safety concerns during lease compliance actions and cleanup and restoration activities; and new long-term, minor, beneficial impacts on cultural practices from the removal of limitations on cultural access that would support Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs.

~~Potential~~ **Mitigation Measures:** Beyond the existing management measures listed in **Section 3.11.4.3**, the Army ~~would consider~~proposes the following mitigation measures outlined in **Table 3-33**. ~~to further reduce potential adverse impacts on communities with environmental justice concerns: (1) through consultation with Native Hawaiians and cultural practitioners, the Army would formalize a cultural access request process to enable Native Hawaiians and cultural practitioners opportunities to promote and preserve cultural practices, beliefs, and resources; and (2) the Army would explore options to provide unlimited cultural access to specific locations to be determined in consultation with Native Hawaiians and cultural practitioners. If the Army were to select these mitigation measures, the Army would identify them in the ROD and endeavor to formalize the cultural access request process prior to the end of the current lease so that it is in place when the lease expires. The Army would consider developing a mitigation plan with monitoring requirements for any mitigation measures it selects to implement to ensure their use and effectiveness.~~

Table 3-33: Mitigation Measures to Reduce Adverse Impacts to Environmental Justice Communities

Mitigation Measure	Timing
The Army will negotiate an agreement with the State to monitor wildfires on land not retained and an agreement document will be developed with the State. The agreement will be implemented once all parties sign the agreement document or when the land retention estate document (e.g., lease or deed) is executed, whichever is later.	Negotiations to begin no later than October 2028.
In addition to the current thermal technology at PTA, the Army will add advanced technology which will include additional thermal technology equipment. The additional thermal technology equipment would enable firefighting personnel to locate and eliminate hot spots where a fire persists. The Army will install approximately six to eight infrared cameras that provide adequate coverage across the training area for wildfire heat signature monitoring—three cameras in the Keamuku Maneuver Area, three cameras in the Pōhakuloa Training Area, and one or two additional mobile cameras.	Contracting and installation to begin no later than October 2028.
The Army will develop a formalized access plan for quarterly access for Native Hawaiian organizations, individuals, and consulting parties, 'ohana, lineal descendants, and cultural practitioners	Consultation will begin no later than October 2028.
The Army proposes to install interpretive panels at the Gilbert Kahele Recreation Area to illustrate the historical and cultural importance of the Saddle Region. The interpretive panels will be accessible to community members and visitors of the park.	Consultation will begin no later than October 2028.

The Army will monitor the mitigation measures to ensure their implementation and effectiveness and 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.

Further, the ongoing implementation of management measures specified for other resource areas would continue to benefit and avoid or minimize adverse impacts on communities with environmental justice concerns.

Level of Significance: Alternative 1 would result in significant, adverse impacts on land tenure and from limited cultural access under lease and fee simple title based on the significance criteria in **Sections 3.2.5**, **3.4.5**, and **3.11.5**. ~~Alternative 1 also would result in significant, adverse impacts on land tenure and from limited cultural access under fee simple title based on the significance criteria in **Sections 3.2.5**, **3.4.5**, and **3.11.5**.~~ Alternative 1 would result in significant, beneficial impacts on land tenure for land not retained based on the significance criteria in **Sections 3.2.5** and **3.11.5**. Alternative 1 could also result in significant, adverse impacts on cultural practices from potential training-related wildland fires under lease and fee simple title based on the significance criteria in **Sections 3.4.5** and **3.11.5**.

3.11.6.2 Alternative 2: Modified Retention

Land Retained

Lease Impacts:

Land Use

Alternative 2 impacts on land use under lease are anticipated to be the same as under Alternative 1 (i.e., 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, which would result in continued disproportionate, long-term, significant, adverse impacts on communities with environmental justice concerns).

Historic and Cultural Resources and Cultural Practices

Continued long-term, significant, adverse impacts on cultural practices from limited cultural access, continued long-term, significant, adverse impacts on cultural practices from potential training-related wildland fires, and continued impacts to sacred and traditionally and culturally important land would be as described for Alternative 1 and would disproportionately affect Native Hawaiians and therefore result in significant environmental justice impacts.

Transportation and Traffic

Continued long-term, minor, adverse impacts on transportation and traffic from ongoing activities would disproportionately affect communities with environmental justice concerns.

The Army would continue implementing engagement and community outreach efforts in **Section 3.11.4.3**. Further, the Army would continue to implement measures identified at **Section 3.12.4.3** to continue to avoid or minimize existing transportation and traffic effects on surrounding communities to the extent practicable.

Fee Simple Title Impacts:

New long-term, significant, adverse impacts on land tenure from the transfer of land control and ownership from the State to the U.S. Government would occur as described under Alternative 1, except less land would leave the State land inventory. A permanent transition in land ownership from the State to the U.S. Government would constitute a loss of ʻāina and result in disproportionate and significant, adverse impacts on communities with environmental justice ~~communities~~concerns. Continued long-term, significant, adverse impacts on cultural practices from limited cultural access, continued long-term, significant, adverse impacts on cultural practices from potential training-related wildland fires, and continued impacts to sacred and traditionally and culturally important land would disproportionately affect Native Hawaiians resulting in significant environmental justice impacts. The land retained would be retained at no less than an equitable, fair market value and the Army would continue to maintain current policies that permit cultural access within the land retained and promote intercultural awareness and respect to minimize effects on Native Hawaiians and the surrounding Hawaiian communities. Impacts on transportation and traffic under fee simple title would be the same as those under a lease.

Land Not Retained

New long-term, significant, beneficial impacts on land tenure would occur through resumption of State control of the land not retained for the use and benefit of Native Hawaiians and for the public; consequently, the ability to use the land not retained in accordance with the objectives of the public trust would result in new long-term, significant, beneficial impacts on communities with environmental justice concerns. New long-term, negligible, beneficial impacts on Native Hawaiian communities would be expected from increased public access for recreation. New short-term, negligible, adverse impacts on historic and cultural resources could occur from lease compliance actions and cleanup and restoration activities. New impacts on cultural practices would include short-term, negligible, adverse impacts from short-term limitations on cultural access due to public safety concerns during lease compliance actions and cleanup and restoration activities; and new long-term, minor, beneficial impacts on cultural practices from the removal of limitations on cultural access that would support Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs.

~~**Potential**~~ **Mitigation Measures:** Alternative 2 existing management measures and ~~potential~~ mitigation measures are the same as those discussed under Alternative 1.

Level of Significance: Alternative 2 would result in significant, adverse impacts on land tenure and from limited cultural access under lease and fee simple title based on the significance criteria in **Sections 3.2.5**, **3.4.5**, and **3.11.5**. ~~Alternative 2 also would result in significant, adverse impacts on land tenure and from limited cultural access under fee simple title based on the significance criteria in **Sections 3.2.5**, **3.4.5**, and~~

~~**3.11.5**.~~ Alternative 2 would result in significant, beneficial impacts on land tenure for land not retained based on the significance criteria in **Sections 3.2.5** and **3.11.5**. Alternative 2 could also result in significant, adverse impacts on cultural practices from potential training-related wildland fires under lease and fee simple title based on the significance criteria in **Sections 3.4.5** and **3.11.5**.

3.11.6.3 Alternative 3: Minimum Retention and Access

Land Retained

Lease Impacts:

Land Use

Any new land retention method or estate would be negotiated at no less than an equitable,~~a~~ fair market ~~rate~~ value in accordance with current federal regulations and Army policy and procedures, as described for Alternative 1. Implementation of Alternative 3 through lease retention of the State-owned land retained would result in impacts similar to (but to a lesser degree) than those described for Alternative 1, with no differences in the significance conclusions for effects on environmental justice populations.

Historic and Cultural Resources and Cultural Practices

~~Continued significant, adverse impacts on cultural practices and beliefs would occur from military control of State-owned land, which impedes Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs. Because cultural access limitations disproportionately affect Native Hawaiians, there would be significant environmental justice impacts.~~ Continued long-term, significant, adverse impacts on cultural practices from limited cultural access, continued long-term, significant, adverse impacts on cultural practices from potential training-related wildland fires, and continued impacts to sacred and traditionally and culturally important land would be as described for Alternative 1 and would disproportionately affect Native Hawaiians and therefore result in significant environmental justice impacts.

Transportation and Traffic

Continued long-term, minor, adverse impacts on transportation and traffic from ongoing activities would disproportionately affect communities with environmental justice concerns.

Fee Simple Title Impacts:

New long-term, significant, adverse impacts on land tenure from the transfer of land control and ownership from the State to the U.S. Government would occur as described under Alternative 1, except less land would leave the State inventory. A permanent transition in land ownership from the State to the U.S. Government would constitute a loss of ʻāina and result in disproportionate and significant, adverse impacts on communities with environmental justice ~~communities~~concerns. Continued, long-term, significant, adverse impacts on cultural practices would occur from military control of State-owned land limiting cultural access, continued long-term, significant, adverse impacts on cultural practices from potential training-related wildland fires, and continued impacts to sacred and traditionally and culturally important land. Because cultural access limitations would disproportionately affect Native Hawaiians, there would also be significant impacts on environmental justice. The land retained would be retained at

no less than an equitable, fair market value and the Army would continue to maintain current policies that permit cultural access within the land retained and promote intercultural awareness and respect to minimize effects on Native Hawaiians and the surrounding Hawaiian communities. Impacts on transportation and traffic under fee simple title would be the same as those under a lease.

Land Not Retained

Alternative 3 would result in new long-term, moderate, beneficial impacts on communities with environmental justice concerns, including Native Hawaiians, from the discontinuation of military activities and associated impacts on the 12,900 acres of State-owned land not retained. New long-term, significant, beneficial impacts on land tenure would occur through resumption of State control of the land not retained for the use and benefit of Native Hawaiians and for the public; consequently, the ability to use the land not retained in accordance with the objectives of the public trust would result in new long-term, significant, beneficial impacts on communities with environmental justice concerns. New long-term, minor, beneficial impacts on Native Hawaiian communities would be expected from increased public access for recreation. New short-term, negligible, adverse impacts on historic and cultural resources could occur from lease compliance actions and cleanup and restoration activities. New impacts could include short-term, minor, adverse impacts on cultural practices from cultural access limitations to support public safety during lease compliance actions and cleanup and restoration activities. New long-term, moderate, beneficial impacts would result from the removal of limitations on cultural access that would support Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs.

~~**Potential**~~ **Mitigation Measures:** Alternative 3 existing management measures and ~~potential~~ mitigation measures are the same as those discussed under Alternative 1.

Level of Significance: Alternative 3 would result in significant, adverse impacts on land tenure and from limited cultural access under lease and fee simple title based on the significance criteria in **Sections 3.2.5**, **3.4.5**, and **3.11.5**. ~~Alternative 3 also would result in significant, adverse impacts on land tenure and from limited cultural access under fee simple title based on the significance criteria in **Sections 3.2.5**, **3.4.5**, and **3.11.5**.~~ Alternative 3 would result in significant, beneficial impacts on land tenure for land not retained based on the significance criteria in **Sections 3.2.5** and **3.11.5**. Alternative 3 could result in significant, adverse impacts on cultural practices from potential training-related wildland fires under lease and fee simple title based on the significance criteria in **Sections 3.4.5** and **3.11.5**.

3.11.6.4 No Action Alternative

Compared to the Proposed Action, impacts associated with the No Action Alternative would tend to have reduced levels of adverse impacts on communities with environmental justice concerns and, in some cases, additional beneficial impacts relative to the action alternatives. Changes under the No Action Alternative would also generally be viewed as beneficial for the Native Hawaiian culture.

The potential impacts of the No Action Alternative on air quality and greenhouse gases; noise; geology, topography, and soils; water resources; airspace; electromagnetic spectrum; or utilities would not disproportionately and adversely affect communities with environmental justice concerns. Therefore, these resource areas are not analyzed for environmental justice impacts under the No Action Alternative.

This determination primarily is based on the substantial distances between the State-owned land and populated areas.

The following analysis addresses the anticipated land use, biological resources, historic and cultural resources and cultural practices, hazardous substances and hazardous wastes, socioeconomics, transportation and traffic, and human health and safety resource area impacts resulting from the No Action Alternative that also would disproportionately and adversely affect communities with environmental justice concerns. 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 No Action Alternative 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.

Land Use

Under the No Action Alternative, use of the State-owned land to support military training would cease; 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 PTA are misaligned with their culture and traditional values and use of the land. There also would be new long-term, significant, beneficial impacts on land tenure because the State would resume control of the State-owned land for the use and benefit of Native Hawaiians and for the public; consequently, the ability to use the land not retained in accordance with the objectives of the public trust would result in new long-term, significant, beneficial impacts on communities with environmental justice concerns. The No Action Alternative would also result in reduced access restrictions to recreation areas, which would be a new, long-term, minor, beneficial impact on nearby populations. Adverse impacts would include new long-term, moderate, adverse impacts on encroachment management from the loss of Army control over lands adjacent to U.S. Government-owned land and could include new short-term, moderate, adverse impacts on recreation due to restricted access during lease compliance actions and cleanup and restoration activities.

Biological Resources

Implementation of Army lease compliance actions could result in new, temporary, minor adverse impacts and long-term, beneficial impacts on biological resources from habitat disturbance during cleanup and reforestation. These changes would also be viewed as long-term, beneficial for the Native Hawaiian community and their cultural regard for the natural environment. While there would be a reduction in Army sponsored conservation programs, it is anticipated that the State would continue these efforts over the long term. The No Action Alternative would eliminate ongoing activities within the State-owned land, eliminate or substantially reduce training in the impact area and training ranges south of the State-owned land due to lack of access, and consequently substantially reduce ongoing training on U.S. Government-owned land at PTA, which would considerably reduce the risk of potential training-related wildland fires. As a result, there would be continued, but less than significant, adverse impacts on biological resources from potential training-related wildland fires ~~that could spread beyond~~ associated with the U.S. Government-owned land at PTA. No impacts on human populations would be expected because they are not located near the State-owned land.

Historic and Cultural Resources and Cultural Practices

Under the No Action Alternative, adverse impacts related to training would cease. While there would be no Army-sponsored conservation programs in the State-owned land, it is anticipated that the State would continue these efforts over the long term. Because adverse impacts associated with training and limitations on cultural access to State-owned land would no longer occur, there would be new, long-term, less than significant, beneficial impacts (related to historic and cultural resources) and ~~a significant, beneficial impact (related to cultural practices)~~ new long-term, significant, beneficial impacts on cultural practices (from increased access) that could alleviate the ongoing perception that their sacred and traditionally and culturally important land is under an unjust military occupation, on communities with environmental justice concerns, including Native Hawaiian communities, under the No Action Alternative. New impacts could include short-term, minor, adverse impacts on cultural practices from cultural access limitations to support public safety during lease compliance actions and cleanup and restoration activities. The potential for training-related wildland fires from ongoing activities within the State-owned land and associated activities within the U.S. Government-owned land to impact biological resources that are important to the cultural practices of Native Hawaiians would be eliminated, thus, resulting in new, long-term, significant, beneficial impacts on cultural practices.

Hazardous Substances and Hazardous Wastes

There would be no adverse impacts relating to management of hazardous substances and hazardous wastes on communities with environmental justice ~~communities~~ concerns under the No Action Alternative. Implementation of lease compliance actions could result in beneficial impacts from removal of MEC and munitions debris. ~~Following current lease expiration, the Army would conduct lease compliance actions and follow Army regulations to determine how and when cleanup and restoration activities for hazardous substances and hazardous wastes would occur under CERCLA.~~ 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, CERCLA, and the terms of the lease. Actions required under CERCLA would be coordinated with the DOH. These actions would result in new long-term, minor to moderate, beneficial impacts from reduced potential for exposure to hazardous substances and hazardous wastes.

Socioeconomics

Under the No Action Alternative, there would be substantially reduced training and operational capabilities at PTA and fewer DoD agencies would travel to PTA to train and fewer support personnel would be required at PTA. These changes would result in new long-term, significant, direct and indirect, adverse impacts on socioeconomic resources from reduced population and housing demand along with a significant reduction in spending in the local economy in the County of Hawai‘i (e.g., labor [approximately $92M], utilities, equipment, construction, travel, local shopping) (see **Section 3.10**). Although these changes would not disproportionately affect environmental justice populations in comparison to any other faction of the island population, the socioeconomic effects on all County of Hawai‘i populations would be significant.

Transportation and Traffic

The No Action Alternative would result in a minor improvement to regional transportation, which would be a beneficial impact to nearby populations. Because there would be new, long-term, minor, beneficial impacts to regional transportation under the No Action Alternative, there would be a less than significant beneficial impact on communities with environmental justice concerns under the No Action Alternative.

Human Health and Safety

There would be new long-term, negligible to moderate, adverse impacts on human health and safety under the No Action Alternative from increased munitions handling and transportation; potential exposure of public to ESQDs, CZs, and APZs on the ~~former training land~~closed ranges; and loss of capacity to support State and county emergency services training. **Section 3.16** indicates, however, that these impacts would only have the potential to occur in non-populated areas and would not adversely affect any populations, including low-income and minority populations. The No Action Alternative would also result in new long-term, minor, beneficial impacts on human health and safety from the elimination of military activities on the State-owned land and impact area and training ranges to the south of the State-owned land that could cause wildfires. Because there would not be significant, adverse impacts on human health and safety, there would not be a significant impact on environmental justice under the No Action Alternative.

~~**Potential**~~ **Mitigation Measures:** The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended. No mitigation measures are recommended for the lease compliance actions and cleanup and restoration activities beyond the existing management measures discussed in **Section 3.11.4.3**.

Level of Significance: The No Action Alternative would result in significant, beneficial impacts on land tenure, increased cultural access, and cultural practices based on the significance criteria in **Sections 3.2.5, 3.4.5,** and **3.11.5**.

3.12 Transportation and Traffic

3.12.1 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 Hawaiʻi are regulated by the Federal Highway Administration and implemented by HDOT. Street operations on the island of Hawaiʻi are managed by HDOT and the County of Hawaiʻi Department of Public Works. Roads and training trails on PTA 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 through a combination of permanent, in-ground traffic counting stations, overhead cameras, and temporary traffic counters or tubes (HDOT-HD, 2017a).

Operation of roadway segments and intersections is expressed in terms of level of service (LOS), which varies 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 3-23** 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: Ryus et al., 2011

Figure 3-23: Level of Service Illustration

3.12.2 Regulatory Framework

The HDOT Highways Division and the County of Hawai‘i Department of Public Works implement national standards for roadways and circulation in accordance with the *Statewide Federal-Aid Highways 2035 Transportation Plan* (HDOT-HD, 2014a) and the *Federal-Aid Highways 2035 Transportation Plan for District of Hawai‘i* (HDOT-HD, 2014b), which are regional long-range land transportation plans. Other regulatory policies and procedures related to the construction, operation and management of roadways include the Transportation Research Board’s *Highway Capacity Manual, 2010 Edition*, the American Association of State Highway and Transportation Official’s *Policy on Geometric Design of Highways and Streets* and *Highway Safety Manual*, and the HDOT Highway Division’s *2005 Standard Specifications and Special Provisions*. State highways, such as DKI Highway (formerly Saddle Road), Māmalahoa Highway, Queen Ka‘ahumanu Highway, and ‘Akoni Pule Highway, are under the jurisdiction of the HDOT Highways Division. County roadways, such as Waikōloa Road, are under the jurisdiction of the County of Hawai‘i Department of Public Works. The roads within PTA, including those on State-owned land, are under the jurisdiction of the Army (USACE-POH & USAG-HI, 2019b).

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 [Hawaiʻi Revised Statutes Section 266-1 (2012)]. HDOT implements the *Hawaiʻi Island Commercial Harbors 2035 Master Plan* as a strategic planning guide for ensuring continuous and effective management and operations of Hilo and Kawaihae Harbor. The 2035 Master Plan was completed in August 2011 and updated two earlier plans, the *Hawaiʻi Commercial Harbors 2020 Master Plan* (1998) and the *Hilo and Kawaihae Harbors 2010 Master Plan* (1989). The U.S. Government owns and operates a landing ramp and maintains an easement authorized by a series of Governor EOs, including EO 1759 (1956), EO 1904 (1960), EO 2142 (1964), and EO 4523 (2016), which allow military operations including the transfer of troops, vehicles, military munitions, and other goods at Kawaihae Harbor (HDOT-H, 2011).

All commercial airports in Hawaiʻi fall under the jurisdiction of the HDOT Airports Division. The Hawaiʻi District, a subset of the HDOT Airports Division, manages, operates, and maintains four State airports on the island of Hawaiʻi in accordance with state and federal laws. The Army has jurisdiction over BAAF. The FAA is the federal governing agency for commercial, military, and general aviation air traffic.

3.12.3 Region of Influence

The ROI for transportation and traffic includes the transportation networks on State-owned land at PTA, PTA transportation networks used to conduct ongoing activities within the State-owned land, and regional transportation networks used to access PTA to conduct ongoing activities within the State-owned land, including the transportation corridor between Kawaihae Harbor and PTA and the transportation corridors between Hilo International Airport (ITO) and Ellison Onizuka Kona International Airport (KOA) and PTA.

3.12.4 Existing Conditions

The Army uses ground, ocean, and air transportation, and various modes of travel (e.g., planes, ships, trucks) to transport troops, vehicles, equipment, and military munitions from various locations (primarily Oʻahu) to PTA. Transportation facilities used by the Army include roadways (e.g., DKI Highway, Māmalahoa Highway), harbors (i.e., Kawaihae Harbor), regional airports (i.e., ITO and KOA), and BAAF.

3.12.4.1 PTA Transportation

PTA Roads and Trails

Several types of vehicular traffic are generated by activities at PTA including traffic associated with military exercises, permanent personnel employed at the Cantonment, contractors, commercial vehicles (i.e., water, food, and fuel deliveries), visitors, and construction vehicles. In addition, under the terms of the 1964 lease, the State has the right to use roads and trails within the State-owned land.

PTA contains a network of roads and training trails that provide access for ongoing activities. The State-owned land includes approximately 65 miles of roads and 94 miles of training trails (**Figure 3-24**). One of the primary roads used to access the training and support facilities and maneuver area on the State-owned land is Old Saddle Road, which is oriented in a northwest-southeast direction through TAs 1, 3, 4, 5, 6, 7, 8, 9, 11, 12, 15, 16, and the southern portion of the Cantonment (**Figure 3-24**). Old Saddle Road is not part of the State-owned land. It is administered by the County of Hawaiʻi, which has granted PTA exclusive use of the approximately 11-mile segment of Old Saddle Road within PTA, following its closure to the public after realignment of the DKI Highway (USACE-POH & USAG-HI, 2019b). A network of roads

and training trails, most of which are single-lane and unimproved, is also used to access areas throughout the State-owned land, as well as to the Cantonment, Keʻāmuku parcel, impact area, and training ranges. Lightning Trail, which runs parallel to and along the south side of Old Saddle Road, and Lava Road, which partially runs along the southern boundary of the State-owned land, are two primary east-west roadways that provide access to most of the live-fire training ranges on the State-owned land.

PTA Airfields

Airfields at PTA include BAAF and Cooper Air Strip. BAAF is just west of the Cantonment and is the highest elevation airfield in consistent use in the Hawaiian Islands. The airfield consists of a 3,705-foot runway and is used for training operations and delivery of materials and personnel from Oʻahu (USACE-POH & USAG-HI, 2020a). BAAF is restricted to military activities. Cooper Air Strip is the only airfield on State-owned land at PTA. It accommodates unmanned aerial systems during training operations and is used for approximately 8,500 operations annually (USAG-PTA, 2020b; USARHAW, ND). Cooper Air Strip is not used for transportation purposes; therefore, transportation related to airfields on the State-owned land is not discussed further (USARHAW, ND).

Pedestrian Networks

Soldiers who train at PTA rely on walking within the Cantonment and are transported in tactical vehicles to TAs on the State-owned land. Training operations, such as maneuver training, require soldiers to transit in vehicles and on foot within the State-owned land using existing roads, training trails, and maneuver area on TAs 1 through 20 (USARHAW, NDa). During training periods, there are more than 1,000 pedestrians and military vehicles at the Cantonment (USACE-POH & USAG-HI, 2020a). There are no pedestrian-only networks within the State-owned land.

3.12.4.2 Regional Transportation

The Army uses several regional roadways to transport military materiel, civilian personnel, and soldiers to and from PTA. Soldiers permanently stationed at PTA and civilian personnel employed at the Cantonment commute daily from Hilo, Kailua-Kona, Waikōloa, Waimea, and other island of Hawaiʻi residential communities via DKI Highway and other public roadways.

Commuting PTA personnel, deliveries, and visitors are directed to the PTA main gate near milepost 35 along DKI Highway. In 2019, DKI Highway had an AADT volume of 5,600 vehicles on the segment that includes access to the PTA main gate (**Table 3-34**) (HDOT-HD, 2021). AADT volume on DKI Highway is projected to increase to 19,400 vehicles by 2035 due to anticipated statewide growth in population and employment. Traffic counts conducted by HDOT indicate over 50 percent of traffic on DKI Highway is between Hilo (and/or destinations on DKI Highway) and Kona, approximately 25 percent of traffic is between Hilo and Waikoloa Village or the South Kohala Resorts, and approximately 20 percent of traffic is between Hilo and Waimea (HDOT-HD & USDOT-FHWA, 2017). In fiscal year 2019, PTA employed 129 personnel and approximately 45 contractors; therefore, traffic volumes associated with PTA commuting personnel are small (approximately 3 percent) compared with the total AADT for DKI Highway (USACE-POH & USAG-HI, 2020a). In addition to commuting personnel and contractors, PTA-related traffic includes commercial traffic for the delivery of water, fuel, and other supplies. All water for PTA is trucked in daily from the Waimea Treatment Plant, an approximate 40-mile commute to and from PTA (USACE-POH & USAG-HI, 2015).

Soldiers arriving at KOA are transported by bus to PTA via Queen Kaʻahumanu Highway, Waikōloa Road, Māmalahoa Highway, and DKI Highway. Soldiers arriving at ITO are transported to PTA via DKI Highway. Military materiel is transported from Kawaihae Harbor to PTA via military convoy. The primary route for military convoys traveling between Kawaihae Harbor and PTA is via ʻAkoni Pule Highway, Queen Kaʻahumanu Highway, Waikōloa Road, Māmalahoa Highway, and DKI Highway (USACE-POH & USAG-HI, 2019b). Regional roadways used for ground transportation are depicted in **Figure 3-25**. AADT and pavement condition are routinely monitored by HDOT. Data from 2019 for roadway segments on the island of Hawaiʻi used by the Army are provided in **Table 3-34**. **Table 3-34** also includes LOS for roadways used by the Army, as presented in the *Statewide Federal-Aid Highways 2035 Transportation Plan* (HDOT-HD, 2014a).

Convoys typically access PTA via the convoy gate, which is in TA 16 at the western intersection of Old Saddle Road and DKI Highway (near milepost 41), approximately 6 miles west of the PTA main gate (USACE-POH & USAG-HI, 2020a). The convoy entrance has a designated right turning lane onto PTA for eastbound vehicles and a designated merge lane for vehicles entering westbound onto DKI Highway. Once through the convoy gate, convoys travel approximately 5.5 miles on Old Saddle Road to reach the Cantonment. Vehicles transporting military munitions travel an additional 2 miles (approximately) along PTA roads and training trails on State-owned land to reach the ASP.

Figure 3-24: Pōhakuloa Training Area Roads and Training Trails

Figure 3-25: Regional Ground Transportation Routes

Table 3-34: AADT, LOS, and Pavement Condition for Roadways Used by the Army				
Roadway	**Segment**	**AADT [a]**	**LOS**	**Pavement Condition**
DKI Highway	MP 0 – MP 20	330	C or Higher	Good
DKI Highway	MP 20 – MP 43	5,600	C or Higher	Good
Māmalahoa Highway	MP 11 – MP 14	6,200	C or Higher	Fair to Poor
Waikōloa Road	MP 0 – MP 6	5,200	C or Higher	N/A
Waikōloa Road	MP 6 – MP 12	10,400	C or Higher	N/A
Queen Kaʻahumanu Highway	MP 67 – MP 75	12,700	E or Higher	Good to Fair
Queen Kaʻahumanu Highway	MP 75 – MP 93	15,000	D or Higher	Good to Fair
ʻAkoni Pule Highway	MP 0 – MP 1	7,400	C or Higher	Fair

Note: [a] AADT counts account for non-PTA-related and PTA-related traffic. PTA-related traffic includes convoys, permanent party personnel and contractor commutes, commercial vehicles (i.e., water, food, and fuel deliveries), visitors, and construction vehicles.

Key: MP = milepost; N/A = data not available.

Sources: HDOT-HD, 2014a; HDOT-HD, 2021

During the public scoping process (summarized in **Section 1.6**), members of the public raised concerns regarding the effects of military convoys on transportation and traffic, including degradation of roadway pavements and increases in traffic on routes to and from PTA. Convoy traffic associated with periodic training exercises at PTA is closely coordinated with local authorities to minimize congestion-related impacts on public roadways. Military convoys consist of no more than 30 vehicles and are typically accompanied by a military police escort. Per Army guidance, convoys 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 25 to 50 feet while in town traffic (USACE-POH & USAG-HI, 2019b). These convoy procedures aim to prevent situations where convoy vehicles dominate local traffic flow for long periods of time. Because convoys between Kawaihae Harbor and PTA consist of 30 or less vehicles, traffic volumes associated with convoys are small when compared to the total AADT for roadways used by the Army (**Table 3-34**), and these convoys generally do not increase the rate of pavement degradation on these roads when compared to typical traffic (HDOT-HD, 2021).

To avoid peak traffic hours and reduce the risk of accidents, HDOT regulations prohibit military convoys from traveling on State highways during peak weekday traffic hours, which are from 6:00 a.m. to 8:30 a.m., and 3:00 p.m. to 6:00 p.m. HDOT regulations also prohibit convoy travels on weekends and weekday holidays. Special permission can be acquired for weekend, holiday, or non-standard hour convoy activities (USACE-POH & USAG-HI, 2019b; USAG-HI & USARPAC, 2013). Convoys and transportation of military munitions are not allowed to occur through school zones between Monday and Friday during the hours that students are in transit; however, there are no school zones along the military convoy route between Kawaihae Harbor and PTA (USACE-POH & USAG-HI, 2019b). Because convoys travel at much slower than normal speeds, convoys have the potential to cause minor traffic interruptions and temporary increases in congestion on roadways along the convoy route, such as Māmalahoa Highway, Waikōloa Road, and Queen Kaʻahumanu Highway. Convoy leaders are instructed to be cognizant of civilian motorists and are advised to pull over to a safe location when several motorists are trailing behind the convoy to allow them to pass (West Hawaiʻi Today, 2020). Military munitions, when not transported via air (i.e., by helicopter), are transported on roads in accordance with HDOT regulations for transporting explosive material (USAG-HI & USARPAC, 2013).

To mitigate potential traffic congestion and safety hazards for civilians when military units travel to PTA, USAG-HI publishes media releases to local newspapers, radio stations, and online (via the PTA website) to provide advanced notice of upcoming convoys and training activities occurring at PTA. The PTA Public Affairs Office also provides routine community updates and FLASH alerts regarding training and convoys via email (upon the individual's request) (USAG-PTA, 2021b~~d~~). Since 2012, media releases to the public about convoy transport between PTA and Kawaihae Harbor have varied from 11 to 25 releases per year (USACE-POH & USAG-HI, 2020a).

DKI Highway

DKI Highway (State Route 200), originally named Saddle Road, was constructed as a one-lane roadway in 1942 to support military training activities. Over time, the road was widened and became a public route used to traverse the island. Substantial improvements to DKI Highway were completed in 2017 and included renovations, resurfacing, and realignment in some areas, and a redesign to the PTA main gate that included right and left turning lanes onto PTA to ease traffic congestion where military and civilian traffic enters PTA. The roadway had previously intersected PTA south of the Cantonment. Following realignment of DKI Highway, the portion of the roadway that intersected PTA south of the Cantonment, referred to as Old Saddle Road, was transferred to the County of Hawaiʻi, which granted PTA exclusive use. Today, DKI Highway is a two-lane State highway that extends 48 miles from the Hawaiʻi Belt Road (State Route 19) on the east side of the island to Māmalahoa Highway on the west side of the island. The highway is the only road that crosses the central part of the island, connecting Hilo to the east and Waimea to the north. The highway also connects PTA to the surrounding area and is used by the Army to travel between PTA and Kawaihae Harbor, ITO, and KOA.

DKI Highway consists of different sections that include Section I from milepost 42 to the highway's eastern terminus at Māmalahoa Highway, Section II from mileposts 28 to 42, Section III from mileposts 19 to 28, and Section IV from mileposts 0 (western terminus) to 19 (HDOT-HD, 2017b). Section I of the DKI Highway traverses the southern portion of the Keʻāmuku parcel and the northern portion of TA 16, which is partially on State-owned land. Section II of the DKI Highway travels in a northwest-southeast direction through TAs 2, 10, 11, 15, and 16 on State-owned land. Section II is used to access the PTA main gate. The posted speed limit on DKI Highway ranges from 60 mph for most of the highway, to 45 mph near PTA and the Mauna Kea Recreation Area (USACE-POH & USAG-HI, 2019b). The portions of DKI Highway used by the Army operate at LOS C or higher (HDOT-HD, 2014a).

DKI Highway separates portions of TAs 2, 10, 11, 15, and 16 north of the highway from the rest of the State-owned land south of the highway. To access State-owned land north of DKI Highway, vehicles and PTA personnel cross DKI Highway at unsignalized intersections along the highway; however, the State-owned land north of DKI Highway has limited infrastructure and is not routinely used for training. PTA personnel use DKI Highway and roads that intersect DKI Highway to access the Keʻāmuku parcel.

Māmalahoa Highway

Māmalahoa Highway (consisting of State Routes 11, 19, and 190), also referred to as Hawaiʻi Belt Road, is a two-lane undivided State highway that encircles the island of Hawaiʻi and connects DKI Highway to Waikōloa Road. The posted speed limit on the portion of Māmalahoa Highway traversed by the Army is 50 mph and, in 2019, HDOT assigned the roadway segment an overall pavement condition of fair to poor (HDOT-HD, 2021). The portions of Māmalahoa Highway used by the Army operate at LOS C or higher (HDOT-HD, 2014a).

Waikōloa Road

Waikōloa Road (County Route 191) is a mainly two-lane undivided highway with a four-lane divided section near Waikōloa Village. The approximately 12-mile roadway connects Māmalahoa Highway to Queen Kaʻahumanu Highway. The posted speed limit on Waikōloa Road ranges from 35 mph to 55 mph. Waikōloa Road operates at LOS C or higher (HDOT-HD, 2014a).

Queen Kaʻahumanu Highway

Queen Kaʻahumanu Highway (State Route 19) is a two-lane State highway that connects Waikōloa Road to Kawaihae Harbor and ITO. The approximately 26 miles of Queen Kaʻahumanu Highway that the Army uses to transport materials and personnel from Kawaihae Harbor and ITO operates at LOS E or better (HDOT-HD, 2014a). The posted speed limit on the highway is 55 mph (USAG-HI & USARPAC, 2013).

ʻAkoni Pule Highway

The Army uses a 1-mile segment of ʻAkoni Pule Highway (State Route 270) to access Kawaihae Harbor from Queen Kaʻahumanu Highway. The Kawaihae Harbor South Gate provides direct access to a roadway easement held by the Army, which extends from ʻAkoni Pule Highway to the Army's Kawaihae Harbor facility. The Army is the primary user of the Kawaihae South Gate, while the public and commercial harbor users enter through the PTA main gate, approximately 0.3 mile north of the Kawaihae South Gate along ʻAkoni Pule Highway. The posted speed limit on the portion of ʻAkoni Pule Highway used by the Army is 35 mph, and the roadway segment operates at LOS C or higher (HDOT-HD, 2014a).

Kawaihae Harbor

The port at Kawaihae Harbor, on the northwest side of the island of Hawaiʻi, is used by the Army and other DoD service branches to ship materials to and from Oʻahu. Kawaihae Harbor is approximately 132 nautical miles from Honolulu Harbor and offers facilities for handling international and interisland cargo (HDOT-H, 2008). The U.S. Government owns and operates a landing ramp for overseas transportation of troops, vehicles, and military munitions at the coral stockpile area, also referred to as the Coral Flats, which is active up to four times a month (HDOT-H, 2011). During transfer of military munitions, public access to the Coral Flats and unsupervised cross-traffic is restricted. Passage of military vehicles through the DoD-controlled area of the Coral Flats is staggered to minimize disruptions to traffic on public roadways (USACE-POH & USAG-HI, 2019b). In addition, when military munitions are off-loaded and stored at the Coral Flats, DoD activates an explosives safety quantity distance arc that restricts public and commercial use of the harbor (HDOT-H, 2011).

Regional Airports

Regional airports on the island of Hawaiʻi include KOA, ITO, and the Waimea-Kohala Airport. KOA is on the west side of the island of Hawaiʻi, approximately 40 miles west of the Cantonment, and ITO is on the east side of the island of Hawaiʻi, approximately 36 miles east of the Cantonment. KOA accommodates transpacific and interisland air travel, while ITO accommodates interisland air travel only. The DoD uses ITO and KOA to transport military personnel to PTA from Oʻahu (USACE-POH & USAG-HI, 2019b). The closest airport to PTA is the Waimea-Kohala Airport, which is owned and operated by the State and is approximately 18 miles northwest of the Cantonment. The airport is primarily used for freight transportation and limited commercial passenger services (USACE-POH & USAG-HI, 2019b). In 2020,

military aircraft operations, which includes all DoD aircraft and helicopter landings and takeoffs, included 6,278 operations at KOA and 3,061 operations at ITO, which is approximately 6 percent of all aircraft operations at KOA and approximately 11 percent of all aircraft operations at ITO (HDOT-AD, 2021).

Public Transportation

The County of Hawaiʻi provides mass public transit via the Hele-On bus and shuttle service. Bus and shuttle routes are primarily present within populated towns and tourist destinations including Hilo, Kona, Waimea, and Kohala resorts. A direct route between Hilo and Kona is offered via Māmalahoa Highway and circles the northern and western portions of the island. There are no public rail, bus, or shuttle routes with stops at PTA; therefore, public transportation is not discussed further (COH-MTA, 2021).

3.12.4.3 Existing Management Measures

As discussed in Existing Conditions, the Army closely coordinates convoy traffic with local authorities to maintain safety and reduce increased congestion on public roadways. In addition, Army guidance instructs convoys to be accompanied by military escort and to maintain a gap of at least 30 minutes between serials, 330 feet between vehicles on highways, and 25 to 50 feet between vehicles while in town traffic. Military convoys are prohibited from traveling on State highways during peak weekday traffic hours (6:00 a.m. to 8:30 a.m. and 3:00 p.m. to 6:00 p.m.), on weekends and weekday holidays, and through school zones between Monday and Friday during the hours that students are in transit. Convoy leaders are instructed to be cognizant of civilian motorists and to pull over to allow motorists to pass. All personnel are trained to be sensitive to the concerns of nearby communities and to obey all posted speed limits and local laws.

To mitigate potential traffic congestion and safety hazards for civilians when military units travel to PTA, USAG-HI publishes media releases to local newspapers, radio stations, and online (via the PTA website) to provide advanced notice of upcoming convoys and training activities occurring at PTA. These media releases include a monthly training advisory to the public informing the local community, stakeholders, and elected officials. For stand-alone, large-scale, Joint- or Army-led exercises, USAG-HI publishes a separate advisory to increase the public's general awareness of these training exercises. The PTA Public Affairs Office also provides routine community updates and FLASH alerts regarding training and convoys via email (upon the individual's request).

3.12.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.12.6** to assess potential significant 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 an alternative would result in potential significant impacts on transportation and traffic include the extent or degree to which an alternative would result in the following:

- Increase traffic volumes or delays to levels that impair a roadway's handling capacity or increase 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

3.12.6 Environmental Analysis

3.12.6.1 Alternative 1: Maximum Retention

PTA Transportation

Land Retained

Lease Impacts: Alternative 1 would not affect the number of personnel at PTA or ongoing activities on the State-owned land retained; therefore, there would be no change to PTA transportation systems or PTA-generated traffic. The Army would maintain full access to the majority of the roads and training trails within the State-owned land, which would enable continued access among the Cantonment and BAAF, impact area and adjacent training ranges, and Keʻāmuku parcel. The Army would continue to maintain and repair roads and training trails within the State-owned land retained. In addition, the State would maintain the right to use roads and trails within the State-owned land retained. Therefore, no new impacts on PTA ground transportation routes and traffic would occur under Alternative 1. Continued long-term, minor, adverse impacts on PTA transportation systems and traffic would remain due to ongoing activities within the State-owned land retained that cause roadway degradation and traffic (during busy training events) on the PTA roads and training trails.

Fee Simple Title Impacts: Impacts under a fee simple title method of land retention would be similar to a lease retention method for Alternative 1. Fee simple title would not change the type, frequency, or duration of ongoing activities when compared to lease retention; however, under fee simple title, the State would lose its right to use roads and trails in the State-owned land retained. Under fee simple, the Army would continue to follow the same DoD and federal transportation and traffic laws and regulations, as well as state transportation and traffic laws and regulations to the extent practicable.

Land Not Retained

The Army would no longer use, maintain, or repair approximately 3.5 miles of roads and training trails in the DHHL-administered land not retained. The Army rarely uses the roads and training trails in the land not retained, and it is assumed the State also would rarely use them. It also is assumed the State would maintain and repair the roads and training trails on the State-owned land not retained consistent with its use (i.e., rarely used roads and training trails would be maintained and repaired as needed). Therefore, use, traffic, condition, and maintenance and repair of the roads and training trails would largely continue unchanged, and no new impacts would occur. Continued long-term, negligible, adverse impacts on the roads and training trails within the State-owned land not retained would remain due to State use.

Regional Transportation

Under Alternative 1, ground transportation routes used by military personnel, vehicles, and equipment between Kawaihae Harbor, ITO, KOA, and PTA; the frequency, timing, and duration of military convoys; and PTA personnel daily commuter routes would remain the same as noted in **Section 3.12.4**. Traffic volumes associated with ongoing PTA-related traffic are small when compared to the total AADT for roadways used by the Army, and this traffic does not meaningfully increase the rate of pavement degradation on these roads when compared to typical traffic. Ongoing convoy activity has the potential to cause minor traffic interruptions and temporary increases in congestion on roadways along convoy routes. The Army would continue to implement measures to maintain safety and reduce congestion-

related impacts on public roadways from military convoys, including close coordination with local authorities, adherence to Army and HDOT regulations, and issuance of media releases to local newspapers, radio stations, and online (via the PTA website) to provide advanced notice of upcoming convoys and training activities occurring at PTA. In addition, Alternative 1 would not affect the type or frequency of DoD's activities at Kawaihae Harbor and regional airports or the demand for these facilities and would not disrupt or displace harbor and airport operations. Therefore, regional PTA-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 to DoD use of regional airports and harbors would occur under Alternative 1. Continued long-term, minor, adverse impacts on regional transportation systems and traffic would remain due to continuation of ongoing activities within the State-owned land retained.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.12.4.3**.

Level of Significance: Alternative 1 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.12.5**.

3.12.6.2 Alternative 2: Modified Retention

PTA Transportation

Land Retained

Lease Impacts: The approximately 19,700 acres that would be retained under Alternative 2 include the majority of roads and training trails on the State-owned land. The Army would continue to use, maintain, and repair all roads and training trails on the State-owned land retained as well as have access among the Cantonment and BAAF, impact area and adjacent training ranges, and the Keʻāmuku parcel via the roads and training trails in the State-owned land retained. In addition, the State would maintain the right to use roads and trails within the State-owned land retained.

As noted in **Section 2.2.2**, Alternative 2 would slightly reduce training conducted in the State-owned land; therefore, traffic within the State-owned land retained and the Cantonment would be reduced on some roads and training trails because they would no longer be used to access activities within the State-owned land not retained. The condition of these roads and trails would not deteriorate as quickly and would require less maintenance. Consequently, Alternative 2 would result in new long-term, negligible, beneficial impacts on PTA ground transportation routes and traffic. Continued long-term, minor, adverse impacts on PTA transportation systems and traffic would remain due to continuation of ongoing activities within the State-owned land retained that cause roadway degradation and traffic (during busy training events) on the PTA roads and training trails.

Fee Simple Title Impacts: Impacts under a fee simple title method of land retention would be similar to a lease retention method for Alternative 2. Fee simple title would not change the type or frequency of ongoing activities when compared to lease retention; however, under fee simple title, the State would lose its right to use roads and trails in the State-owned land retained. Under fee simple, the Army would continue to follow the same DoD and federal transportation and traffic laws and regulations, as well as state transportation and traffic laws and regulations to the extent practicable.

Land Not Retained

The Army would no longer use, maintain, or repair approximately 10 miles of roads and training trails in the State-owned land not retained. The Army rarely uses the roads and training trails in the land not retained, and it is assumed the State also would rarely use them. It also is assumed the State would maintain and repair the roads and training trails on the State-owned land not retained consistent with its use (i.e., rarely used roads and training trails would be maintained and repaired as needed). Therefore, use, traffic, condition, and maintenance and repair of the roads and training trails would largely continue unchanged, and no new impacts would occur. Continued, long-term, negligible, adverse impacts on the roads and training trails within the State-owned land not retained would continue due to State use.

Regional Transportation

New, long-term, negligible, beneficial impacts on regional transportation and traffic would be expected under Alternative 2. The Army would not retain State-owned land north of DKI Highway; therefore, vehicles and PTA personnel would no longer be required to cross DKI Highway to access these areas, which would reduce potential PTA-related traffic on DKI Highway proximal to those areas.

Under Alternative 2, ground transportation routes used by military personnel, vehicles, and equipment between Kawaihae Harbor, ITO, KOA, and PTA; the frequency, timing, and duration of military convoys; and PTA personnel daily commuter routes would remain the same as existing conditions and regional PTA-generated ground traffic would not change. Traffic volumes associated with ongoing PTA-related traffic are small when compared to the total AADT for roadways used by the Army, and this traffic does not meaningfully increase the rate of pavement degradation on these roads when compared to typical traffic. Ongoing convoy activity has the potential to cause minor traffic interruptions and temporary increases in congestion on roadways along convoy routes. To reduce potential traffic congestion and safety hazards, the Army would continue to implement measures to maintain safety and reduce congestion-related impacts on public roadways from military convoys including close coordination with local authorities, adherence to Army and HDOT regulations, and issue of media releases to local newspapers, radio stations, and online (via the PTA website) to provide advanced notice of upcoming convoys and training activities occurring at PTA. In addition, Alternative 2 would not affect the type or frequency of the Army's activities at Kawaihae Harbor and regional airports or the demand for these facilities and would not disrupt or displace harbor and airport operations. Therefore, regional PTA-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 to DoD use of regional airports and harbors would occur under Alternative 2. Continued long-term, minor, adverse impacts on regional transportation systems and traffic would remain due to continuation of ongoing activities within the State-owned land retained.

~~Potential~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.12.4.3**.

Level of Significance: Alternative 2 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.12.5**.

3.12.6.3 Alternative 3: Minimum Retention and Access

PTA Transportation

Land Retained

Lease Impacts: The approximately 10,100 acres of State-owned land that would be retained under Alternative 3 includes vital training and support facilities and approximately 115 miles of roads and training trails. Additionally, the Army would retain approximately 11 miles of select roads and training trails within the western portion of the State-owned land to maintain vital access to the Keʻāmuku parcel to the northwest and the impact area and training ranges to the southwest. The Army would continue to use, maintain, and repair all roads and training trails in the State-owned land retained, and would continue to have access among the Cantonment and BAAF, impact area and adjacent training ranges, and the Keʻāmuku parcel via the roads and training trails in the State-owned land retained. In addition, the State would maintain the right to use roads and trails within the State-owned land retained. The Army would cooperate with the State to provide physical security for the 11 miles of select roads and training trails retained within the western portion of the State-owned land.

As noted in **Section 2.2.3**, Alternative 3 would moderately reduce the level of training conducted in the State-owned land; therefore, traffic within the State-owned land retained and the Cantonment would be reduced on some roads and training trails because they would no longer be used to access activities within the State-owned land not retained. The condition of these roads and trails would not deteriorate as quickly and would require less maintenance. Consequently, Alternative 3 would result in new long-term, negligible, beneficial impacts on PTA ground transportation systems and traffic. Continued long-term, minor, adverse impacts on PTA transportation systems and traffic would continue due to ongoing activities within the State-owned land retained that cause roadway degradation and traffic (during busy training events) on the PTA roads and training trails.

Fee Simple Title Impacts: Impacts under a fee simple title method of land retention would be similar to a lease retention method for Alternative 3. Fee simple title would not change the type or frequency of ongoing activities when compared to lease retention; however, under fee simple title, the State would lose its right to use roads and trails in the State-owned land retained. Under fee simple, the Army would continue to follow the same DoD and federal transportation and traffic laws and regulations, as well as state transportation and traffic laws and regulations to the extent practicable.

Land Not Retained

The Army would no longer use, maintain, or repair approximately 45 miles of roads and training trails within State-owned land not retained. It is assumed the State would use these roads and training trails less than the Army and maintain and repair the roads and training trails consistent with the State's need (i.e., actively used roads and training trails would be regularly maintained and repaired and unused/rarely used roads and training trails would be maintained and repaired less or not at all). Therefore, roadway condition would stay the same but use, traffic, and maintenance and repair of the roads and training trails in the State-owned land not retained would be reduced, which would result in new long-term, negligible, beneficial impacts on the PTA transportation system and traffic.

Regional Transportation

New long-term, negligible, beneficial impacts on regional transportation and traffic would be expected under Alternative 3 because minimum retention of State-owned land would result in decreased use of regional transportation systems by the DoD and improve traffic conditions on regional roadways due to no training and other activities on State-owned land not retained. Similar to Alternative 2, the Army would not retain State-owned land north of DKI Highway; therefore, vehicles and PTA personnel would no longer be required to cross DKI Highway to access these areas, which would reduce potential PTA-related traffic on DKI Highway proximal to those areas.

Under Alternative 3, ground transportation routes used by military personnel, vehicles, and equipment between Kawaihae Harbor, ITO, KOA, and PTA, and PTA personnel daily commuter routes would remain the same as existing conditions. Because training capabilities at PTA would be moderately reduced under Alternative 3, a reduction in training operations at PTA would occur, which would decrease the frequency of military convoys; however, the timing and duration of military convoys would not change from existing conditions. In addition, the frequency of military personnel being bussed between regional airports and PTA would decrease due to reduced training; however, the route, duration, and timing for regional ground transportation of military personnel would not change. Reductions in PTA-related regional ground transportation operations would result in beneficial impacts through reduced congestion and traffic, and improved condition (i.e., reduction of future rate of pavement degradation) of regional roadways, which would have new long-term, negligible, beneficial impacts for LOS on affected roadways. However, existing traffic volumes associated with military convoys are small in relation to the total AADT for regional roadways used by the Army and PTA-related traffic generally does increase the rate of pavement degradation on these roads when compared to typical traffic. The Army would continue to implement measures to maintain safety and reduce congestion-related impacts on public roadways from military convoys including close coordination with local authorities, adherence to Army and HDOT regulations, and issue of media releases to local newspapers, radio stations, and online (via the PTA website) to provide advanced notice of upcoming convoys and training activities occurring at PTA. Alternative 3 would also reduce the frequency of DoD's activities at Kawaihae Harbor and regional airports, which would decrease the demand for these facilities.

Despite the reduced training, continued long-term, minor, adverse impacts on regional transportation systems and traffic would remain from continued use to support ongoing activities within the State-owned land retained.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.12.4.3**.

Level of Significance: Alternative 3 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.12.5**.

3.12.6.4 No Action Alternative

PTA Transportation

Following current lease expiration, the Army would not use, maintain, or repair any roads or training trails within the State-owned land. Additionally, the Army would no longer have access among the Cantonment and BAAF, impact area and adjacent training ranges, and Keʻāmuku parcel. Due to less training, PTA-

generated traffic would be substantially reduced within the U.S. Government-owned land, particularly within the impact area and adjacent training ranges that would no longer be accessible via land and might have to be abandoned. Due to training reductions, the No Action Alternative also could result in reductions to permanent party personnel, commercial vehicles and visitors, and construction vehicles, which would further reduce use of the PTA ground transportation system. It is assumed the State would use these roads and training trails less than the Army and maintain and repair the roads and training trails consistent with the State's need (i.e., actively used roads and training trails would be regularly maintained and repaired and unused/rarely used roads and training trails would be maintained and repaired less or not at all). Therefore, roadway condition would not change, but use and traffic would decrease, resulting in new long-term, minor, beneficial impacts on the PTA transportation system and traffic.

Following expiration of the current lease, lease compliance actions on any of the State-owned land not retained would be subject to negotiation with the State. Lease compliance actions could include abandoning in place or removal of existing roads and training trails. If roads and trails were abandoned in place, maintenance and repair requirements would be the responsibility of the State. Potential decreased maintenance and repair of PTA ground transportation systems and continued deterioration of roads and trails would render them unusable over time, which would restrict access to the area, resulting in long-term, negligible to minor, adverse impacts. Complete removal of existing roads and trails as part of lease compliance would restrict future access to the area.

Regional Transportation

New long-term, negligible, adverse and beneficial impacts on regional transportation and traffic would be expected under the No Action Alternative. Loss of the State-owned land would result in decreased use of regional transportation systems by the DoD, improved traffic conditions on regional roadways, and elimination of vehicles and PTA personnel crossing DKI Highway to State-owned land north of DKI Highway due to less training. However, loss of access to the Keʻāmuku parcel via roads and training trails within the State-owned land would require that all DoD personnel use a 6-mile segment of DKI Highway to access the Keʻāmuku parcel from the PTA main gate, which would slightly increase military traffic on DKI Highway. Despite the loss of the State-owned land, it is assumed that the County of Hawaiʻi would continue to grant PTA exclusive use of the approximately 11-mile segment of Old Saddle Road and it would continue to be used by military convoys to access the Cantonment.

Under the No Action Alternative, ground transportation routes used by military personnel, vehicles, and equipment between Kawaihae Harbor, ITO, KOA, and PTA, and PTA personnel daily commuter routes would remain the same as existing conditions. Because training capabilities at PTA would be greatly reduced under the No Action Alternative, a reduction in training operations at PTA would occur, which would decrease the frequency of military convoys and bussing of military personnel on regional roadways between Kawaihae Harbor, regional airports, and PTA; however, the route, duration, and timing of these military convoys and buses would not change from existing conditions. Reductions in PTA-related regional ground transportation operations would result in beneficial impacts and would reduce congestion on regional roadways; however, existing traffic volumes associated with military convoys are small in comparison to the total AADT for regional roadways used by the Army. 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 issue of media releases to local newspapers, radio stations, and online (via the PTA website) to provide advanced notice of upcoming convoys and training activities occurring at PTA.

The No Action Alternative would also decrease the frequency of the Army's activities at Kawaihae Harbor and regional airports, which would decrease DoD use of these facilities.

New short-term, negligible, adverse impacts could result from use of vehicles on regional roadways and from contractor/construction crew commutes required to conduct the lease compliance actions and cleanup and restoration activities within any State-owned land not retained after expiration of the current lease. The additional traffic traveling to and from PTA could cause congestion on roadways in the area. However, under the No Action Alternative, PTA-related traffic would decrease or cease and contractor/construction traffic would compose a small percentage of the total traffic when compared to normal traffic conditions.

~~**Potential**~~ **Mitigation Measures:** The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended. No mitigation measures are recommended for the lease compliance actions and cleanup and restoration activities beyond the existing management measures discussed in **Section 3.12.4.3**.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.12.5**.

3.13 Airspace

3.13.1 Definition

Airspace management is the integration, coordination, and regulation of defined airspaces to accommodate the safe flow of air traffic, which includes times of usage and horizontal and vertical boundaries of airspace zones and classes. The FAA is responsible for the control and use of the National Airspace System in the United States. The National Airspace System is a network of controlled and uncontrolled airspace, both domestic and oceanic. FAA jurisdiction applies to all airspace users including the U.S. military.

Generally, aircraft operate under two categories of operational flight rules: VFR and Instrument Flight Rules (IFR), which are linked to visual meteorological conditions (VMC) and instrument meteorological conditions (IMC). VMC are used when weather conditions are fair or good, and IMC is used when visual ability may be impaired. During VMC, aircraft may operate under VFR; the pilot is responsible for seeing other aircraft and maintaining aircraft safety. During IMC, aircraft operate under IFR and Air Traffic Control (ATC) is primarily responsible for aircraft safety within controlled airspace (USDOT-FAA, 2024a). In addition, for VFR and IFR, there are specific instances where Special Visual Flight Rules (SVFR) are warranted. FAA Order JO 7110.65AA, ATC (effective April 20, 2023) authorizes SVFR operations in weather conditions when less than basic VFR minimums are authorized (USDOT-FAA, 2023b).

The FAA has four airspace categories: controlled, uncontrolled, SUA and "Other Airspace Areas."

"Controlled Airspace" is a generic term that represents areas where ATC service is provided to flights using instrument and visual navigation systems; it is the airspace within which all aircraft operators are subject to certain pilot qualifications, operating rules, and equipment requirements as outlined in the FAA's "General Operating and Flight Rules" (14 CFR Part 91). There are five different classifications of controlled airspace: Classes A, B, C, D, and E (**Figure 3-26**). When overlapping airspace designations apply for the

same airspace, the operating rules associated with the more restrictive airspace apply. The following airspace classes are discussed in order from most restrictive to least restrictive (USDOT-FAA, 2024a; USDOT-FAA, 2023c):

- Class A airspace includes airspace from 18,000 feet mean sea level (MSL) up to and including 60,000 feet MSL.
- Class B airspace typically extends from the surface up to 10,000 feet MSL and is often associated with major airport complexes.
- Class C airspace generally extends from the surface up to 4,000 feet MSL. It is designed to provide additional ATC into and out of primary and military airports where aircraft operations are periodically at high-density levels.
- Class D airspace is generally from the surface to 2,500 feet MSL. All traffic must maintain radio communication or have prior arrangements for operating within Class D airspace.
- Class E airspace, in most areas of the United States, is that which is not designated as Class A, B, C, or D. Class E airspace generally extends from 1,200 feet AGL up to but not including 18,000 feet MSL.

"Uncontrolled Airspace (Class G)" is airspace that has not been designated as Controlled Airspace (Class A, B, C, D, or E). Class G airspace is not subject to FAA or ATC control, or the restrictions that apply to Controlled Airspace. However, most regulations that affect pilots and aircraft still apply to Class G airspace, including VFR and IFR. The floor altitude of Class G airspace is dependent on the restrictions of airports, en routes and other airways in the area (USDOT-FAA, 2024a; USDOT-FAA, 2023c).

Figure 3-26: Airspace Classification

"SUA" consists of 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 the FAA to maintain safety by separating military and civilian flights. At PTA, SUA is comprised of a restricted area and controlled firing areas (CFA). FAA Order JO 7400.10F, *Special Use Airspace* (effective February 16, 2024), provides a compiled list and definition of each designated SUA within the U.S. (USDOT-FAA, 2024a; USDOT-FAA, 2024b).

- Restricted Areas are reserved for military operations and cannot be entered by private or commercial aircraft without permission from the controlling agency when that airspace area is active. Restricted areas denote the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles. Entry into restricted areas without authorization from the using or controlling agency may be extremely hazardous to the aircraft and its occupants. Restricted areas were established by 14 CFR Part 73 and are published in the FR (USDOT-FAA, 2024b).
- CFAs are designated to contain hazardous activities that need to be conducted in a controlled space for the safety of nonparticipating aircraft. Their distinguishing feature is that the CFA is designated when a restricted area is not warranted. The area can be turned off immediately and thus can only accommodate activities that can be immediately suspended if nonparticipating aircraft approach without impacting aviation activities. Because these areas are not charted, there is no requirement for the nonparticipating aircraft to avoid the area; the termination of activities is contingent upon the CFA user (USDOT-FAA, 2023a).

"Other Airspace Areas" refers to uses such as Military Training Routes, Temporary Flight Restrictions and published VFR routes (USDOT-FAA, 2024a).

Only controlled, uncontrolled and SUA exist within the PTA ROI.

3.13.2 Regulatory Framework

The management of airspace is governed by federal law and military regulations and procedures. Per 49 U.S.C. Section 40103, Sovereignty and Use of Airspace, the FAA has overall responsibility for managing airspace and assigning by regulation or order the use of the airspace necessary to ensure the safety of flight and that all users can operate in a safe, secure, and efficient manner. The FAA achieves this through administration of a system of flight rules and regulations, airspace management actions, and ATC procedures; as well as through close coordination with state aviation and airport planners, military airspace managers, and other entities to determine how airspace can be used most effectively to serve all interests. The FAA Administrator also establishes security provisions that encourage and allow maximum use of the navigable airspace by civilian aircraft consistent with national security in consultation with the Secretary of Defense. The FAA implements its authority in 49 U.S.C. Section 40103(b) via pronouncement of regulations in CFR Title 14 and associated procedures. Adherence to federal aviation regulations ensures that military and civilian aircraft operate safely in shared airspace. Title 14 CFR Part 91, FAA General Operating and Flight Rules, and the FAA Handbook H-8083-86, *Airplane Flying Handbook*, specify the flight standards for courses to be flown, obstacle clearance criteria, minimum safe altitudes and aircraft separation, navigation performance, and communications requirements for pilots operating in the national airspace system. All military aircraft fly in accordance with 14 CFR Part 91 when flying outside SUA. Respectively, 14 CFR Sections 77.21 and 77.23 define the standards for preserving airspaces at DoD airports and heliports. FAA Order JO 7400.2P, *Procedures for Handling Airspace Matters* (effective March 21, 2024), prescribes the airspace management actions and ATC procedures that allow military and civilian aircraft to operate in shared airspace safely. *FAA Aeronautical Information Manual: Official Guide to Basic Flight Information and ATC Procedures* (effective March 21, 2024) defines and provides the operational requirements for each of the various types or classes of airspace, including SUAs such as restricted areas (USDOT-FAA, 2024a).

3.13.3 Region of Influence

The ROI for airspace management includes the airspaces that overlie and are immediately proximal to PTA, including BAAF.

3.13.4 Existing Conditions

3.13.4.1 Airspace

PTA airspace includes Class D and Class G airspace, SUA and flight corridors.

Class D Airspace. The Class D airspace at BAAF is active Monday through Friday between 1715 and 0100Z (7:15 a.m. to 3:00 p.m. Hawai'i Standard Time) except for holidays; other times it is Class G airspace. When active, the Class D airspace extends from the ground surface (0 feet AGL) to 8,700 feet MSL within a 4.3-mile radius of the airfield and roughly overlaps the middle portion of the State-owned land (USDOT-FAA, 2023d; USDOT-FAA, 2023e; USACE-POH, 2012).

Class G Airspace. When neither R-3103 nor Class D airspace is active, the airspace at PTA operates under Class G airspace (USDOT-FAA, 2023e).

Special Use Airspace. Restricted area R-3103 (defined in FAA Order 7400.10E and documented in 70 FR 58607) encompasses 128 square nautical miles overlaying PTA and is managed locally by PTA Range Control and the FAA Honolulu Control Facility (HCF). R-3103 is an intermittent (or activated only when needed) SUA that extends from the ground surface (0 feet AGL) to 30,000 feet MSL. To activate the restricted area for military training, the Army contacts the HCF at least 12 hours prior to the start of training and provides notification specifying when the training and associated airspace restriction would begin and end. To provide awareness of the airspace activation and restriction and facilitate early flight planning in the region, this notification is further publicized in a Notice to Airmen (NOTAM) that informs the flying community. NOTAMs are available online at: https://notams.aim.faa.gov/notamSearch/nsapp.html#/. Pilots may also contact the HCF or the nearest airport ATC (which would direct flights and provide instructions for safe separation), or Flight Service Station (an air traffic facility that provides information and services to aircraft pilots before, during, and after flights) to learn of the airspace operating conditions for the area in real time. Civilian aircraft are prohibited from entering R-3103 airspace when active to maintain a safe separation from military aircraft flight and air-to-ground or ground-to-ground military munitions firing operations that require exclusive use of that airspace area (USAG-HI & USARPAC, 2013; USDOT-FAA, 2023e). When active, the restricted area encompasses approximately half of the BAAF Class D airspace. These SUA features are shown in **Figure 3-27**.

The USAG-PTA *External Standard Operating Procedures* specify that aircraft entry into and exit from R-3103 shall occur at altitudes higher than 2,000 feet AGL. Unless approved prior to planned operations, fixed-wing operations are generally conducted at altitudes no greater than 29,500 feet MSL and no lower than 750 feet AGL, while rotary- and tilt-wing operations occur between ground level and 500 feet AGL (USAG-PTA, 2018a).

Figure 3-27: Airspace Features at Pōhakuloa Training Area and the Surrounding Area

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Fixed-, rotary-, and tilt-wing aircraft activities conducted within R-3103 include live-fire aerial gunnery, air assault missions, medical evacuation training and real medical evacuations, sling load supply and delivery missions, firefighting water bucket support and training, aerial lasing, aerial mapping, CAS, high-altitude bombing and strafing, and unmanned aerial system certification. Between 2022 and 2023, R-3103 airspace was activated 147 ~~291~~ days and supported 124,387~~177,260~~ airspace sorties (USAG-PTA, 2024g).~~; in 2020, R-3103 airspace was activated 201 days and supported 147,295 airspace sorties (USAG-PTA, 2020f).~~

Flight Corridors. PTA flight corridors are used to provide military aircraft using VFR or SVFR with safe and efficient routes between two points in R-3103 airspace during live-fire training. These routes are monitored by the BAAF ATC and are coordinated with range control to activate R-3103. The following seven flight corridors support flight training operations over the State-owned land (**Figure 3-27**). R-3103 is activated when training in one or more of these corridors is required:

1. Route Blue runs roughly along the northern portion of the State-owned land.
2. Route Purple runs roughly along the northern portion of the State-owned land and the DKI Highway.
3. Route Red runs roughly along the southern portion of the State-owned land.
4. Route Alpha runs approximately north-south along the impact area, as well as north-south between TAs 18 and 19, east-west between TAs 17 and 19, and north-south between TAs 17 and 20 within the State-owned land.
5. Route Bravo runs approximately north-south between TAs 8 and 9 within the State-owned land.
6. Route Charlie runs approximately north-south between TAs 5 and 7 withing the State-owned land.
7. Route Delta runs approximately north-south along the impact area then turns west along the southern border of the State-owned land (USAG-PTA, 2018a).

3.13.4.2 Airfields, Landing and Drop Zones, and Ranges

The Army's primary user of PTA is the 25th ID; however, there is considerable use of the installation by other Army units, Service Components (primarily USMC), DoD agencies, international partners, and local agencies. Aviation training at PTA includes flight proficiency training, air support exercises including CAS, strategic air support, Strike Warfare, live-fire exercise, Special Warfare Operations, Aircraft Operations support, Air-to-Surface Missile exercises, and joint live-fire training. Aviation training that requires activation and operation of SUA (restricted area R-3103) consists primarily of aerial gunnery and assault support for ground troops. These training activities include UAVs and fixed-, rotary-, and tilt-wing aircraft (DA, 2018c). Usage of PTA airspace requires either Class D airspace or activation of the R-3103 restricted airspace. Roughly 80 percent of training that occurs on State-owned land involves activation of R-3103 (USAG-PTA, 2021c~~e~~).

Bradshaw Army Airfield

BAAF is located on U.S. Government-owned property. It has a 3,705-foot by 90-foot runway that primarily supports rotary- and tilt-wing aircraft operations. The BAAF can also support fixed-wing aircraft (i.e., C-130, C-17) operations, but aircraft are limited to 60 percent load to compensate for altitude and wind safety considerations (USAG-PTA, 2021c~~e~~). ATC traffic statistics for aircraft that passed through BAAF

airspace, either the Class D or Class E transition zone, between 2021 and 2023 are shown in **Table 3-35**. Airspace and BAAF usage are dependent on many different factors, including civilian air traffic and scheduled military activities, that may vary from year to year.

Table 3-35: Bradshaw Army Airfield Tower Traffic Statistics

Action	2021~~19~~	2022~~20~~	2023
Civilian aircraft that passed through PTA airspace	10,158~~13,900~~	13,532~~6,800~~	11,128
Military aircraft landings	23,106~~15,200~~	16,373~~18,500~~	14,054
Military aircraft that passed through PTA airspace *	29,346~~13,900~~	21,774~~23,000~~	1,5774

Note: * This number is not included in the associated annual SUA sortie calculation.

Source: USAG-PTA, 2021d~~f~~

In accordance with the USAG-PTA *External Standard Operating Procedures*, all visiting aircraft pilots and crew, including those conducting flights over the ocean, receive a briefing from the BAAF Air Traffic and Airspace Chief designed to minimize noise impacts and disruption to local communities. The briefing specifies the flight route to and from PTA devised specifically to avoid populated areas as much as possible. Additionally, aircraft are directed to fly at 2,000 feet AGL during transition to PTA airspace, unless low cloud cover necessitates flying lower for safety reasons (USAG-PTA, 2020e).

Cooper Air Strip

Cooper Air Strip is an asphalt landing strip approximately 1,000 feet long × 60 feet wide with two plywood storage buildings located on the State-owned land. The air strip was completed in 2010 and is used solely for UAV operations and is not shown on figures for security reasons (USAG-PTA, 2020b; USARHAW, NDa). Cooper Air Strip is under restricted area R-3103 airspace, so the UAVs can be operated without conflicts with general aviation traffic and is used for approximately 8,500 operations annually (USAG-PTA, 2024). An FAA certificate of authorization to operate UAVs allows take off from restricted airspace and operation outside of restricted airspace subject to conditions; however, UAVs do not fly outside of restricted airspace. UAV operations at PTA are conducted in accordance with the requirements set forth in AR 95-2, *Air Traffic Control, Airfield/Heliport, and Airspace Operations.*

Landing and Drop Zones

PTA has 27 landing zones and four drop zones that are used for rotary- and tilt-wing aircraft training activities that include personnel and equipment parachute drops. Six landing zones and one drop zone are located on State-owned land.

Firing Points

There are 118 FPs located on PTA to support live- and non-live-fire (inert) training with various Army weapons systems (e.g., long-range firing, artillery, and mortars). Approximately 107 (91 percent) of the FPs on PTA are located on State-owned land (USARHAW, 2021) (**Figure 1-3**). During live-fire or inert military munitions operations, R-3103 is activated for safety to restrict flights and other concurrent training activities within the airspace (DA, 2018c).

Battle Area Complex

The BAX is a digital (training is captured via computer), live-fire range used for aviation training as well as mounted and dismounted training. This facility is the only one within Hawai'i, and BAX operation requires R-3103 activation (USARHAW, 2019b). The BAX supports training of ground and air personnel in multiple capacities including live-fire convoys, gunnery lanes and aerial gunnery. The BAX integrates with TA-11 to provide complementary training (USARHAW, NDa). In fiscal year 2023~~19~~, the BAX was utilized ~~for 281 days~~ to train approximately 4,650~~8,000~~ personnel (USARHAW, 2024).

Forward Arming and Refueling Point

Two of the three PTA FARPs are located on State-owned land. FARPs are concrete pads designated to support loading and unloading of military munitions and fuel to rotary- and tilt-wing aircraft.

Helicopter Dip Tank

PTA has 13 ~~Four of the ten mobile~~ helicopter dip tanks, 7 are on State-owned land, that provide water to helicopters during firefighting operations~~ are distributed throughout the State-owned land~~. The dip tanks are the primary water source for air operation firefighting (USAG-PTA, 2021e~~g~~).

Ongoing Training Impact Measures

The Army operates under measures to reduce the potential for impacts on resources from ongoing activities in the airspace. These measures include FAA's general flight safety protocols, Army flight safety protocols as outlined in AR 95-1, *Aviation Flight Regulations*, and other Army programs such as Bird/Wildlife Air Strike Hazards.

3.13.4.3 Existing Management Measures

The Army implements fly-neighborly programs on PTA that adjust aircraft training times and routes to lower the impact on the community to the greatest extent practicable given mission requirements. Additionally, the Army adjusts the timing, where feasible, of particularly disruptive activities, including aircraft operations, to avoid conflicts with local events such as church times or holidays (USAPHC, 2010). When operating in noise-sensitive areas, unless required by the mission, all Army aircraft maintain a minimum of 2,000 feet above the surface of the following: national parks, monuments, recreation areas, and scenic river ways administered by the National Park Service; National Wildlife Refuges, Big Game Refuges, or Wildlife Ranges operated by USFWS; and wilderness and primitive areas administered by the USFS (USDOT-FAA, 2004; USDOT-FAA, 2024a). The Army follows the airspace safety protocols in the USAG-PTA *External Standard Operating Procedures*, including range-specific authorized military munitions, familiarization with published radio frequencies, adherence to R-3103 ingress and egress altitude requirements, coordination of communications between indirect-fire and aviation units, adherence to unmanned aerial system protocols, and NOTAM submittal no later than 3 working days prior to training for all aircraft supporting Airmobile and Airborne Operations (USAG-PTA, 2018a). Refer to **Appendix E** for additional management measures, BMPs, and SOPs.

3.13.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.13.6** to assess potential significant impacts on airspace. The criteria considered to assess whether an alternative would result in potentially significant impacts on airspace include the extent or degree to which an alternative would result in the following:

- Reduction in the amount of navigable airspace
- Assignment of a new SUA or require the modification of a SUA
- Substantial change to an existing or planned aviation training route
- Restriction of access to, or impact the use of, airports or airfields available for public use, or impact commercial or private airfield or airport arrival and departure traffic flows
- Creation of an obstruction to air navigation
- Increase of risks associated with flying activities or personnel safety (military, contractors or local community)

3.13.6 Environmental Analysis

As defined in **Section 3.13.1**, PTA airspace size and configuration would remain the same under all alternatives and the No Action Alternative.

3.13.6.1 Alternative 1: Maximum Retention

Land Retained

For either a lease or fee simple title retention method, the Army would continue to operate in the airspace in accordance with FAA regulations and Army requirements and guidelines as noted in **Section 3.13.4.2**.

Lease Impacts: Under Alternative 1, the Army would continue current types and levels of aircraft and live-fire operations. There would be no changes to and therefore no impacts on airspace configuration, the types of operations conducted in the airspace, or usage of R-3103 or the Class D airspace at BAAF. Continued long-term, minor, adverse impacts on civilian air traffic from restricted access to R-3103 would remain due to continuation of ongoing air- and ground-based training activities within the State-owned land retained and in the overlying airspace at PTA.

There would be no reduction in the amount of navigable airspace; no assignment of a new or modified SUA; no change to the existing aviation training route; no restrictions to access or use of public, private, or commercial airports or airfields; no navigation obstructions; and no increased flying risks or personnel safety.

Fee Simple Title Impacts: Impacts under a fee simple title method of land retention would be the same as described for a lease retention method for Alternative 1 because no changes in airspace use, management, or configuration would result from the fee simple title retention of the State-owned land retained.

Land Not Retained

Under Alternative 1, the Army would not retain 250 acres of DHHL-administered land. Loss of access to the State-owned land not retained would not impact the overlaying airspace resources, including the flight corridors, R-3103, and Class D airspace. R-3103 activation would not change because there are no training features and infrastructure on the State-owned land not retained that require R-3103 activation. There would be no new impacts on the use, configuration, or management of airspace resources and there would be continued long-term, minor, adverse impacts on civilian air traffic from continuation of ongoing activities.

Lease compliance actions and cleanup and restoration activities for State-owned land not retained after the end of the current lease would have no impact on airspace.

There would be no reduction in the amount of navigable airspace; no assignment of a new or modified SUA; no change to the existing aviation training route; no restrictions to access or use of public, private, or commercial airports or airfields; no navigation obstructions; and no increased flying risks or personnel safety.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.13.4.3**.

Level of Significance: Alternative 1 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.13.5**.

3.13.6.2 Alternative 2: Modified Retention

Impacts on airspace under Alternative 2 would be the same as those identified under Alternative 1. Alternative 2 would not impact the activation or use of R-3103 or Class D airspace. R-3103 would continue to be activated via NOTAM, specifying dates and hours of activation, in support of air and ground training operations.

For either a lease or fee simple title retention method, the Army would continue to operate in the airspace in accordance with FAA regulations and Army requirements and guidelines as noted in **Section 3.13.2**.

Land Retained

Lease Impacts: The Army would retain and continue training on approximately 19,700 acres of the State-owned land. The State-owned land retained includes Cooper Air Strip, the BAX, 104 FPs, 6 landing zones, 1 drop zone, and 2 FARPs. The Army would continue to conduct the types of air- and ground-based training (e.g., live-fire training, fixed-wing, rotary-wing, tilt-wing, and UAV flight activities) that require the use of the restricted airspace at current operating levels. The Army would also continue to permit and coordinate ongoing training by other PTA users. Continuation of these training activities would not result in new impacts on airspace resources. Continued long-term, minor, adverse impacts on civilian air traffic

associated with R-3103 activation would remain due to continuation of ongoing training within the State-owned land retained.

There would be no reduction in the amount of navigable airspace; no assignment of a new or modified SUA; no change to the existing aviation training route; no restrictions to access or use of public, private, or commercial airports or airfields; no navigation obstructions; and no increased flying risks or personnel safety.

Fee Simple Title Impacts: Impacts under a fee simple title method of land retention would be the same as described for a lease retention method for Alternative 2 because there would be no new impacts on airspace from fee simple title retention of the State-owned land retained.

Land Not Retained

The Army would not retain approximately 3,300 acres. Loss of access to the land not retained would not impact the overlaying airspace resources, including the flight corridors, R-3103, and Class D airspace. R-3103 activation would not change because there are no training features and infrastructure on the State-owned land not retained that require R-3103 activation. The FPs in TA 16 that would be lost are not used for live-fire training because military munitions are not permitted to be fired over DKI Highway. There would be no new impacts on the use, configuration, or management of airspace resources and there would be continued long-term, minor, adverse impacts on civilian air traffic from continuation of ongoing activities.

Lease compliance actions and cleanup and restoration activities for State-owned land not retained after the end of the current lease would have no impact on airspace.

There would be no reduction in the amount of navigable airspace; no assignment of a new or modified SUA; no change to the existing aviation training route; no restrictions to access or use of public, private, or commercial airports or airfields; no navigation obstructions; and no increased flying risks or personnel safety.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.13.4.3**.

Level of Significance: Alternative 2 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.13.5**.

3.13.6.3 Alternative 3: Minimum Retention and Access

Under Alternative 3, airspace size and configuration would not change; R-3103 would continue to be activated via NOTAM, specifying dates and hours of activation, in support of air and ground training operations. R-3103 activation would decrease proportionately with the loss of ground training features associated with State-owned land not retained.

For either a lease or fee simple title retention method, the Army would continue to operate in the airspace in accordance with FAA regulations and Army requirements and guidelines as noted in **Section 3.13.2**.

Land Retained

Lease Impacts: The Army would retain approximately 10,100 acres. The land retained includes Cooper Air Strip, the BAX, approximately 78 FPs, 4 landing zones, 1 drop zone, and 2 FARPs. Army airspace use associated with the land retained would continue, and there would be no new impacts. Continued long-term, minor, adverse impacts on civilian air traffic associated with R-3103 activation would remain based on continuation of ongoing training within the State-owned land retained.

There would be no reduction in the amount of navigable airspace; no assignment of a new or modified SUA; no change to the existing aviation training route; no restrictions to access or use of public, private, or commercial airports or airfields; no navigation obstructions; and no increased flying risks or personnel safety.

Fee Simple Title Impacts: Impacts under a fee simple title method of land retention would be the same as described for a lease retention method for Alternative 3 because there would be no new impacts on airspace from fee simple title retention of the State-owned land retained.

Land Not Retained

The Army would not retain approximately 12,900 acres, including approximately 29 FPs and 2 landing zones. Loss of State-owned land not retained would not alter the configuration or management of the overlying airspace resources, which include the flight corridors, R-3103, and the Class D airspace at BAAF. The permanent loss of 2 landing zones, and approximately 29 FPs within the State-owned land not retained could reduce the number of times R-3103 would be activated by approximately 20 percent, which would result in new long-term, negligible, beneficial impacts on airspace because there would be a reduced requirement for VFR aircraft to detour or for ATC to reroute civilian aircraft around an active restricted area. Continued long-term, minor, adverse impacts on civilian air traffic would remain from continuation of ongoing activities.

Lease compliance actions and cleanup and restoration activities for State-owned land not retained after the end of the current lease would have no impact on airspace.

There would be no reduction in the amount of navigable airspace; no assignment of a new or modified SUA; no change to the existing aviation training route; no restrictions to access or use of public, private, or commercial airports or airfields; no navigation obstructions; and no increased flying risks or personnel safety.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.13.4.3**.

Level of Significance: Alternative 3 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.13.5**.

3.13.6.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at PTA after the lease expires. The No Action Alternative would eliminate the ability of the Army and other users to conduct aviation training associated with the two FARPs, the BAX, six landing zones, one drop zone, and Cooper

Air Strip in the State-owned land. The loss of these training features, as well as the loss of the 107 FPs on the State-owned land, and loss of use of the impact area and adjacent training ranges (U.S. Government-owned land) due to lack of land access would decrease the Army's use and activation of R-3103 by approximately 80 percent. These changes would result in new long-term, minor, beneficial impacts on airspace because there would be a reduced requirement for VFR aircraft to detour or for ATC to reroute civilian flights around R-3103.

Lease compliance actions and cleanup and restoration activities for State-owned land after the end of the current lease would have no impact on airspace.

There would be no reduction in the amount of navigable airspace; no assignment of a new or modified SUA; no change to the existing aviation training route; no restrictions to access or use of public, private, or commercial airports or airfields; no navigation obstructions; and no increased flying risks or personnel safety.

~~**Potential**~~ **Mitigation Measures:** The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended. No mitigation measures are recommended for the lease compliance actions and cleanup and restoration activities beyond the existing management measures discussed in **Section 3.13.4.3**.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.13.5**.

3.14 Electromagnetic Spectrum

3.14.1 Definition

EMS is the range of waves of electromagnetic energy. It includes radio waves, microwaves, infrared light, visible light, ultraviolet light, X-rays, and gamma rays. 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 (radio waves), to a very high range of frequency and energy level, with a corresponding short wavelength (gamma rays). The low-frequency end of the spectrum includes radio, short-wave radio, microwaves, and television signals.

3.14.2 Regulatory Framework

DoDI 6055.11, Protecting Personnel from Electromagnetic Fields, provides technical guidance to protect DoD personnel from accidental death, injury, and occupational illness and the public from the risk of death, injury, illness, or property damage from DoD activities involving EMS equipment. DoDI 4650.01, Policy and Procedures for Management and Use of the Electromagnetic Spectrum, outlines proper management and use of the EMS as an integral part of military planning, research, development, testing, and operations involving spectrum-dependent systems.

AR 5-12, Army Use of the Electromagnetic Spectrum, assigns responsibilities for Army management of the EMS and delineates the elements of the Army Spectrum Management Program. It describes the Army spectrum management functional processes necessary to achieve compliance with statutory provisions, regulations, and technical standards required by the International Telecommunication Union, the

National Telecommunications and Information Administration's Manual of Regulations and Procedures for Federal Radio Frequency Management (47 CFR Part 300), and DoDI 4650.01.

3.14.3 Region of Influence

The ROI for potential impacts related to the EMS is the area within and adjacent to the State-owned land, including all of PTA.

3.14.4 Existing Conditions

Military personnel at PTA use radio systems to communicate across the installation. A retransmission site is in TA 9 within the State-owned land. The retransmission site contains electronic equipment that receives and resends electronic communications to overcome a physical or operational issue, such as obstruction to radio frequency transmission or to allow different groups to communicate without sharing encryption keys. Cooper Air Strip, within TA 3 in the State-owned land, is dedicated to UAV operations, which use radio frequencies for communication between the UAV and the crew on the ground. Hawai'i Electric Light Company (HELCO) and U.S. Government-owned aerial power lines are within and adjacent to the State-owned land (USARHAW, NDa). A cellular tower containing AT&T and T-Mobile equipment is within the Cantonment, adjacent to the State-owned land. The HELCO power lines and cellular tower are not owned, operated, or maintained by the U.S. Government and would not be affected by the Proposed Action.

3.14.4.1 Existing Management Measures

EMS equipment used by the DoD is cleared through the DoD's Joint Spectrum Center and meets Institute of Electrical and Electronics Engineers (IEEE) radio frequency standards. EMS equipment at PTA generates electromagnetic energy below exposure reference levels (ERLs) established in IEEE C95.1-2345 and is inventoried on an annual basis (USAG-HI, 2021b~~c~~). Department of the Army Pamphlet 385-24 notes that current scientific evidence indicates that no adverse health impacts will occur with electromagnetic energy exposures that are within the ERLs, even under repeated or long-term exposure conditions.

3.14.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.14.6** to assess potential significant impacts on the environment from EMS. The criteria considered to assess whether an alternative would result in potential significant impacts ~~associated with~~from EMS include the extent or degree to which an alternative would result in the following:

- Noncompliance with EMS policies, regulations, and technical standards
- Operation of EMS equipment in an unsafe condition with respect to electromagnetic energy

3.14.6 Environmental Analysis

3.14.6.1 Alternative 1: Maximum Retention

Land Retained

Lease Impacts: No changes in use, maintenance, or repair of EMS equipment would occur within the approximately 22,750 acres of State-owned land retained under Alternative 1. As stated in **Section 3.14.4.1**, electromagnetic energy from EMS equipment at PTA is below ERLs established by IEEE. Therefore, no new impacts ~~associated with~~ from EMS would occur, but continued long-term, negligible, adverse impacts on safety related to the continued use of EMS equipment from ongoing activities would occur. Existing management measures would continue to be implemented to reduce continued EMS impacts.

Fee Simple Title Impacts: Impacts under fee simple title would be the same as described under lease retention because no new impacts ~~associated with~~ from EMS would occur. Under fee simple title, existing management measures would continue to be implemented to reduce continued EMS impacts.

Land Not Retained

The Army would no longer have access to the approximately 250 acres of maneuver area, as well as a road and training trail, within the State-owned land not retained. By the lease expiration date, all training would stop within the State-owned land not retained. Therefore, new long-term, negligible, beneficial impacts on safety from reduced exposure to electromagnetic energy are anticipated due to a cessation in the use of radio systems within the State-owned land not retained.

Lease compliance actions and cleanup and restoration activities for State-owned land not retained after the end of the current lease would have no impacts ~~associated with~~ from EMS.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.14.4.1**.

Level of Significance: Alternative 1 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.14.5**.

3.14.6.2 Alternative 2: Modified Retention

Land Retained

Lease Impacts: The retransmission site within TA 9 and Cooper Air Strip, where UAV operations are conducted, are within the approximately 19,700 acres of State-owned land that would be retained under Alternative 2. The Army would continue to use, maintain, and repair EMS equipment in this area due to ongoing activities. Therefore, no new impacts ~~associated with~~from EMS would occur, but continued long-term, negligible, adverse impacts on safety related to the continued use of EMS equipment would occur in the State-owned land retained. Existing management measures would continue to be implemented to reduce continued EMS impacts.

Fee Simple Title Impacts: Impacts under fee simple title would be the same as described under lease retention because no new impacts ~~associated with~~ from EMS would occur. Under fee simple title, existing management measures would continue to be implemented to reduce continued EMS impacts.

Land Not Retained

The Army would no longer have access to the approximately 3,300 acres of maneuver area, facilities, and some roads and training trails within the State-owned land not retained. By the lease expiration date, all training would stop within the State-owned land not retained. Therefore, new long-term, negligible, beneficial impacts on safety from reduced exposure to electromagnetic energy are anticipated due to a cessation in the use of radio systems within the State-owned land not retained.

Lease compliance actions and cleanup and restoration activities for State-owned land not retained after the end of the current lease would have no impacts ~~associated with~~ from EMS.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.14.4.1**.

Level of Significance: Alternative 2 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.14.5**.

3.14.6.3 Alternative 3: Minimum Retention and Access

Land Retained

Lease Impacts: The retransmission site within TA 9, Cooper Air Strip, and vital training and support facilities and associated maneuver area are within the approximately 10,100 acres of State-owned land that would be retained under Alternative 3. The Army would continue to use, maintain, and repair EMS equipment in this area due to ongoing activities. Therefore, no new impacts ~~associated with~~ from EMS would occur, but continued long-term, negligible, adverse impacts on safety related to the continued use of EMS equipment would occur in the State-owned land retained. Existing management measures would continue to be implemented to reduce continued EMS impacts.

Fee Simple Title Impacts: Impacts under fee simple title would be the same as described under lease retention because no new impacts ~~associated with~~from EMS would occur. Under fee simple title, existing management measures would continue to be implemented to reduce continued EMS impacts.

Land Not Retained

The Army would no longer have access to the approximately 12,650 acres of maneuver area, facilities, and some roads and training trails within the State-owned land not retained. By the lease expiration date, all training would stop within the State-owned land not retained. Therefore, new long-term, negligible, beneficial impacts on safety from reduced exposure to electromagnetic energy are anticipated due to a cessation in the use of radio systems within the State-owned land not retained.

Lease compliance actions and cleanup and restoration activities for State-owned land not retained after the end of the current lease would have no impacts ~~associated with~~from EMS.

~~Potential~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.14.4.1**.

Level of Significance: Alternative 3 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.14.5**.

3.14.6.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any of the State-owned land after the lease expires and would no longer have access to U.S. Government-owned utilities and infrastructure, including EMS equipment, within the State-owned land. New long-term, negligible, beneficial impacts on safety would occur from the discontinued use of EMS equipment in the State-owned land. Impacts associated with loss of communications capacity ~~is~~ are addressed in **Section 3.15**.

Lease compliance actions and cleanup and restoration activities for State-owned land after the end of the current lease would have no impacts from EMS.

~~Potential~~ **Mitigation Measures:** The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended. No mitigation measures are recommended for the lease compliance actions and cleanup and restoration activities beyond the existing management measures discussed in **Section 3.14.4.1**.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.14.5**.

3.15 Utilities

3.15.1 Definition

Utilities are the services and associated infrastructure provided to a specified area that enable it to function effectively. Utilities include items such as electricity, potable water, fire protection water, communications, wastewater, stormwater, natural gas, liquid fuel, renewable energy, and solid waste management.

3.15.2 Regulatory Framework

The State-owned land contains U.S. Government-owned utilities and non-U.S. Government-owned utilities (i.e., HELCO, Hawaiian Telcom, and Pural Water Specialty Company). Additionally, ongoing activities (primarily training) within the State-owned land involve the use of utilities within the Cantonment and BAAF (e.g., personnel use facilities within the Cantonment in support of the ongoing activities within the State-owned land). A summary of applicable regulations follows.

AR 420-49, Utility Services, includes policies and responsibilities for operation, maintenance, and repair of infrastructure and systems for the efficient and economical management of utilities at Army installations. It is applicable to U.S. Government-owned utilities on PTA, as well as non-U.S. Government-owned utilities on PTA that are used by PTA.

PTA purchases potable water from the County of Hawaiʻi Department of Water Supply; therefore, the potable water system at PTA is exempt from HAR ~~Section~~ Chapter 11-20.

PTA manages wastewater via individual wastewater systems (e.g., septic systems) and small-capacity cesspools for buildings not yet connected to an individual wastewater system. Individual wastewater systems and small-capacity cesspools in Hawaiʻi are regulated by HAR ~~Section~~ Chapter 11-62 and administered by the Hawaiʻi DOH Wastewater Branch. Act 125 (House Bill 1244) was approved in 2017 and requires that all cesspools be upgraded or converted to a septic system or aerobic treatment unit system or be connected to a sewerage system by 2050.

Solid waste management at PTA complies with DoDI 4715.23, *Integrated Recycling and Solid Waste Management*, which established the protocols to implement waste prevention and recycling for DoD activities.

The Hawaiʻi Integrated Solid Waste Management Act (HRS Chapter 342G) and HAR Section 11-58.1, which governs implementation of HRS Chapter 342G, outline that counties should consider a variety of solid waste management practices and processing methods to safely and effectively manage solid waste with the least adverse impact on human health and the environment. The rules under HAR Section 11-58.1 apply to any entity that proposes to own, operate, or maintain a solid waste recycling, reclamation, salvage, transfer, or disposal facility. However, HRS Chapter 342G and HAR Section 11-58.1 are not applicable to PTA because it is not classified as a solid waste processing, management, or disposal facility.

HRS Chapter 342H requires solid waste landfill operators to obtain a permit from DOH prior to constructing, operating, modifying, expanding, or closing a landfill.

3.15.3 Region of Influence

The ROI for utilities includes utilities within the State-owned land, utilities in the Cantonment and BAAF that have the potential to be used in support of ongoing activities (primarily training) within the State-owned land, and utilities outside of PTA that have the potential to be used in support of lease compliance actions and cleanup and restoration activities.

3.15.4 Existing Conditions

Electricity

Electrical power is provided to PTA by HELCO (USACE-POH & USAG-HI, 2020a). HELCO-owned powerlines and a HELCO-owned substation (HELCO substation) are located on the State-owned land via an easement that ranges between 25 and 50 feet on either side of the easement centerline. Power from two HELCO 69-kilovolt circuits, the Waikiʻi Substation and the Hale Pōhaku Substation, feed the HELCO substation at PTA. Power from the HELCO substation feeds a substation owned, operated, and maintained by the U.S. Government (PTA substation). The PTA substation is also located on State-owned land.

The U.S. Government owns, operates, and maintains the PTA electricity distribution network beyond the PTA substation. The PTA electricity distribution network within the State-owned land consists of exterior lighting, manholes, utility poles, transformers, overhead and underground distribution lines, and the PTA substation. Personnel use electricity within the Cantonment and BAAF in support of ongoing activities

within the State-owned land. PTA's electricity usage is approximately 1,718,400 kW-hours per year (USAG-HI & USARPAC, 2013).

The Army has committed to electrification of its non-tactical vehicle fleet department-wide, including at PTA and the State-owned land (DA-ASAIEE, 2022).

Potable Water

All water for operation of PTA is purchased from the County of Hawai'i Department of Water Supply facility in Waimea and transported to PTA. Water is regularly trucked 40 miles via 5,000-gallon tanker trucks to two enclosed standpipes within the State-owned land where it is pumped via two pump stations to three non-U.S. Government-owned 670,000-gallon ASTs located on State-owned land. One of the three ASTs is reserved for fire protection water, and the other two ASTs are used for potable water. The potable water is chlorinated on the State-owned land and conveyed via underground pipes to three smaller 10,000-gallon reservoirs on the Cantonment where it is distributed to facilities on the Cantonment (USACE-POH & USAG-HI, 2015). The potable water storage, treatment, and distribution system at PTA has been privatized and is owned and maintained by Pural Water Specialty Company. The Army owns and maintains only the potable water pipes from the water meters or demarcation points to the interior of the facilities on U.S. Government-owned land. The potable water system is not connected to facilities on the State-owned land and is exempt from HAR ~~Section~~ Chapter 11-20.

Personnel use potable water within the Cantonment in support of ongoing activities within the State-owned land. Water consumption at PTA varies from 10,000 gallons per day during periods of minimal troop presence to approximately 70,000 gallons per day when at full capacity (USAG-HI & USARPAC, 2013).

Fire Protection Water

~~As noted in the potable water section, t~~There is one non-U.S. Government-owned 670,000-gallon AST on State-owned land that contains fire protection water. The fire protection water storage and distribution system at PTA has been privatized and is owned and maintained by Pural Water Specialty Company. The Army owns and maintains only the fire protection water pipes from the water meters or demarcation points to the interior of the facilities on U.S. Government-owned land. PTA also has ~~approximately ten~~ 13 30,000- to 80,000-gallon dip tanks to support aerial and ground wildfire fighting activities. ~~Approximately 4~~ Seven of the ~~10~~ 13 dip tanks are within the State-owned land. The dip tanks are refilled via 5,000-gallon water tanker trucks (USAG-PTA, 2021~~e~~g). The dip tanks are not permanent and can be moved.

Wastewater

A latrine wastewater holding tank is located at Building 600 within TA 5 of the State-owned land. The wastewater holding tank is serviced by B&B Pumping Services, LLC.

Portable latrine facilities are permanently sited at the BAX and temporarily sited at various locations within the State-owned land during training events. The portable latrines are serviced by commercial waste haulers, and the wastewater is disposed at county wastewater disposal facilities (USAG-HI, 2018a). The permanently sited portable latrines at the BAX are not permitted. HAR Section 11-62.06(e) prohibits the use of portable toilets for permanent structures unless approved by the DOH Director. PTA works with the DOH to maintain compliance with wastewater system regulations.

Personnel use wastewater facilities within the Cantonment and BAAF in support of ongoing activities within the State-owned land. The Cantonment and BAAF manage wastewater via individual wastewater systems (e.g., septic systems) and small-capacity cesspools for buildings not yet connected to an individual wastewater system. Commercial ~~S~~septic tank pumping services haul the wastewater to county wastewater disposal facilities~~ by commercial haulers~~.

Stormwater

There are no stormwater facilities on the State-owned land. The majority of PTA consists of various permeable surfaces with high percolation rates that allow rain to infiltrate naturally (USAG-HI & USARPAC, 2013). Stormwater runoff on State-owned land is discussed in **Section 3.9**.

Non-Hazardous Solid Waste

A former solid waste landfill (POTA-06) is located within TA 6 of the State-owned land. It was closed in 1993 and capped in 1996 in accordance with HRS Chapter 342H. The closure and capping were accepted by the DOH (USACE-POH, 2017). **Section 3.5.4** provides more information on this closed solid waste landfill. There are no other solid waste landfills on the State-owned land.

Solid waste is no longer disposed within the State-owned land. All solid waste generated within PTA, including the State-owned land, is collected and brought to the solid waste accumulation point, recycling, and composting facility on the Cantonment. PTA's recycling center diverts (recycles) approximately 54 percent of PTA's solid waste. The remaining solid waste is trucked from the Cantonment to the West Hawai'i Sanitary Landfill for disposal.

Solid waste generation at PTA is directly tied to the number of personnel using the installation and the duration of their stay. Data from 2010 revealed that PTA generated 1,100 tons of solid waste per year, an average of 3 tons per day, which resulted in annual disposal costs to PTA of $166,250 (USAG-HI & USARPAC, 2013).

Military personnel remove ~~solid waste~~spent munitions items, wood boxes, and other trash prior to departing a training area or range facility in accordance with *Pohakuloa Training Area Range Operations Standard Operating Procedures* and the USAG-PTA *External Standard Operating Procedures*. Additionally, PTA uses several checklists that range users must review and sign stating that they understand the requirements for range operations and clearing. The checklists include Range Checklist Procedures, Live-Fire Range Opening Sheet, and Maneuver Training Area Opening Sheet.

Under the current lease, the State is responsible for removing and disposing of solid waste ~~resulting~~ from public use of the State-owned land, which is a minimal quantity of solid waste.

Liquid Fuel

The State-owned land does not contain active, permanent liquid fuel storage tanks. An inactive diesel fuel AST is located near Building 600 in the State-owned land (USACE-POH, 2017). Temporary, liquid fuel ASTs (i.e., fuel bladders with secondary containment) are used at the FARPs within the State-owned land during training events.

Personnel who conduct ongoing activities within the State-owned land use the liquid fuel facilities at the PTA fueling station within U.S. Government-owned land to fuel vehicles, helicopters, tilt-rotor aircraft, and UAVs, as well as liquified petroleum gas (propane) to heat water at the Cantonment (USAG-HI & USARPAC, 2013). The PTA fueling station includes gasoline, diesel, and Jet A fuel (USAG-PTA, 2018a).

Communications

Telecommunications services are provided to PTA by Hawaiian Telcom and Spectrum (USACE-POH & USAG-HI, 2020a). Hawaiian Telcom owns most of the telecommunication infrastructure on PTA (USACE-POH & USAG-HI, 2015). Hawaiian Telcom telecommunication lines and other infrastructure are located on the State-owned land via easements that range between 25 and 50 feet on either side of the easement centerline.

Communication facilities within the State-owned land include a speaker, antennas, manholes, utility poles, and underground and aboveground distribution lines.

Personnel use communication facilities within the Cantonment and BAAF in support of ongoing activities within the State-owned land.

Renewable Energy

The Army has implemented some renewable energy projects at PTA, such as operating more than 450 solar panels at 16 small arms ranges on PTA to power range towers and pop-up targets with solar-sourced electricity rather than relying on electricity sourced from gasoline-fueled generators (USAG-PTA PAO, 2008).

3.15.4.1 Existing Management Measures

The *Pohakuloa Training Area Range Operations Standing Operating Procedures* includes instructions for communications and range clearing (e.g., solid waste collection and removal) within the training ranges, including a requirement to develop, submit, and implement a range and training area clearing plan prior to final departure. The USAG-PTA *External Standard Operating Procedures* includes information and procedures for units regarding use of barracks and facilities on the Cantonment and BAAF, use of portable latrines on the training ranges, vehicle fueling, communications, solid waste management and recycling, and fire prevention and protection. Additional existing management measures addressing utilities are presented in **Appendix E**.

3.15.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.15.6** to assess potential significant impacts on utility systems. The analysis considers the impacts of utility system use, access, maintenance, and repair under each of the alternatives. To fully assess the utility impacts, utility system use includes use of utilities within the State-owned land, ~~as well as use of utilities~~ within the Cantonment and BAAF in support of ongoing activities within the State-owned land, and outside of PTA in support of lease compliance actions and cleanup and restoration activities. Analysis of non-U.S. Government-owned utilities is limited to use because the Proposed Action would not affect the access, maintenance, or repair of these utilities. The Proposed Action includes retention of all U.S. Government-owned utilities throughout the State-owned land (retained and not retained) for Alternatives 1, 2, and 3, and analysis of utilities includes areas

beyond the State-owned land; therefore, the analysis for potential utilities impacts is not separated into State-owned land retained and not retained for the alternatives as it is for other resource areas.

The criteria considered to assess whether an alternative would result in potential significant impacts on utilities include the extent or degree to which an alternative would result in the following:

- Exceedance of capacity or an unreasonable demand on a utility
- Loss or reduction of utility capacity such that demand exceeds capacity
- Noncompliance with a permit or regulation

3.15.6 Environmental Analysis

For Alternatives 1, 2, and 3, the Army would continue to allow existing utility easements for non-U.S. Government-owned utilities (i.e., HELCO, Hawaiian Telcom, and Pural Water Specialty Company) within the State-owned land retained regardless of the land retention estate selected for implementation.

Per Act 125, all cesspools at PTA would be upgraded or converted to a septic system or aerobic treatment unit system or would be connected to a sewerage system by 2050.

3.15.6.1 Alternative 1: Maximum Retention

Lease Impacts: Under Alternative 1 via lease, the Army would retain approximately 22,750 acres of the State-owned land as well as all U.S. Government-owned utilities and associated access throughout the State-owned land not retained (i.e., electrical and communication systems in TA 2) to enable continued safe operation of the State-owned land retained and U.S. Government-owned land at PTA (**Figure 2-2**). As noted in **Section 2.2.1**, Alternative 1 would negligibly reduce ongoing activities conducted in the State-owned land; therefore, the Army would continue to use, access, maintain, and repair U.S. Government-owned utilities within the State-owned land (retained and not retained) and use non-U.S. Government-owned utilities within the State-owned land (retained and not retained) at levels similar to current levels. In support of the ongoing activities within the State-owned land retained, the Army would continue to use U.S. Government-owned and non-U.S. Government-owned utilities in the U.S. Government-owned land at levels similar to current levels. In summary, Alternative 1 via lease would result in no new impacts on U.S. Government-owned and non-U.S. Government-owned utilities during a new lease; however, continued long-term, minor, adverse impacts on U.S. Government-owned and non-U.S. Government-owned utilities would remain during a new lease due to continuation of ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land (e.g., continued use of utilities in the Cantonment and BAAF by personnel conducting ongoing activities in the State-owned land).

The Army would remain obligated to maintain or obtain State approvals or permits for operation of U.S. Government-owned utility systems in the State-owned land, but this would be a continued administrative burden rather than a NEPA or HEPA impact (i.e., change to the human environment). Additionally, the Army would cooperate with the State to provide physical security for U.S. Government-owned utility systems in the State-owned land not retained.

Lease compliance actions and cleanup and restoration activities associated with expiration of the current lease for State-owned land not retained would have no impact on utilities at PTA because those actions

would not use or impact Army use of utilities at PTA. It is assumed that contractors performing the lease compliance actions and cleanup and restoration activities would bring and use their own utilities (e.g., potable water, wastewater facilities, generators, liquid fuel), which could result in new short-term, negligible, adverse impacts on utilities outside of PTA due to increased demand.

Alternative 1 via lease would not result in loss or reduction of utility capacity, an increased utility demand beyond utility capacity, or noncompliance with a utility permit or regulation.

Fee Simple Title Impacts: Impacts under Alternative 1 via fee simple title would be the same as those under lease because the level, type, and location of ongoing activities in the State-owned land retained and associated activities in the U.S. Government-owned land would be the same regardless of retention via fee simple title or lease. Consequently, Alternative 1 via fee simple title would result in no new impacts on utilities due to retention of the State-owned land; however, continued long-term, minor, adverse impacts on U.S. Government-owned and non-U.S. Government-owned utilities would remain due to continuation of ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land, and new short-term, negligible, adverse impacts on utilities outside of PTA could occur due to increased demand from lease compliance actions and cleanup and restoration activities associated with expiration of the current lease for State-owned land not retained.

The Army would become responsible for disposing of solid waste from public use of the State-owned land retained, which would have no impact on solid waste management due to the small amounts of solid waste generated from public use. Additionally, the Army would no longer be required to obtain State approvals or permits for operation of U.S. Government-owned utility systems in the State-owned land retained due to the supremacy clause, but this would be an administrative burden reduction rather than a NEPA or HEPA impact (i.e., change to the human environment). The Army would cooperate with the State to provide physical security for U.S. Government-owned utility systems in the State-owned land not retained.

Alternative 1 via fee simple title would not result in loss or reduction of utility capacity, an increased utility demand beyond utility capacity, or noncompliance with a utility permit or regulation.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.15.4.1**.

Level of Significance: Alternative 1 would result in less than significant impacts for lease and fee simple title based on the significance criteria in **Section 3.15.5**.

3.15.6.2 Alternative 2: Modified Retention

Lease Impacts: Under Alternative 2 via lease, the Army would retain approximately 19,700 acres of the State-owned land as well as all U.S. Government-owned utilities and associated access throughout the State-owned land not retained (i.e., electrical and communication systems in TAs 2, 10, 11, 15, and 16) to enable continued safe operation of the State-owned land retained and U.S. Government-owned land at PTA (**Figure 2-3**). As noted in **Section 2.2.2**, Alternative 2 would negligibly reduce ongoing activities conducted in the State-owned land; therefore, the Army would continue to use, access, maintain, and repair U.S. Government-owned utilities within the State-owned land (retained and not retained) and use non-U.S. Government-owned utilities within the State-owned land (retained and not retained) at levels similar to current levels. In support of the ongoing activities within the State-owned land retained, the

Army would continue to use U.S. Government-owned and non-U.S. Government-owned utilities in the U.S. Government-owned land at levels similar to current levels. Therefore, utilities impacts during a new lease would be the same as described for Alternative 1.

The Army would remain obligated to maintain or obtain State approvals or permits for operation of U.S. Government-owned utility systems in the State-owned land, but this would be a continued administrative burden rather than a NEPA or HEPA impact (i.e., change to the human environment). Additionally, the Army would cooperate with the State to provide physical security for U.S. Government-owned utility systems in the State-owned land not retained.

Lease compliance actions and cleanup and restoration activities associated with expiration of the current lease for State-owned land not retained would have no impact on utilities at PTA because those actions would not use or impact Army use of utilities at PTA. It is assumed that contractors performing the lease compliance actions and cleanup and restoration activities would bring and use their own utilities (e.g., potable water, wastewater facilities, generators, liquid fuel), which could result in new short-term, negligible, adverse impacts on utilities outside of PTA due to increased demand.

Alternative 2 via lease would not result in loss or reduction of utility capacity, an increased utility demand beyond utility capacity, or noncompliance with a utility permit or regulation.

Fee Simple Title Impacts: Impacts under Alternative 2 via fee simple title would be the same as those under lease because the level, type, and location of ongoing activities in the State-owned land retained and associated activities in the U.S. Government-owned land would be the same regardless of retention via fee simple title or lease. Consequently, Alternative 2 via fee simple title would result in no new impacts on utilities due to retention of the State-owned land; however, continued long-term, minor, adverse impacts on U.S. Government-owned and non-U.S. Government-owned utilities would remain due to continuation of ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land, and new short-term, negligible, adverse impacts on utilities outside of PTA could occur due to increased demand from lease compliance actions and cleanup and restoration activities associated with expiration of the current lease for State-owned land not retained.

The Army would become responsible for disposing of solid waste from public use of the State-owned land retained, which would have no impact on solid waste management due to the small amounts of solid waste generated from public use. Additionally, the Army would no longer be required to obtain State approvals or permits for operation of U.S. Government-owned utility systems in the State-owned land retained due to the supremacy clause, but this would be an administrative burden reduction rather than a NEPA or HEPA impact (i.e., change to the human environment). The Army would cooperate with the State to provide physical security for U.S. Government-owned utility systems in the State-owned land not retained.

Alternative 2 via fee simple title would not result in loss or reduction of utility capacity, an increased utility demand beyond utility capacity, or noncompliance with a utility permit or regulation.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.15.4.1**.

Level of Significance: Alternative 2 would result in less than significant impacts for lease and fee simple title based on the significance criteria in **Section 3.15.5**.

3.15.6.3 Alternative 3: Minimum Retention and Access

Lease Impacts: Under Alternative 3 via lease, the Army would retain approximately 10,100 acres, 11 miles of select roads and training trails within the State-owned land not retained, and all U.S. Government-owned utilities and associated access throughout the State-owned land not retained (i.e., electrical and communication systems in TAs 2, 10, 11, 15, 16, 19, and 22B) to enable continued safe operation of the State-owned land retained and U.S. Government-owned land at PTA (**Figure 2-4**). As noted in **Section 2.2.3**, Alternative 3 would moderately reduce the ongoing activities conducted in the State-owned land due to the loss of approximately 12,900 acres, which would also reduce associated activities within the U.S. Government-owned land. Consequently, the Army would continue to use, access, maintain, and repair U.S. Government-owned utilities within the State-owned land (retained and not retained) and use non-U.S. Government-owned utilities within the State-owned land (retained and not retained) but at moderately reduced levels (reduced by approximately 15 to 30 percent). In support of the ongoing activities within the State-owned land retained, the Army would continue to use U.S. Government-owned and non-U.S. Government-owned utilities in the U.S. Government-owned land but at moderately reduced levels (reduced by approximately 15 to 30 percent). In summary, Alternative 3 via lease would result in new long-term, negligible, beneficial impacts on U.S. Government-owned and non-U.S. Government-owned utilities from decreased demand during a new lease; however, continued long-term, negligible to minor, adverse impacts on U.S. Government-owned and non-U.S. Government-owned utilities would remain during a new lease due to continuation of ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land.

The Army would remain obligated to maintain or obtain State approvals or permits for operation of U.S. Government-owned utility systems in the State-owned land, but this would be a continued administrative burden rather than a NEPA or HEPA impact (i.e., change to the human environment). Additionally, the Army would cooperate with the State to provide physical security for U.S. Government-owned utility systems in the State-owned land not retained.

Lease compliance actions and cleanup and restoration activities associated with expiration of the current lease for State-owned land not retained would have no impact on utilities at PTA because those actions would not use or impact Army use of utilities at PTA. It is assumed that contractors performing the lease compliance actions and cleanup and restoration activities would bring and use their own utilities (e.g., potable water, wastewater facilities, generators, liquid fuel), which could have new short-term, negligible, adverse impacts on utilities outside of PTA due to increased demand.

Alternative 3 via lease would not result in loss or reduction of utility capacity, an increased utility demand beyond utility capacity, or noncompliance with a utility permit or regulation.

Fee Simple Title Impacts: Impacts under Alternative 3 via fee simple title would be the same as those under lease because the level, type, and location of ongoing activities in the State-owned land retained and associated activities in the U.S. Government-owned land would be the same regardless of retention via fee simple title or lease. Consequently, Alternative 3 via fee simple title would result in new long-term, negligible, beneficial impacts on U.S. Government-owned and non-U.S. Government-owned utilities from decreased demand; however, continued long-term, negligible to minor, adverse impacts on U.S. Government-owned and non-U.S. Government-owned utilities would remain due to continuation of ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land. Additionally, new short-term, negligible, adverse impacts on utilities outside of

PTA could occur due to increased demand from lease compliance actions and cleanup and restoration activities associated with expiration of the current lease for State-owned land not retained.

The Army would become responsible for disposing of solid waste from public use of the State-owned land retained, which would have no impact on solid waste management due to the small amounts of solid waste generated from public use. Additionally, the Army would no longer be required to obtain State approvals or permits for operation of U.S. Government-owned utility systems in the State-owned land retained due to the supremacy clause, but this would be an administrative burden reduction rather than a NEPA or HEPA impact (i.e., change to the human environment). The Army would cooperate with the State to provide physical security for U.S. Government-owned utility systems in the State-owned land not retained.

Alternative 3 via fee simple title would not result in loss or reduction of utility capacity, an increased utility demand beyond utility capacity, or noncompliance with a utility permit or regulation.

~~**Potential**~~ **Mitigation Measures:** No mitigation measures are recommended beyond the existing management measures discussed in **Section 3.15.4.1**.

Level of Significance: Alternative 3 would result in less than significant impacts for lease and fee simple title based on the significance criteria in **Section 3.15.5**.

3.15.6.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any of the State-owned land at PTA, including U.S. Government-owned utilities. By the lease expiration date, ongoing activities within the State-owned land, and associated activities within the U.S. Government-owned land, would stop. Because the Army would have no land access to the impact area and training ranges south of the State-owned land, ongoing activities within the impact area and adjacent training ranges also would cease at lease expiration. The elimination of ongoing activities in the State-owned land, activities in the impact area and training ranges to the south of the State-owned land, and associated activities in the U.S. Government-owned land would reduce utility demand, resulting in new long-term, minor, beneficial impacts on U.S. Government-owned and non-U.S. Government-owned utilities that would still exist or be accessible such as potable water, fire protection water, wastewater, solid waste, liquid fuel, and communications.

The Army would have no access to, and due to lease compliance actions (e.g., removing or abandoning structures) may have to remove, the electrical distribution system (including the PTA substation), wastewater systems, liquid fuel temporary ASTs (i.e., fuel bladders with secondary containment), communication distribution network, and renewable energy system (i.e., solar panels) on the State-owned land. Removal of or inability to use, maintain, and repair these utilities would result in their immediate or near-term loss, respectively. Loss of the PTA substation would eliminate electricity throughout PTA (i.e., loss of utility capacity such that demand exceeds capacity), which would result in new long-term, significant, adverse impacts on electrical capacity at PTA. It is assumed that contractors performing the lease compliance actions and cleanup and restoration activities would bring and use their own utilities (e.g., potable water, wastewater facilities, generators, liquid fuel); therefore, these activities would not use or increase demand on remaining utilities at PTA but could have new short-term, negligible, adverse impacts on utilities outside of PTA due to increased demand.

The current land use controls and long-term monitoring actions for Former Landfill POTA-06 on the State-owned land would remain in place. The Army would maintain ongoing management of Former Landfill POTA-06 pending an agreement allowing the Army access for necessary inspection and management. When the current lease expires, maintenance of the landfill and land use controls may be negotiated in the transfer of the State-owned land.

The No Action Alternative would not result in an increased utility demand beyond utility capacity or noncompliance with a utility permit or regulation.

~~Potential~~ **Mitigation Measures:** The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended. No mitigation measures are recommended for the lease compliance actions and cleanup and restoration activities beyond the existing management measures discussed in **Section 3.15.4.1**.

Level of Significance: The No Action Alternative would result in significant, adverse impacts based on the significance criteria in **Section 3.15.5**.

3.16 Human Health and Safety

3.16.1 Definition

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury, illness, or property damage. Necessary elements for an accident-prone situation or 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, occurrences, or operations that have the potential to affect the following:

- The well-being, safety, or health of DoD personnel – persons who are directly involved with an operation that produces an effect or who are physically present at the operational site
- The well-being, safety, or health of members of the public – persons not physically present at the operational site, including workers at nearby locations who are not involved in the operation, and the population outside of PTA

This analysis considers hazards associated with actions on State-owned land at PTA that could affect PTA personnel and the public such as military munitions storage, training operations, aircraft operations, human wildlife conflict (feral ungulate management), and wildland fire management. This section also includes an analysis of emergency services and readiness of state and county government agencies that use PTA for emergency services training. Safety areas such as ESQD arcs, surface danger zones (SDZ), clear zones (CZ), and accident potential zones (APZ) are present on State-owned land at PTA and are defined as follows:

- ESQD arcs are ground areas that represent the prescribed minimum distance between facilities used for storage, handling, and maintenance of explosive material and specified exposures (e.g., inhabited buildings, public highways, other storage or handling facilities). ESQD arcs restrict the use of areas and personnel density within the arc and provide an explosive material safety buffer.

- SDZs are two-dimensional features, extending from a FP to a distance downrange, that provide a contained area representing a 1:1,000,000 probability of escapement for all projectiles, debris, and fragments resulting from detonation of weapons and explosives.
- CZs begin immediately beyond each end of a runway and are the areas with the highest potential for aircraft accidents or mishaps (DoD, 2018c).
- APZs are areas at military airfields that possess a high potential for aircraft accidents, or mishaps, when compared to non-airfield areas. There are two APZs (APZ I and APZ II) that lie immediately beyond each CZ and have increasingly less accident potential as you move away from the runway, but still enough to warrant safety concerns (DoD, 2018c).

3.16.2 Regulatory Framework

Numerous federal, DoD, and state regulations have been enacted for the well-being of workers and the general population, including the Occupational Safety and Health Act of 1970 (29 U.S.C. Section 651 *et seq.*), which established laws and regulations to ensure safe working conditions through enforcing standards and training requirements and is administered by the Occupational Safety and Health Administration. EO 12196, *Occupation Safety and Health Programs for Federal Employees*; DoD Instruction 6055.01, *DoD Safety and Occupational Health Program*, and DoD Instruction 6055.05, *Occupational and Environmental Health*, set safety and health guidelines, in accordance with Occupational Safety and Health Administration standards, for DoD employees.

The Hawai‘i Occupational Safety and Health Division administers the Hawai‘i Occupational Safety and Health Law (HRS Chapter 396) and has jurisdiction over private sector employment on federal land, including military installations, with some exceptions.

DoD Manual 6055.05, *Occupational Medical Examinations: Medical Surveillance and Medical Qualification*, implements occupational medical examinations and surveillance programs and adopts protective medical standards for blood lead levels to protect military personnel.

The Army has established various regulations and guidance documents to implement safety requirements of DoD policies, including DoDI 6055.01; DoDI 6055.05; DoDI 6055.06, *DoD Fire and Emergency Services (F&ES) Program*; DoDI 6055.07, *Mishap Notification, Investigation, Reporting, and Record Keeping*; DoD Instruction 6055.16, *Explosives Safety Management Program*; and DoDI 6055.17, *DoD Emergency Management (EM) Program*. AR 385-10, *The Army Safety Program*, establishes safety standards designed to protect against serious injury, loss of life, and damage to property. AR 385-10 prescribes the Army’s safety criteria and standards for operations involving ammunition and explosives and is supported by Army Pamphlet 385-64, *Ammunition and Explosives Safety*, which includes Army-wide safety policies, responsibilities, standards, and procedures for installations with an ammunition and/or explosives mission. AR 385-63, *Range Safety*, and Army Pamphlet 385-63, *Range Safety*, include policies, procedures, and standards for firing ammunition, lasers, guided missiles, and rockets and provide guidance for risk management in range operations.

Per Army Pamphlet 385-40, *Army Accident Investigations and Reporting*, which supports AR 385-10, and the USAG-PTA *External Standard Operating Procedures*, accident reporting requirements are applied during all tactical/combat operations and training. A written risk assessment is completed for all tasks and activities prior to unit deployment to PTA. The Directorate of Installation Safety performs, categorizes,

and approves risk assessments using the risk-management process. Reporting requirements for occupational accidents are covered under federal and state regulations. Accidents occurring along public roadways that involve military personnel are investigated and reported through standard procedures of the Hawai'i Police Department. DoD Police at PTA also investigate and report accidents through their standard procedures for accidents involving military personnel immediately outside the PTA boundary (DA & HIARNG, 2013).

AR 200-1, *Environmental Protection and Enhancement*, and AR 420-1, *Army Facilities Management*, instructs PTA to develop and implement an IWFMP compliant and integral with the installation's INRMP, ICRMP, and fire and emergency programs. The PTA IWFMP describes the methods and procedures necessary to minimize fire frequency, severity, and size while providing military units the freedom to conduct the training exercises required to maintain a high level of combat readiness (USAG-PTA, 2021~~eg~~).

HRS, Article, XII, Section 7 declares the State "shall protect the rights, customarily and traditionally exercised for subsistence, cultural and religious purposes… by native Hawaiians" and descendants. Such rights are subject to the State to regulate in the interest of preserving public safety and welfare.

3.16.3 Region of Influence

The human health and safety ROI includes PTA and the land within PTA's 420 square mile emergency response area.

3.16.4 Existing Conditions

During the public scoping process and the Draft EIS public review period (summarized in **Section 1.6**), members of the public raised concerns regarding air contamination, DU, migration of hazardous substances and contaminated soils, health impacts on wild animals, geologic hazards, aircraft hazards, climate change, flooding, and wildland fire management. The human health and safety topics discussed in this section include safety areas such as ESQD arcs, SDZs, CZs, and APZs; range operations; wildland fire management; fire protection, police, and medical services; and emergency services training. Similar concerns were raised during the Second Draft EIS public comment period and concerns about feral ungulates along DKI Highway also were expressed. In addition, other issues associated with the Proposed Action that are connected to human health and safety are addressed throughout other sections of this EIS (e.g., DU is addressed in **Sections 3.5** and **3.6**).

ESQD Arcs. DoD establishes ESQD arcs for the safe storage and handling of various quantities and types of ammunition and explosives. ESQD arcs at PTA are imaginary ground surfaces, with a typical radius of 2,000 feet or less, that extend from an explosive or hazardous material storage area such as the ASP, AHAs, FARPs, and the hazardous cargo pad at BAAF. There is one ASP, two AHAs, and two FARPs on State-owned land at PTA. ESQD arcs associated with these facilities, as well as two AHAs and two FARPs on U.S. Government-owned land, range from approximately 1,250 feet to 1,900 feet in diameter and are present within TAs 5, 6, 7, 8, 17, 18, and 20 on the State-owned land (DA, 2018d; DA, 2018e). The ESQD arcs associated with the FARPs are depicted in **Figure 3-28**. For security reasons, the ASP, AHAs, and their associated ESQD arcs are not shown.

The hazardous cargo pad at BAAF has an associated 1,250-foot ESQD arc, in which inhabited buildings are prohibited. The 1,250-foot ESQD arc extends across an approximately 0.25-mile segment of DKI Highway and within a portion of TA 10. There are no inhabited buildings within this area. Within the 1,250-foot

ESQD arc, there is a 750-foot ESQD arc in which public traffic routes are prohibited. There are no public traffic routes within this area (DA, 2018e).

SDZs and Range Safety. The FPs with SDZs on State-owned land are within TAs 8, 9, 12, 13, and 15 (**Figure 3-29**). SDZs on State-owned land are contained within TAs 7, 8, 9, 12, 13, 14, 15, and 18. All of these SDZs are oriented south toward the impact area. There are three FPs within the Keʻāmuku parcel, south of DKI Highway, that are used for live-fire into the impact area. The SDZs associated with these FPs are over TAs 13, 14, 17, 18, and 19 on State-owned land. HDOT prohibits live ammunition from crossing over DKI Highway; therefore, there are no SDZs north of DKI Highway. The 1964 lease and PTA SOPs include additional training limitations to ensure the health and safety of the public and to protect the State-owned land from hazardous training activities. These include prohibiting training, firing, or maneuvering within 1,500 meters of the Gilbert Kahele Recreation Area; restricting small arms firing only to Parcel A (i.e., TAs 5–9, 12–15, 18–20 and the portions of TAs 16, 17, 21, 22, and 22B that are in the State-owned land); and storing ammunition and equipment in designated areas away from publicly accessible roads and trails (DLNR, 1964; USAG-PTA, 2018a; USARHAW, 2022).

Various types of military munitions are used during live-fire training exercises within the State-owned land. Ammunition is delivered to PTA via aircraft (i.e., helicopter) or military convoy from Kawaihae Harbor on the west side of the island of Hawaiʻi. Helicopters, barges, and ground transportation vehicles responsible for delivering ammunition to PTA follow safe handling and transportation procedures addressed in Army Pamphlet 385-64, *Ammunition and Explosives Safety*, to maintain safety and reduce the potential for accidental detonation.

Ammunition at PTA is managed via the ASP and the Training Support System, which are licensed by the DDESB and sited and built to meet regulatory requirements for net explosive weight, compatibility, and quantity-distance for ammunition storage and handling (DA, 2018d; DA, 2018e). The ASP, which is within State-owned land, consists of nine potential explosion sites including eight earth-covered magazines and one surveillance workshop, which is used to perform inspections and receive and distribute ammunition. The road to the ASP includes physical barriers that preclude direct access and is restricted to ASP personnel only (DA, 2018d). The Training Support System consists of 11 potential explosion sites that include six AHAs, two FARPs, one FARP/AHA combination, one burn pan area, and one hot cargo pad (at BAAF). There are two AHAs and two FARPs on State-owned land. There are no publicly accessible roads with access to the Training Support System (DA, 2018e).

Ammunition at PTA is primarily stored at the ASP, where it is issued to the training unit prior to training exercises. AHAs are used to temporarily store ammunition during training periods and are continually monitored by DoD personnel when ammunition is present. Any unused ammunition is returned to the original storage facility at the end of each training exercise. The Army carefully organizes each deployment to PTA to reduce unused ammunition and minimize transportation of ammunition on public, unsecured roadways (USAG-HI & USARPAC, 2013). Following the completion of a training exercise, the Army removes or deactivates live and blank ammunition in accordance with the *Pohakuloa Training Area Range Operations Standard Operating Procedures* and the USAG-PTA *External Standard Operating Procedures* (USARHAW, 2022; USAG-PTA, 2018a).

Figure 3-28: Safety Features at Pōhakuloa Training Area

Figure 3-29: Surface Danger Zones on State-Owned Land at Pōhakuloa Training Area

CZs and APZs. CZs and APZs, which are determined based on historical aircraft mishap and operations data, are areas with restrictions or land use controls that extend beyond each end of a runway to ensure the safety of military personnel and civilians. CZs and APZs at PTA are depicted in **Figure 3-28**. Each CZ and APZ associated with the runway at BAAF is approximately 3,000 feet long × 1,000 feet wide. APZ I, APZ II, and a portion of the CZ west of the runway overlap State-owned land at PTA, extending within TAs 9 and 11. A portion of APZ II east of the runway extends across DKI Highway and within TA 10 on State-owned land. APZ II east of the runway also extends across the PTA boundary into the Gilbert Kahele Recreation Area. The PTA Garrison Commander restricts aircraft takeoffs and landings to the east to reduce the potential for aircraft mishap over the Cantonment, which is east of BAAF (USACE-POH & USAG-HI, 2019b). Restricting takeoffs and landings to the east also reduces the potential for aircraft mishaps on the Gilbert Kahele Recreation Area. There are no CZs and APZs associated with Cooper Air Strip.

Fire Protection, Police, and Medical Services. Units stationed at PTA provide firefighting, police, and medical services to PTA and the areas surrounding PTA. PTA's emergency response area is approximately 420 square miles, which is twice the size of PTA.

PTA collaborates with the Maunakea Observatories to provide essential fire and medical first responder support for visitors at the Mauna Kea summit, which is accessed via the Mauna Kea Access Road approximately 7 miles east of the Cantonment along DKI Highway. Given the proximity of PTA to the Mauna Kea Summit, PTA emergency services cut response times in half compared to the emergency services provided by the County of Hawaiʻi, which is beneficial for the health and safety of Hawaiʻi residents and visitors and reduces the burden of on-site Maunakea Observatories staff.

The PTA Fire Department is located at BAAF, and firefighting staff is stationed at BAAF and the Cantonment. The PTA Fire Department is available to assist with fires proximal to PTA at the request of the Hawaiʻi County Fire Department. Emergency response times to locations at PTA vary and may be over an hour for more remote areas. The PTA Fire Department consists of six staff, including two emergency medical technicians, working around the clock. PTA Fire Department equipment includes six brush trucks, three Class A pumpers, one water pumper, one brush utility task vehicle, and one brush trailer command post (USAG-PTA, 2021d~~f~~; USAG-PTA, 2021e~~g~~). The PTA Fire Department also maintains an aircraft crash rescue vehicle and an ambulance (USAG-PTA, 2021d~~f~~; USAG-HI & USARPAC, 2013). The closest external fire stations to PTA are the Waikoloa Fire Station and the Waimea Fire Station, approximately 20 miles northwest and 25 miles north of the Cantonment, respectively (COH, 2017a).

The DoD Police provide all police services on PTA, including general range and installation security. The DoD Police facility at PTA is within the Cantonment and operates 24 hours per day, 7 days per week. State-owned land at PTA is not regularly patrolled; however, DoD Police provide security when necessary. Units that come to PTA for training exercises may bring military police of their own, depending on the size of the unit and policing requirements. DoD Police at PTA coordinate with and support the Hawaiʻi Police Department for patrol of DKI Highway and areas surrounding PTA, and is available to support county police when needed (DA & HIARNG, 2013). DoD Police do not enforce the laws of external agencies or their regulations (e.g., state hunting regulations). The closest external police stations to PTA are the Waikoloa Police Station and the Waimea Police Station, approximately 20 miles northwest and 25 miles north of the Cantonment, respectively (COH, 2017b).

Medical services are provided by deployed military units and the fire and emergency services staff at PTA. Limited medical facilities are at the Cantonment, and emergency medical service staff have the capacity

to respond to accidents along DKI Highway (DA & USACE-POH, 2004). Serious medical emergencies rely on medical helicopter transport to Hilo, which is approximately 10 minutes away by air. The closest medical facilities to PTA are the North Hawai'i Community Hospital and the Hilo Medical Center, approximately 20 miles north and 30 miles east of the Cantonment, respectively (DOH-OHCA, 2020; USAG-PTA, 2021d~~f~~).

Feral Ungulate Management. PTA manages ungulates using three primary approaches:

- Ungulate Exclusion Fence Units - Fencing is a conservation measure implemented in accordance with the 2003 and 2008 BOs. Large-scale fence units provide species and habitat protection and alleviate threats to native and listed plant species. PTA has large-scale fence units with approximately 86 miles of fence and 107 access gates surrounding approximately 37,300 acres across PTA with approximately 28 miles of ungulate exclusion fencing surrounding 8,500 acres on the State-owned land at PTA (**Figure 3-4**).
- Ungulate and Small Mammal Control - Feral ungulates are controlled using live corral traps, drives, and shooting with or without aerial support. PTA NRP staff also contract Hawai'i Game Management to remove ungulates with lethal force. All shooting operations are conducted on the ground (i.e., no aerial hunting is permitted), but shooters can use helicopters to locate ungulates.
- Game Management Program - The PTA Game Management Program, in conjunction with state hunting regulations, manages introduced game animals including ungulates. This program is designed to reduce negative natural resources impacts and provide outdoor recreation and public access for hunting game mammals and upland game birds.

Refer to **Section 3.3.4.2** for additional information on feral ungulate management.

Wildland Fire Management. Wildfires on State-owned land can occur from natural sources (i.e., volcanic activity and lightning), arson and accidental fires, and military activities. Most wildfires at PTA occur on live-fire ranges on the eastern and northern perimeters of the impact area on U.S. Government-owned land. The majority of fires recorded on PTA are ignited from military activities. Most military-ignited fires are caused by military munitions such as tracer rounds, pyrotechnics, illumination rounds, and explosive ordnance. The Army keeps a database of all PTA fire records from 1975 to the present; however, many fire records prior to 2012 ~~have been lost~~are considered incomplete. Between 1975 and August 2024, 1,261 fires were recorded by PTA firefighting personnel. Of these, ~~892~~ 1,007 recorded fires (80 percent) were recorded as attributable to military activities. Of the 1,007 fires caused by military activities, ~~265~~ 301 (30 percent) were caused by munitions, and of these, ~~196~~ 209 (~~74~~ 69 percent) were caused by tracer rounds (USAG-PTA, 2021e~~g~~, USAG-PTA, 2024h). Military munitions are fired from TAs on State-owned land, TAs on U.S. Government-owned land, and ranges within the impact area into the impact area~~ and from land within the impact area~~. Military munitions are not fired into the impact area from within TAs north of DKI Highway. Wildfires at PTA are considered frequent and the average yearly wildfire occurrence ~~from~~ between 2012 ~~through~~ and ~~2017~~ 2023 was ~~37~~ 41 per year.

Approximately 208 (17 percent) of the 1,261 recorded wildfires at PTA occurred or were likely to have occurred on the State-owned land. Between 1975 and 2011, the Army documented 112 fires within the State-owned land at PTA. These fires burned at least 15,047 acres; however, the data prior to 2012 is considered incomplete. Between 2012 and August 2024, 96 fires were recorded on State-owned land at PTA, burning approximately 19,328 acres. Of the fires that were greater than 100 acres and ignited by military activities, or suspected military activities, five fires burned portions of the State-owned land.~~ A~~

~~November 2012 fire that started from training activities in the impact area moved westward toward TA 22, burning a total of approximately 723 acres, including portions of the State-owned land. A fire occurred in 2018 and affected approximately 368 acres within TAs 18, 19, and 22B. The fire originated in TA 19 from inadvertent discharge of flares during aerial live-fire training (USAG-PTA, 2021g). The latest fire recorded at PTA was the Leilani fire, which broke out in July of 2022 (DLNR, 2022).~~ The majority of wildfires documented on State-owned land since 2012 (71 percent) are less than 0.1 acre. **Table 3-36** includes a summary of the recorded fires on the State-owned land between 2012 and August 2024.

Table 3-36: 2012-August 2024 Wildland Fire History within State-owned Land at PTA*

Year	Acres	Location on State-owned land	Source
2012	723.00	TA 22	Unknown
2012	1.00	TA 22	Unknown (rekindle)
2013	0.10	TA 22	Military activity – unknown
2013	0.10	TA 22	Unknown
2013	0.10	BAX	Military activity – unknown
2013	0.10	BAX	Military activity – live-fire (small arms)
2013	1.00	BAX	Military activity – live-fire
2013	0.023	BAX	Military activity (vehicle)
2013	0.002	BAX	Military activity – live-fire (small arms)
2014	0.10	BAX	Military activity – live-fire (small arms)
2014	0.10	BAX	Rekindle
2014	0.10	BAX	Military activity – live-fire (small arms)
2014	0.002	BAX	Military activity – live-fire (small arms)
2014	0.002	BAX	Military activity – live-fire (small arms)
2014	0.002	BAX	Military activity - unknown
2014	0.001	BAX	Military activity – live-fire (small arms)
2015	0.10	BAX	Military activity - unknown
2015	0.10	BAX	Rekindle
2015	0.10	BAX	Military activity – live-fire
2015	0.10	BAX	Military activity – unknown
2015	0.10	BAX	Military activity – unknown
2015	0.10	BAX	Military activity – live-fire (small arms)
2015	0.10	BAX	Military activity – unknown
2015	0.10	BAX	Military activity – unknown
2015	0.10	BAX	Military activity – unknown
2015	0.10	BAX	Military activity – live-fire (small arms)

Table 3-36: 2012-August 2024 Wildland Fire History within State-owned Land at PTA*			
Year	Acres	Location on State-owned land	Source
2015	0.10	BAX	Military activity – unknown
2015	0.10	BAX	Military activity – live-fire (rocket)
2015	0.10	BAX	Military activity – unknown
2015	0.10	BAX	Military activity – live-fire (small arms)
2015	0.10	BAX	Military activity – live-fire (small arms)
2015	0.10	BAX	Military activity – unknown
2015	0.10	BAX	Military activity – unknown
2015	0.028	BAX	Unknown
2015	0.014	BAX	Military activity – unknown
2015	0.005	BAX	Military activity – unknown
2015	0.005	BAX	Military activity – live-fire (small arms)
2015	0.002	BAX	Military activity – live-fire (small arms)
2015	0.001	BAX	Military activity – live-fire (small arms)
2016	0.10	BAX	Military activity – live-fire (aviation)
2016	0.10	BAX	Military activity – unknown
2016	0.10	BAX	Military activity – unknown
2016	0.10	BAX	Military activity – unknown
2016	0.10	TA 9	Military activity – live-fire (mortar)
2016	0.50	BAX	Military activity – live-fire (small arms)
2016	0.25	BAX	Military activity – live-fire (small arms)
2016	0.10	BAX	Military activity – unknown
2016	0.005	TA 3	Military activity – non live-fire (pyrotechnics)
2016	0.001	Old Saddle Road	Non-military (civilian campfire)
2016	0.00	TA 22	Rekindle
2016	0.1	TA 22	Military activity – unknown
2017	0.10	BAX	Military activity – unknown
2017	0.25	BAX	Military activity – live-fire (small arms)
2017	0.10	BAX	Military activity – unknown
2017	0.10	BAX	Military activity – unknown
2017	0.10	BAX	Military activity – unknown
2017	0.10	BAX	Military activity – live-fire (small arms)

Table 3-36: 2012-August 2024 Wildland Fire History within State-owned Land at PTA*			
Year	Acres	Location on State-owned land	Source
2017	0.10	BAX	Military activity – unknown
2017	0.10	BAX	Military activity – unknown
2017	0.50	BAX	Military activity – unknown
2017	0.40	BAX	Military activity – live-fire (small arms)
2017	0.23	BAX	Military activity – live-fire (small arms)
2017	0.009	BAX	Military activity – unknown
2018	0.25	Old Saddle Road	Non-military – unknown
2018	Unknown	BAX	Military activity – unknown
2018	0.01	BAX	Military activity – unknown
2018	Unknown	BAX	Military activity – live-fire (small arms)
2018	0.06	BAX	Rekindle
2018	Unknown	TA 19	Military activity – unknown
2018	368.00	TAs 18, 19, and 22B	Military activity - pyrotechnics
2019	Unknown	BAX	Military activity – unknown
2019	0.20	BAX	Military activity – unknown
2019	0.20	BAX	Military activity – unknown
2019	0.01	BAX	Military activity – live-fire (small arms)
2019	110.00	BAX	Military activity – unknown
2020	0.50	BAX	Military activity – live-fire (small arms)
2020	0.001	BAX	Military activity – unknown
2020	1.78	DKI Highway	Non-military – unknown
2020	Unknown	DKI Highway	Non-military – unknown
2021	Unknown	DKI Highway	Lightning
2021	1.00	BAX	Military activity – unknown
2022	3.00	BAX	Military activity – live-fire (small arms)
2022	0.01	DKI Highway	Non-military – unknown
2022	0.01	BAX	Military activity – live-fire (small arms)
2022	0.01	BAX	Military activity – unknown
2022	0.01	TA 21	Military activity – unknown
2022	Unknown	BAX	Military activity – live-fire (small arms)
2022	17,712	TA 22	Military activity – pyrotechnics

Table 3-36: 2012-August 2024 Wildland Fire History within State-owned Land at PTA*			
Year	Acres	Location on State-owned land	Source
2022	0.01	Pu‘u Ahi	Military activity – artillery simunition
2022	0.01	TA 12	Military activity – artillery simunition
2023	0.01	BAX	Military activity – unknown
2023	0.04	BAX	Military activity – live-fire (small arms)
2023	400.00	TA 15	Military activity (rekindle)
2024	0.05	Old Saddle Road	Non-military – unknown
2024	0.01	BAX	Military activity – unknown

*Records shown include only fires that occurred on the State-owned land at PTA. These records represent approximately 17 percent of the total fires that have been recorded at PTA between 1975 and ~~2018~~August 2024.

On the night of July 20, 2022, a unit training at PTA reported a fire in the PTA impact area following a training exercise involving pyrotechnic munitions. The Range Division and fire crews were alerted and monitored the fire because fires in the impact area are not actively fought due to health and safety concerns related to UXO. During the morning of July 21, 2022, Army personnel reported a fire (subsequently known as the Leilani Fire) outside the impact area, in the northeastern corner of TA 22, on State-owned land. It is possible that the fire was ignited by an ember from the impact area but that has not been definitively determined. Fire crews employed a combination of ground firefighting and helicopter bucket drops. The Leilani fire was contained, with 1,557 acres burned by July 29, 2022; however, crews continued to work on hot spots until August 3, 2022. On August 10, 2022, due to strong winds (30-40 mph), a re-ignition of the original fire occurred and escaped TA 22 containment and spread west onto adjacent State land. The Army is working on core issues that are needed to improve wildland fire response and prevention, particularly in response to climate change. The Army is also planning to expand firefighting capacity to ensure large fire response capability; and investing in new technology to monitor fires.

Prescribed burns, or controlled fires, are not currently conducted at PTA but are under consideration for future application to meet natural land management objectives and to control fuels within PTA. All prescribed burns ~~are~~ would be governed by the protocols in the IWFMP. Prescribed burns for fuels management are also subject to the requirements of the Fuels Management Plan. A burn plan ~~is~~ would be completed in advance of all prescribed burns at PTA to describe how the burn ~~will~~ would be conducted and include~~s~~ descriptions of equipment support, contingency operations, risk assessment, and safety procedures. In addition, USFWS consultation under Section 7 of the ESA and consultation with the SHPD under Section 106 of the NHPA is required prior to any prescribed burn. If a prescribed burn would exceed~~s~~ the predetermined and pre-approved constraints in the burn plan, the fire ~~is~~ would be declared a wildfire and appropriate emergency action ~~is~~ would be taken (DA, 2018f; USAG-PTA, 2021e~~g~~).

Wildfires also could occur from non-military activities or on land outside of PTA and migrate to the State-owned land. In 2010, a civilian arson fire that started outside of PTA near Mauna Kea State Park burned approximately 1,378 acres, including portions of TA 2 and other DLNR land outside the PTA boundary. Army fire crews assisted the Hawai‘i County Fire Department, National Park Service, and DLNR Division of Forestry and Wildlife to control the fire (USAG-PTA, 2021e~~g~~). In July 2021, a wildfire, nicknamed the Mana

Road fire, was ignited from non-military activity near Waimea. The fire burned more than 40,000 acres of land, including approximately 2,500 acres of KMA, and is considered the largest recorded fire on Hawaiʻi. PTA firefighters assisted the Hawaiʻi County Fire Department, DLNR Division of Forestry and Wildlife, and the National Park Service with extinguishing the fire and provided aerial support with water drops from helicopters that was crucial to containing the fire. Additional military personnel and supplies traveled from Oʻahu to assist with fire containment (DLNR, 2021). Most recently, in February 2023, two brush fires were ignited by lightning strikes within KMA and burned between approximately 1,500 and 1,800 acres. The 2023 KMA Complex fire did not reach the State-owned land (DA, 2023).

As noted in **Section 3.6.6**, increased potential for drought from changes to regional temperatures and precipitation patterns due to climate change may result in increased wildland fires. Rising temperatures and prolonged droughts can dry out vegetation, which serves as fuel for wildland fires. 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 increased fuel loads from downed trees and vegetation. The combination of these factors can increase wildland fire risk within PTA.

As required by DoDI 6055.06, Army policy ensures that appropriate training and equipment are provided so that fire departments are prepared to respond to emergencies in the emergency response area. All Army personnel engaging in wildfire fighting activities are required to meet National Wildland Coordinating Group requirements for training, certification, and physical fitness or National Fire Protection Association requirements. In addition, all firefighters are trained not to enter any known UXO areas or areas of environmental concern to fight fires without the approval from the Incident Commander and the Directorate of Installation Safety (USAG-PTA, 2021eg).

The Army uses an internal rating system to assess wildfire risk at PTA and assigns a daily fire danger rating to areas of PTA. The fire danger rating system restricts the use of weapons systems and types of training based on the type of weapon or training activity, the current weather, and fuel conditions. As weather and fuel conditions become more conducive to fire, more weapons systems and more types of training areas are restricted. Fire suppression resources at PTA include an extensive series of firebreaks/fuel breaks and areas of modified fuels; firefighting equipment and supplies; fire response vehicles including water tankers; and aerial resources that can be used for fire bucket support. PTA has 13 30,000-gallon to 80,000-gallon dip tanks, 7 dip tanks are on State-owned land. Dip tanks ~~Approximately ten 30,000-gallon to 80,000-gallon dip tanks at PTA~~ are required to be filled at 60 percent capacity at all times and can be used by aerial and ground wildfire support resources (USAG-PTA, 2021eg). PTA does not use firefighting foam containing PFAS to combat wildfires. See **Section 3.5** for additional information on PFAS.

Firefighting equipment at PTA is maintained at all times during training activities. Fire response vehicles at PTA meet requirements defined by the National Wildland Fire Coordination Group. If fire suppression equipment is not operational, or if insufficient firefighting staff is present at PTA, all live-fire training is suspended. The PTA Fire and Emergency Services Fire Chief and PTA Wildland Fire Program Manager are responsible for implementing the IWFMP, developing procedures to reduce the threat of wildland fires, responding to fires that impact PTA's emergency response area, and mitigating the adverse impacts of fires, which requires coordination with PTA Range Division Hawaiʻi and the PTA NRP. In addition, the PTA Wildland Fire Program Manager is responsible for securing and maintaining operationally ready firefighting equipment; ensuring all firefighting personnel meet and maintain training and certification requirements; maintaining minimum supplies, equipment, and qualified personnel; and reviewing wildfire

reports. The PTA Fire Department also assists the State during prescribed burns and emergency forest fire controls near PTA (USAG-PTA, 2021eg).

The PTA Fire Department is responsible for providing wildfire protection services and assists the Wildland Fire Program Manager with implementing the PTA IWFMP. This includes ensuring supplies, equipment, training, mutual aid agreements, and qualified personnel are available, and properly maintaining firebreaks and fuel breaks. In accordance with DoD Instruction 6055.06 and the PTA IWFMP, PTA firefighters respond to all fires on PTA and within the Army's AOR, which is within 25 road miles of PTA. The PTA Fire Department is the first responder for all fires within PTA and within the Army's area of responsibility. The minimum PTA Fire Department staffing requirement during live-fire training exercises is six personnel (USAG-PTA, 2021df). Because of PTA's large size, volume of training, and additional staff required by obligations in addition to the IWFMP, military units bring additional firefighting staff to PTA during training; therefore, staffing levels always exceed the minimum requirement. A Memorandum of Agreement (MOA) between the Army and the Hawaiʻi County Fire Department, signed December 22, 2014, allows the Army to request firefighting assistance from the Hawaiʻi County Fire Department to fight wildfires. Similarly, the Army provides firefighting resources, including fire response vehicles, firefighting equipment, helicopter support, and emergency services personnel, upon request by the Hawaiʻi County Fire Department to areas outside of the PTA AOR, which is within 25 road miles of PTA. Additional support from the National Park Service and DLNR Division of Forestry and Wildlife is available for fire suppression if a fire has the potential to become large (USAG-PTA, 2021eg).

The IWFMP incorporates public health and environmental quality considerations into its fire-management planning and execution and, where practical, provides protection for natural and historic and cultural resources. By following the guidelines set forth in the IWFMP and associated fire prevention, suppression, and reporting SOPs, the Army reduces wildfire risks and provides for the protection of public services and utilities. In the event of a wildfire, wildland fire management at PTA is also conducted in accordance with the NHPA and ESA where possible (DA & HIARNG, 2013).

Emergency Services Training. PTA is used for training and logistics planning by local emergency services agencies, including state and county first responders and firefighters; the Hawaiʻi Civil Defense Agency; the Hawaiʻi Emergency Management Agency; the State Office of Homeland Security; and the Hawaiʻi Police Department. The facilities at PTA allow these state and county agencies to adequately train for emergency response situations and prepare emergency responders to ensure the health and safety of local communities within the County of Hawaiʻi and the State.

3.16.4.1 Existing Management Measures

The Army follows all federal, state, and DoD regulations listed in **Section 3.16.2** to ensure that health and safety is maintained and to limit exposure of personnel and the public to health and safety hazards. The *Pohakuloa Training Area Range Operations Standard Operating Procedures,* the USAG-PTA *External Standard Operating Procedures,* 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, to reduce the potential for wildfire, and to ensure appropriate wildfire response. As discussed earlier in **Section 3.16.4**, existing human health and safety management measures captured in the SOPs, IWFMP, and INRMP include prohibiting training, firing, or maneuvering within 1,500 meters of the Gilbert Kahele Recreation Area; restricting small arms firing only to Parcel A and orienting all firing south toward the impact area; prohibiting live firing from crossing over DKI Highway; storing ammunitions and equipment

in designated areas away from publicly accessible roads and trails; removing or deactivating live and blank ammunition following a training exercise; restricting aircraft takeoffs and landings to the east of the BAAF to reduce the potential for aircraft mishap over the Cantonment and the Gilbert Kahele Recreation Area; and using an internal fire danger rating system to restrict the types of weapons and training at PTA based on weather and fuel conditions to reduce the risk of wildfire ignition. Additional existing management measures are presented in **Appendix E**.

3.16.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.16.6** to assess potential significant impacts on human health and safety. The evaluation of impacts on human health and safety is based on existing health and safety procedures and features in the ROI and the compatibility of the Proposed Action with existing hazard conditions. The criteria considered to assess whether an alternative would result in potential significant impacts on human health and safety include the extent or degree to which an alternative would result in the following:

- Violation of applicable regulations and policies designed to protect human health and safety
- Imminent or chronic human health and safety risks
- Change or alteration of ESQD arcs, SDZs, CZs, or APZs in a way that would substantially increase their areas or associated hazards
- Substantial increase or introduction of wildfire risks within the ROI
- Elimination of the ability of PTA to respond to wildfires or provide fire, police, and emergency services
- Substantial reduction of state and county agencies' use of PTA for emergency services training

3.16.6 Environmental Analysis

3.16.6.1 Alternative 1: Maximum Retention

Land Retained

Lease Impacts: Under Alternative 1, established safety features such as ESQD arcs, SDZs, CZs, and APZs; procedures related to explosives and range safety; practices for storage, handling, and cleanup of ammunition; and 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. PTA would continue to provide firefighting, police, medical, and wildland fire management services to, and within areas proximal to, the installation. The Army would continue to permit state and county agencies to use PTA for emergency services training, which would help to ensure human health and safety is maintained within local communities. Because the type, frequency, and intensity of military activities at PTA would not change if the Army retained the State-owned land, risk of wildfire would remain the same. In other words, a continuation of ongoing activities would not increase or decrease the potential for wildfire from existing conditions. Therefore, Alternative 1 would result in no new impacts on human health and safety. Continued long-term, minor, adverse impacts would remain from ongoing aircraft operations and military munitions use, and continued long-term, minor, beneficial impacts would remain from PTA providing

firefighting, police, and medical services beyond the installation and permitting non-DoD emergency services agencies to use PTA facilities to train.

Fee Simple Title Impacts: Impacts under a fee simple title method of land retention would be the same as a lease retention method for Alternative 1 because no new impacts on human health and safety and no changes in training or implementation of health and safety practices would occur from retention of the State-owned land at PTA. Under fee simple, the Army would continue to follow all federal and DoD regulations pertaining to health and safety and wildfire management, and would adhere to state regulations to the extent practicable.

Land Not Retained

There are no safety features such as ESQD arcs, SDZs, CZs, and APZs within the State-owned land not retained. The land not retained is rarely used for training, is not used for live-fire military munitions, and has a low risk of wildfire spread from military training on the State-owned land retained because Old Saddle Road and DKI Highway act as firebreaks between the land not retained and PTA live-fire training areas. In addition, Old Saddle Road and DKI Highway prevent potential wildfires within the land not retained from reaching the southern portion of PTA. Therefore, human health and safety hazards and wildfire risk on the land not retained would not change.

The Army would no longer have access to the State-owned land not retained for wildfire protection and firefighting activities. To address wildfire risk, state and county agencies would become the first responders for wildfire occurrences in the land not retained, and it is assumed they would maintain similar practices as the Army to prevent and respond to potential wildfires including natural fuels management (e.g., fountain grass). The Army would continue or renegotiate its MOA with the Hawai‘i County Fire Department to provide firefighting resources including fire response vehicles, firefighting equipment, helicopter support, and emergency services personnel. Per the MOA, the Army would not access State-owned land not retained for wildfire protection and firefighting activities unless requested by the Hawai‘i County Fire Department. No impacts on wildland fire management in the land not retained would occur due to transfer of wildfire protection and firefighting activities from the Army to state and county agencies.

~~**Potential**~~ **Mitigation Measures:** Beyond the existing management measures discussed in **Section 3.16.4.1**, the Army proposes the mitigation measures outlined in **Table 3-37** ~~would consider the following mitigation measures~~ to further reduce potential adverse impacts on human health and safety: ~~(1) negotiation of an agreement with the State to allow the Army to monitor the State-owned land not retained for wildfires, and (2) continue or renegotiate its MOA with the Hawai‘i County Fire Department to assist wildfire responders with wildfire suppression outside of the PTA AOR. If the Army were to select these mitigation measures, the Army would identify them in the ROD and endeavor to complete the wildfire monitoring access agreement and wildfire response MOA prior to the end of the current lease so that they are in place when the lease expires. The Army would consider developing a mitigation plan with monitoring requirements for any mitigation measures it selects to implement to ensure their use and effectiveness.~~

Table 3-37: Mitigation Measures to Reduce Adverse Impacts to Human Health and Safety	
Mitigation Measure	**Timing**
The Army will negotiate an agreement with the State to monitor wildfires on land not retained and an agreement document will be developed with the State. The agreement will be implemented once all parties sign the agreement document or when the land retention estate document (e.g., lease or deed) is executed, whichever is later.	Negotiations to begin no later than October 2028.
In addition to the current thermal technology at PTA, the Army will add advanced technology which will include additional thermal technology equipment. The additional thermal technology equipment would enable firefighting personnel to locate and eliminate hot spots where a fire persists. The Army will install approximately six to eight infrared cameras that provide adequate coverage across the training area for wildfire heat signature monitoring—three cameras in the Keamuku Maneuver Area, three cameras in the Pōhakuloa Training Area, and one or two additional mobile cameras.	Contracting and installation to begin no later than October 2028.

The Army will monitor the mitigation measures to ensure their implementation and effectiveness and 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 less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.16.5**.

3.16.6.2 Alternative 2: Modified Retention

Land Retained

Lease Impacts: Under Alternative 2, the Army would continue to conduct training and continue to permit and coordinate emergency services training for non-DoD agencies at PTA. State and county agencies would be able to continue to use PTA for emergency services training, which would help to ensure human health and safety is maintained within local communities. Established safety features such as ESQD arcs, SDZs, CZs, and APZs; procedures related to explosives and range safety; and practices for storage, handling, and cleanup of ammunition on State-owned land retained would not change. A continuation of ongoing activities would not change the potential for wildfire on the State-owned land retained from existing conditions. PTA would continue using dip tanks and firebreaks/fuel breaks in the State-owned land retained. The IWFMP for reducing and responding to wildfires would continue to be executed under applicable federal, state, and DoD regulations. PTA also would continue to provide firefighting, police, and medical services to, and within areas proximal to, the installation. Therefore, Alternative 2 would result in no new impacts on human health and safety; however, continued long-term, minor, adverse impacts would remain from ongoing aircraft and military munitions use, and continued long-term, minor, beneficial impacts would remain from providing firefighting, police, and medical services beyond the

installation and permitting non-DoD emergency services agencies to train within the State-owned land retained.

Fee Simple Title Impacts: Impacts under a fee simple title method of land retention would be the same as a lease retention method under Alternative 2 because no new impacts on human health and safety and no changes in training or implementation of health and safety practices would occur from retention of the State-owned land at PTA. Under fee simple, the Army would continue to follow all federal and DoD regulations pertaining to health and safety and wildfire management, and would adhere to state regulations to the extent feasible.

Land Not Retained

The land not retained is rarely used for training, is not used for live-fire military munitions, and has a low risk of wildfire spread from military training on the land retained because Old Saddle Road and DKI Highway act as firebreaks between the land not retained and PTA live-fire training areas. In addition, Old Saddle Road and DKI Highway prevent potential wildfires within the land not retained from reaching the southern portion of PTA. The Army would lose three FPs within TA 16 in the land not retained, but because these FPs are north of DKI Highway, they are not used for live-fire and do not have SDZs; therefore, there would be no impact on human health and safety or wildfire risk.

The Army would continue to operate the hazardous cargo pad and runway at BAAF (located on U.S. Government-owned land), which would result in the 1,250-foot ESQD arc associated with the hazardous cargo pad and APZs I and II east of the runway extending into the State-owned land not retained in TA 10. The areas underlying the ESQD arc and APZs are unimproved and would not likely be accessed by the public. The PTA Garrison Commander would continue to restrict aircraft takeoffs and landings to the east of the runway to reduce the potential for aircraft mishap. Because the likelihood of aircraft mishap to the east of the runway is low and the area is not likely to be accessed by the public, the potential for harm to the public would be low. Therefore, new long-term, negligible, adverse impacts on human health and safety within the State-owned land not retained would occur.

As discussed in **Chapter 2**, the State would add the State-owned land not retained north of DKI Highway (except for the DHHL-administered land) to the Mauna Kea Forest Reserve and Kaʻohe Game Management Area, which would increase access on land managed for public hunting. Therefore, there could be new long-term, negligible, beneficial impacts on human health and safety from the potential decrease of feral ungulates along DKI Highway.

The Army would no longer monitor wildfire risk, assess daily fire danger, or reduce natural fuels (such as dry grasses) in the State-owned land not retained. The Army would no longer have access to the State-owned land not retained for wildfire protection and firefighting activities. To address wildfire risk, state and county agencies would become the first responders for wildfire occurrences in the land not retained, and it is assumed they would maintain similar practices as the Army to prevent and respond to potential wildfires including natural fuels management (e.g., fountain grass). The Army would continue or renegotiate its MOA with the Hawaiʻi County Fire Department to provide firefighting resources including fire response vehicles, firefighting equipment, helicopter support, and emergency services personnel. Per the MOA, the Army would not access State-owned land not retained for wildfire protection and firefighting activities unless requested by the Hawaiʻi County Fire Department. No impacts on wildland

fire management in the land not retained would occur due to transfer of wildfire protection and firefighting activities from the Army to state and county agencies.

~~Potential~~ **Mitigation Measures:** Alternative 2 existing management measures and ~~potential~~ mitigation measures are the same as those identified for Alternative 1.

Level of Significance: Alternative 2 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.16.5**.

3.16.6.3 Alternative 3: Minimum Retention and Access

Land Retained

Lease Impacts: Under Alternative 3, established safety features such as ESQD arcs, SDZs, CZs, and APZs; procedures related to explosives and range safety; practices for storage, handling, and cleanup of ammunition; and the IWFMP for reducing and responding to wildfires would remain in place within the State-owned land retained and would continue to be executed under applicable federal, state, and DoD regulations. SDZs within TAs 7, 8, 9, 12, 13, 14, 15, and 18 on State-owned land retained would remain in place, and PTA would continue to implement SDZ safety procedures in accordance with applicable regulations. A continuation of ongoing activities would not change the potential for wildfire on the State-owned land retained from existing conditions. The Army would retain and continue to use the firebreaks/fuel breaks along most of the 11 miles of select roads and training trails proposed for retention within the State-owned land not retained. The Army also would continue to use the dip tanks within the State-owned land retained and continue to implement the PTA IWFMP on the State-owned land retained. Additionally, PTA would continue to provide firefighting, police, and medical services, as needed, within the State-owned land retained and areas proximal to PTA. Therefore, Alternative 3 would result in no new impacts on human health and safety within the State-owned land retained; however, continued long-term, minor, adverse impacts would remain from ongoing aircraft and military munitions use, and continued long-term, minor, beneficial impacts would remain from providing firefighting, police, and medical services beyond the installation and permitting non-DoD emergency services agencies to train within the State-owned land retained.

Fee Simple Title Impacts: Impacts under a fee simple title method of land retention would be the same as a lease retention method for Alternative 3 because no changes in established safety features or implementation of health and safety practices on the land retained would occur, and no new impacts on human health and safety would result. Under fee simple, the Army would continue to follow all federal and DoD regulations pertaining to health and safety and wildfire management, and would adhere to state regulations to the extent feasible.

Land Not Retained

The State-owned land not retained under Alternative 2 also would not be retained under Alternative 3. Therefore, impacts for those areas would be the same as discussed for Alternative 2. Impacts for additional State-owned land not retained under Alternative 3 are discussed below.

The Army would no longer have access to roads and training trails, TAs, and training facilities in the land not retained, except for the approximately 11 miles of roads and training trails proposed for retention within the western portion of the State-owned land. One AHA and associated ESQD arc on State-owned

land not retained would be removed, and military munitions would no longer be temporarily stored at the AHA during training exercises, which would reduce hazards associated with military munitions storage and handling and result in new long-term, minor, beneficial impacts on health and safety.

The Army would lose approximately 29 FPs within the land not retained, but because these FPs are not used for live-fire they do not have SDZs; therefore, there would be no impact on health and safety or wildfire risk.

The Army would retain a use agreement to enable the firing of indirect-fire weapons from three FPs in the Keʻāmuku parcel over the State-owned land not retained and into the impact area. Any use agreement associated with firing over State-owned land not retained from these FPs would consider appropriate safety requirements. The SDZs associated with these FPs that would extend into State-owned land not retained would continue to exist; however, areas underlying the SDZs are unimproved and would not likely be accessed by the public, which limits the potential risks. Therefore, new long-term, negligible, adverse impacts on human health and safety would occur. The Army would retain approximately 11 miles of trails and firebreaks in the western portion of the State-owned land that underlie the SDZs associated with the three FPs in the Keʻāmuku parcel. Retaining these trails and firebreaks would allow the Army to continue to manage wildfire risk and respond to wildfires that may occur from ongoing live-fire training activities. To further reduce adverse impacts associated with retention of the SDZs over the State-owned land for the three FPs, the Army could negotiate an agreement with the State to allow the Army to monitor the State-owned land not retained for wildfires and assist wildfire responders with wildfire suppression.

Similarly to Alternative 2, there could be new long-term, negligible, beneficial impacts on human health and safety from the potential decrease of feral ungulates along DKI Highway when the State adds the State-owned land not retained north of DKI Highway (except for the DHHL-administered land) to the Mauna Kea Forest Reserve and Kaʻohe Game Management Area, increasing access on land managed for public hunting.

The Army would no longer monitor wildfire risk, assess daily fire danger, or reduce natural fuels (such as dry grasses) in the State-owned land not retained. The Army would no longer have access to the State-owned land not retained for firefighting activities. To address wildfire risk, state and county agencies would become the first responders for wildfire occurrences in the State-owned land not retained and are assumed to maintain similar practices as the Army to prevent and respond to potential wildfires including natural fuels management (e.g., fountain grass). The Army would continue or renegotiate its MOA with the Hawaiʻi County Fire Department to provide firefighting resources including fire response vehicles, firefighting equipment, helicopter support, and emergency services personnel. Per the MOA, the Army would not access State-owned land not retained for wildfire protection and firefighting activities unless requested by the Hawaiʻi County Fire Department. No impacts on wildland fire management in the land not retained would occur due to transfer of wildfire protection and firefighting activities from the Army to state and county agencies.

Because military training activities would be eliminated on State-owned land not retained, a reduction of wildfire hazards associated with military activity-caused fires within those areas would occur, which would result in a new long-term, minor, beneficial impact on wildfire risk.

The Army would continue to allow state and county agencies to use PTA for emergency services training, where possible; however, loss of facilities on, and lack of access to, the State-owned land not retained

would likely reduce training for all users of PTA. Any reduction in training capabilities or loss of facilities at PTA would nonetheless reduce emergency services readiness, which would result in new long-term, minor, indirect, adverse impacts on human health and safety within local communities.

~~Potential~~ **Mitigation Measures:** Alternative 3 existing management measures and ~~potential~~ mitigation measures are the same as those identified for Alternative 1.

Level of Significance: Alternative 3 would result in less than significant impacts for lease, fee simple title, and land not retained based on the significance criteria in **Section 3.16.5**.

3.16.6.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at PTA following expiration of the lease. The ASP, two AHAs, and two FARPs within State-owned land would be removed and their associated ESQD arcs would be inactivated. The Army would no longer have the ability to fire indirect-fire weapons from FPs within the State-owned land and the Keʻāmuku parcel into the impact area; therefore, SDZs associated with these live-fire FPs would be inactivated. Military munitions would no longer be stored or managed at the ASP, AHAs, or FARPs on State-owned land. Removal of these features would eliminate hazards associated with military munitions storage and handling as well as FARP-associated helicopter and tilt-rotor aircraft operations in the State-owned land, which would result in new long-term, minor, beneficial impacts on human health and safety.

Due to the loss of the ASP, all military munitions that are transported to PTA would need to be returned to Oʻahu following training exercises. Helicopters, barges, and ground transportation vehicles responsible for returning military munitions to Oʻahu would follow safe handling and transportation procedures to maintain safety and reduce the potential for accidental detonation. Therefore, new long-term, negligible, adverse impacts on public safety associated with military munitions handling and transportation hazards would occur due to increased handling and transportation of military munitions.

The AHAs on U.S. Government-owned land would continue to be used. The Army would no longer control some areas (i.e., State-owned land) underlying the ESQD arcs associated with two AHAs on U.S. Government-owned land and some areas (i.e., State-owned land) underlying CZs and APZs associated with BAAF, which would result in new long-term, minor, adverse impacts on public safety from potential exposure to safety hazards. Areas underlying ESQD arcs, CZs, and APZs that extend into State-owned land are unimproved, and it is unlikely public activity in the area would increase substantially as a result of the No Action Alternative.

The Army would no longer have access to firebreaks/fuel breaks and dip tanks on State-owned land or conduct wildland fire management procedures on the State-owned land. The State-owned land would no longer be monitored by PTA for wildfire risks, assessed for daily fire danger, or maintained to reduce potential natural fuels, such as dry grasses. To address wildfire risk, state and county agencies would become responsible for monitoring and responding to wildfire occurrences on the State-owned land and it is assumed they would maintain similar practices as the Army to prevent and respond to wildfires including natural fuels management (e.g., fountain grass). In addition, the Army would continue or renegotiate its MOA with the Hawaiʻi County Fire Department to provide firefighting resources and support within the State-owned land upon request. No impacts on wildland fire management in the State-

owned land would occur due to transfer of wildfire protection and firefighting activities from the Army to state and county agencies.

The Army would no longer have land access to the impact area and training ranges to the south of the State-owned land; therefore, it is likely all live-fire training exercises at PTA would cease. Hence, wildfire hazards associated with live-fire training at PTA would be greatly reduced, resulting in new long-term, minor, beneficial impacts on wildland fire risk.

Because the Army would not retain any of the State-owned land, the Army would no longer have access to roads and training trails on State-owned land that could be used to respond to emergencies. U.S. Government-owned utilities and infrastructure within State-owned land, including the U.S. Government-owned ~~potable water facility and~~ electrical substation at the Cantonment, would impact emergency services communication and restrict PTA wildfire protection and firefighting capabilities. Loss of utilities and infrastructure also would reduce the ability for PTA to permit and coordinate training and other activities for state and county emergency service agencies and restrict PTA from providing community services that extend beyond the PTA boundary such as local police and medical support. Loss of the State-owned land would adversely affect the readiness of state and county emergency service agencies that train at PTA. The Army also would lose access roads and training trails used for implementing and maintaining the IWFMP and assisting the state during wildfires and prescribed burns. Therefore, new long-term, moderate, adverse impacts on human health and safety within local communities would occur.

There could be new long-term, negligible, beneficial impacts on human health and safety from the potential decrease of feral ungulates along DKI Highway when the State adds the State-owned land not retained north of DKI Highway (except for the DHHL-administered land) to the Mauna Kea Forest Reserve and Ka‘ohe Game Management Area, increasing access on land managed for public hunting.

~~**Potential**~~ **Mitigation Measures:** The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended. No mitigation measures are recommended for the lease compliance actions and cleanup and restoration activities beyond the existing management measures discussed in **Section 3.16.4.1**.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.16.5**.

3.17 Summary of Potential Environmental Impacts and Mitigation Measures

This section summarizes the potential impacts and mitigation measures for the action alternatives 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 conclusions. If compliance with applicable regulations and implementation of existing BMPs and SOPs are insufficient to lessen the intensity of an impact, when possible, project-specific mitigation measures are recommended to actively avoid or minimize new adverse impacts.

Section 3.17.1 summarizes the potential environmental impacts from the resource analyses for each action alternative and the No Action Alternative as shown in **Table 3-38**. As described in **Section 3.1**, each resource topic identifies an overall level of significance for lease, fee simple title, and land not retained. Impacts from ~~land retention are identified as "new" impacts, while impacts from~~ ongoing training are identified as "continued" impacts, whereas impacts from other actions such as retaining the land, not retaining the land, and lease compliance actions and cleanup and restoration activities are identified as "new" impacts.

Section 3.17.2 provides a summary of ~~potential~~ mitigation measures for the action alternatives in **Table 3-39**. The Army has proposed ~~potential~~ mitigation measures to reduce the severity of adverse impacts from the Proposed Action ~~and connected actions~~ and will include the ~~identify selected~~ mitigation measures and mitigation monitoring plans in the ROD.

3.17.1 Summary of Potential Environmental Impacts

Table 3-38: Potential Environmental Impacts	
Land Use	
Alternative 1	**Land Retained** ***Lease Impacts*:** • No new impacts on vistas. • New, long-term, negligible, adverse impacts on encroachment management. • New, long-term, significant, adverse impacts on land tenure, that could be reduced to less than significant (conservation district rules). • New, long-term, moderate, beneficial impacts on land tenure (new lease negotiated at no less than an equitable, fair market value). • Continued, long-term, negligible, adverse impacts on land tenure (military use of public trust land). • Continued, long-term, significant, adverse impacts on land tenure (incompatibility with the objectives and policies of the State). • Continued, long-term, moderate, adverse impacts on recreation. ***Fee Simple Title Impacts*:** • No new impacts on vistas. • New, long-term, negligible, adverse impacts on encroachment management. • New, long-term, significant, adverse impacts on land tenure (transfer of land control and ownership). • New, minor, beneficial impact on land tenure (sale of land at no less than an equitable, fair market ~~rate~~value). • New, long-term, significant, adverse impacts on land tenure (elimination of potential future revenue generated for the public trust and the opportunity for future use for the explicit purposes of the Admission Act 5(f) and HRS 171-18). • Continued, long-term, moderate, adverse impacts on recreation. **Land Not Retained** No new impacts on vistas or encroachment management; new, long-term, significant, beneficial impacts on land tenure (resumption of State control of State-owned land); new long-term, negligible, beneficial impacts on land tenure (conservation district rules) and on recreation; new short-term, negligible, adverse impacts on recreation.
	Level of Significance: Significant, adverse impacts and significant, adverse impacts that could be reduced to less than significant for lease; significant, adverse impacts for fee simple title; and significant, beneficial impacts for land not retained.

Table 3-38: Potential Environmental Impacts	
Alternative 2	**Land Retained** ***Lease Impacts*:** Impacts are anticipated to be the same as Alternative 1. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as Alternative 1. **Land Not Retained** No new impacts on vistas or encroachment management; new, long-term, significant, beneficial impacts on land tenure (resumption of State control of State-owned land); new long-term, negligible, beneficial impacts on land tenure (conservation district rules); new, long-term, negligible, beneficial impacts on recreation; new, short-term, negligible, adverse impacts on recreation.
	Level of Significance: Significant, adverse impacts and significant, adverse impacts that could be reduced to less than significant for lease; significant, adverse impacts for fee simple title; and significant, beneficial impacts for land not retained.
Alternative 3	**Land Retained** ***Lease Impacts*:** • No new impacts on vistas. • New, long-term, minor, adverse impacts on encroachment management. • New, long-term, significant, adverse impacts on lend tenure, that could be reduced to less than significant (conservation district rules). • New, long-term, moderate, beneficial impacts on land tenure (new lease negotiated at no less than an equitable, fair market value). • Continued, long-term, negligible, adverse impacts on land tenure (military use of public trust lands). • Continued long-term, significant, adverse impacts on land tenure (incompatibility with the objectives and policies of the State). • Continued, long-term, minor, adverse impacts on recreation. ***Fee Simple Title Impacts*:** • No new impacts on vistas. • New, long-term, minor, adverse impacts on encroachment management. • New, long-term, significant, adverse impacts on land tenure (transfer of land control and ownership). • New, long-term, minor, beneficial impacts on land tenure (sale of land at no less than an equitable, fair market ~~rate~~value). • New, long-term, significant, adverse impacts on land tenure (elimination of potential future revenue generated for the public trust and the opportunity for future use for the explicit purposes of the Admission Act 5(f) and HRS 171-18). • Continued, long-term, minor, adverse impacts on recreation. **Land Not Retained** No new impacts on encroachment management; new, long-term, significant, beneficial impacts on land tenure (resumption of State control

Table 3-38: Potential Environmental Impacts	
	of State-owned land); new, long-term, moderate, beneficial impacts on land tenure (conservation district rules); new, long-term, minor, beneficial impacts on recreation; new, long-term, minor, beneficial impacts on vistas; new, short-term, minor, adverse, impacts on recreation.
	Level of Significance: Significant, adverse impacts and significant, adverse impacts that could be reduced to less than significant for lease; significant, adverse impacts for fee simple title; and significant, beneficial impacts for land not retained.
No Action Alternative	New long-term, moderate, beneficial impacts on land tenure (conservation district use rules); new, long-term, significant, beneficial impacts on land tenure (resumption of State control of State-owned land); new, long-term, minor, beneficial impacts on recreation; new, long-term, minor, beneficial impacts on vistas; new, short-term, moderate, adverse impacts on recreation; new, long-term, moderate, adverse impacts on encroachment management.
	Level of Significance: Significant, beneficial impacts.
Biological Resources	
Alternative 1	**Land Retained** ***Lease Impacts*:** Continued long-term, moderate, beneficial impacts from uninterrupted Army conservation activities; continued long-term, moderate, adverse impacts from ongoing activities; continued long-term, negligible, adverse impacts on protected invertebrates from ongoing activities; continued long-term, significant, adverse impacts ~~, that could be reduced to less than significant,~~ from potential training-related wildland fires due to ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land; continued long-term, minor, adverse impacts from noise associated with ongoing activities; and continued long-term, negligible, adverse impacts from potential conflicts with species using PTA airspace. ***Fee Simple Title Impacts*:** Fee simple title impacts would be the same as lease impacts. **Land Not Retained** New long-term, negligible, adverse impacts from increased public access; new long-term, negligible, beneficial impacts from ceased training and maintenance and repair activities and associated noise; new long-term, negligible, beneficial impacts from lease compliance actions; new short-term, negligible, adverse impacts from lease compliance actions and cleanup and restoration activities; and continued long-term, significant, adverse impacts~~, that could be reduced to less than significant,~~ from potential training-related wildland fires due to ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land.
	Level of Significance: Significant, adverse impacts ~~that could be reduced to less than significant~~ for lease, fee simple title, and land not retained.
Alternative 2	**Land Retained** ***Lease Impacts*:** Impacts are anticipated to be the same as Alternative 1 lease. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as Alternative 1 fee simple title. **Land Not Retained**

Table 3-38: Potential Environmental Impacts	
	New, long-term, negligible, adverse impacts from increased hunting and public access; new, long-term, negligible, beneficial impacts from ceased training and maintenance and repair activities and associated noise; new, long-term, minor, beneficial impacts from lease compliance actions; new, short-term, minor, adverse impacts from lease compliance actions and cleanup and restoration activities; and continued, long-term, significant, adverse impacts~~, that could be reduced to less than significant,~~ from potential training-related wildland fires due to ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land.
	Level of Significance: Significant, adverse impacts ~~that could be reduced to less than significant~~ for lease, fee simple title, and land not retained.
Alternative 3	**Land Retained** ***Lease Impacts*:** Continued long-term, minor to moderate, beneficial impacts from uninterrupted Army conservation activities; continued long-term, minor to moderate, adverse impacts on vegetation and protected and native species from ongoing activities; continued long-term, negligible, adverse impacts on protected invertebrates from ongoing activities; continued long-term, significant, adverse impacts~~, that could be reduced to less than significant,~~ from potential training-related wildland fires due to ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land; continued long-term, negligible to minor, adverse impacts from noise associated with ongoing activities; and continued long-term, negligible, adverse impacts from potential airspace conflicts with species using PTA airspace. ***Fee Simple Title Impacts*:** Fee simple title impacts would be the same as lease impacts. **Land Not Retained** New long-term, minor to moderate, adverse impacts from increased hunting and public access; new long-term, minor to moderate, beneficial impacts from ceased training and maintenance and repair activities and associated noise; new long-term, minor to moderate, beneficial impacts and new short-term, minor to moderate, adverse impacts from lease compliance actions and cleanup and restoration activities; and continued long-term, significant, adverse impacts~~, that could be reduced to less than significant,~~ from potential training-related wildland fires due to ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land.
	Level of Significance: Significant, adverse impacts ~~that could be reduced to less than significant~~ for lease, fee simple title, and land not retained.
No Action Alternative	New long-term, moderate, adverse impacts from increased hunting and public access; new long-term, moderate, beneficial impacts from ending ongoing activities, associated noise, and potential wildland fire risks; new long-term, moderate, beneficial impacts and new short-term, moderate, adverse impacts from lease compliance actions and cleanup and restoration activities; continued, long-term, less than significant, adverse impacts from potential training-related wildland fires; and new long-term, significant, adverse impacts on protected species on U.S. Government-owned land that could no longer be accessed.
	Level of Significance: Significant, adverse impacts.
Historic and Cultural Resources and Cultural Practices	

Table 3-38: Potential Environmental Impacts	
Alternative 1	**Historic and Cultural Resources** **Land Retained** ***Lease Impacts*:** No new impacts from ongoing activities; c~~C~~ontinued long-term, moderate, beneficial impacts from the continuation of CRM programs and actions that preserve and protect historic and cultural resources; continued long-term, moderate, adverse impacts from ongoing activities. ***Fee Simple Title Impacts:*** The same as lease impacts. **Land Not Retained** New long-term, negligible, adverse impacts from increased public access; new short-term, negligible, adverse impacts from lease compliance actions and cleanup and restoration activities; new long-term, negligible, beneficial impacts from discontinuation of military activities and associated impacts. **Cultural Practices** **Land Retained** ***Lease Impacts*:** No new impacts from ongoing activities; continued, long-term, significant, adverse impacts from current access limitations from continued DoD control of the land; and continued long-term, significant, adverse impacts due to potential training-related wildland fires impacting biological resources that are important to the cultural practices of Native Hawaiians. ***Fee Simple Title Impacts*:** The same as lease impacts. **Land Not Retained** New short-term, negligible, adverse impacts from ~~additional~~ limitations on cultural access due to public safety concerns during lease compliance actions and cleanup and restoration activities; new long-term, minor, beneficial impacts from the removal of limitations on cultural access.
	Historic and Cultural Resources Level of Significance: Less than significant for lease, fee simple title, and land not retained. **Cultural Practices Level of Significance:** Significant, adverse impacts for lease and fee simple title, and less than significant for land not retained.
Alternative 2	**Historic and Cultural Resources** **Land Retained** ***Lease Impacts*:** Impacts are anticipated to be the same as Alternative 1 lease. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as Alternative 1 fee simple title. **Land Not Retained** New long-term, negligible, adverse impacts from increased public access; new short-term, minor, adverse impacts from lease compliance actions and cleanup and restoration activities; new long-term, minor, beneficial impacts from discontinuation of military activities and

Table 3-38: Potential Environmental Impacts	
	associated impacts. **Cultural Practices** **Land Retained** ***Lease Impacts*:** Impacts are anticipated to be the same as Alternative 1 lease. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as Alternative 1 fee simple title. **Land Not Retained** New, short-term, negligible, adverse impacts from ~~short-term~~ limitations on cultural access due to public safety concerns during lease compliance actions and cleanup and restoration activities; new, long-term, minor, beneficial impacts from the removal of limitations on cultural access.
	Historic and Cultural Resources Level of Significance: Less than significant for lease, fee simple title, and land not retained. **Cultural Practices Level of Significance:** Significant, adverse impacts for lease and fee simple title, and less than significant for land not retained.
Alternative 3	**Historic and Cultural Resources** **Land Retained** ***Lease Impacts*:** Impacts are anticipated to be the same as Alternative 1 lease. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as Alternative 1 fee simple title. **Land Not Retained** New, long-term, moderate, beneficial impacts from the discontinuation of military activities and associated impacts; new, long-term, minor, adverse impacts from increased public access; and new, short-term, minor, adverse impacts from lease compliance actions and cleanup and restoration activities. **Cultural Practices** **Land Retained** ***Lease Impacts*:** Impacts are anticipated to be the same as Alternative 1 lease. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as Alternative 1 fee simple title. **Land Not Retained** New long-term, moderate, beneficial impacts from the removal of limitations on cultural access; and new short-term, minor, adverse impacts ~~due to~~from limitations on cultural access due to public safety concerns during lease compliance actions and cleanup and restoration activities.
	Historic and Cultural Resources Level of Significance: Less than significant for lease, fee simple title, and land not retained. **Cultural Practices Level of Significance:** Significant, adverse impacts for lease and fee simple title, and less than significant for land not retained.

Table 3-38: Potential Environmental Impacts	
No Action Alternative	**Historic and Cultural Resources** New, long-term, moderate, beneficial impacts from the discontinuation of military activities and associated impacts; new long-term, minor to moderate, adverse impacts from increased public access; new, short-term, minor to moderate, adverse impacts from lease compliance actions and cleanup and restoration activities; new, short-term, moderate, adverse impacts during the transition period from Army to State management. **Cultural Practices** New, short-term, moderate, adverse impacts due to ~~short-term~~ limitations on cultural access during lease compliance actions and cleanup and restoration activities; new long-term, significant, beneficial impacts from the removal of Army limitations on cultural access.
	Historic and Cultural Resources Level of Significance: Less than significant. **Cultural Practices Level of Significance:** Significant, beneficial impacts.
Hazardous Substances and Hazardous Wastes	
Alternative 1	**Land Retained** ***Lease Impacts*:** No new impacts associated with hazardous substances and hazardous wastes; continued long-term, minor, adverse impacts due to continuation of ongoing activities; no new impacts associated with military munitions or MEC; continued, long-term, minor, adverse impacts associated with transportation, storage, and use of~~, and training with,~~ military munitions and generation of MEC; and no impacts associated with radioactive materials. ***Fee Simple Title Impacts*:** Fee simple title impacts would be the same as lease impacts. **Land Not Retained** New long-term, negligible, beneficial impacts from ending the use, generation, handling, ~~and~~ disposal, and transportation of hazardous substances and hazardous wastes associated with ongoing activities within the State-owned land not retained; new short-term, ~~negligible~~minor to moderate, adverse impacts and new long-term, ~~negligible~~minor to moderate, beneficial impacts from military munitions and MEC from lease compliance actions and cleanup and restoration activities within the State-owned land not retained at expiration of the current lease; and no impacts associated with radioactive materials.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 2	**Land Retained** ***Lease Impacts*:** Impacts are anticipated to be the same as Alternative 1 lease. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as Alternative 1 fee simple title. **Land Not Retained** Impacts are anticipated to be the same as Alternative 1.

Table 3-38: Potential Environmental Impacts	
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 3	**Land Retained** ***Lease Impacts*:** Continued long-term, negligible to minor, adverse impacts due to continuation of ongoing activities; continued, long-term, negligible to minor, adverse impacts associated with military munitions and MEC; and no impacts associated with radioactive materials. ***Fee Simple Title Impacts*:** Fee simple title impacts would be the same as lease impacts. **Land Not Retained** New long-term, negligible to minor, beneficial impacts from ending the transportation, use, generation, handling, and disposal of hazardous substances and hazardous wastes, military munitions, and MEC associated with ongoing activities within the State-owned land not retained; new short-term, minor, adverse impacts and new long-term, minor, beneficial impacts from hazardous substances and hazardous wastes; and new short-term, minor to moderate, adverse impacts and new long-term, minor to moderate, beneficial impacts from military munitions and MEC due to lease compliance actions and cleanup and restoration activities within the State-owned land not retained at expiration of the current lease.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
No Action Alternative	New long-term, moderate, beneficial impacts from ending transportation, use, generation, handling, and disposal of hazardous substances and hazardous wastes associated with ongoing activities; new short-term, moderate, adverse impacts and new long-term, moderate, beneficial impacts from hazardous substances and hazardous wastes; new, long-term, moderate, beneficial impacts from ending transportation, storage, and use of military munitions and generation of MEC; new short-term, minor to moderate, adverse impacts and new long-term, minor to moderate, beneficial impacts from lease compliance actions and cleanup and restoration activities after expiration of the current lease; and new short-term, minor, adverse impacts and new long-term, minor, beneficial impacts from decommissioning the portion of the former Davy Crockett Weapon System Range on the State-owned land after expiration of the current lease, which would involve additional DU investigation and cleanup protocols.
	Level of Significance: Less than significant.
Air Quality and Greenhouse Gases	
Alternative 1	**Land Retained** ***Lease Impacts*:** Continued long-term, minor, direct and indirect, adverse impacts on air quality and from GHG emissions from continuation of ongoing activities. ***Fee Simple Title Impacts*:** Fee simple title impacts would be the same as lease impacts. **Land Not Retained** New long-term, negligible, beneficial impacts on air quality and from GHG emissions from the end of ongoing activities; new short-term, negligible, adverse impacts on air quality and from GHG emissions from completion of lease compliance actions and cleanup and restoration

Table 3-38: Potential Environmental Impacts	
	activities after expiration of the current lease.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 2	**Land Retained** ***Lease Impacts*:** Impacts are anticipated to be the same as Alternative 1 lease. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as Alternative 1 fee simple title. **Land Not Retained** Impacts are anticipated to be the same as Alternative 1 land not retained.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 3	**Land Retained** ***Lease Impacts*:** Continued long-term, negligible to minor, direct and indirect, adverse impacts on air quality and from GHG emissions from continuation of ongoing activities. ***Fee Simple Title Impacts*:** Fee simple title impacts would be the same as lease impacts. **Land Not Retained** New long-term, negligible, beneficial impacts on air quality and from GHG emissions from the elimination of ongoing activities; new short-term, negligible to minor, adverse impacts on air quality and from GHG emissions from completion of lease compliance actions and cleanup and restoration activities after expiration of the current lease.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
No Action Alternative	New short-term, minor, ~~direct and indirect,~~ adverse impacts on air quality and new short-term, negligible, adverse impacts from GHG emissions from completion of lease compliance actions and cleanup and restoration activities; new long-term, minor, direct and indirect, beneficial impacts on air quality and from GHG emissions from the elimination of training and other activities on the State-owned land (not retained) and impact area and training ranges (access lost) as well as the potential reduction in activities at the Cantonment and BAAF.
	Level of Significance: Less than significant.
Noise	
Alternative 1	**Land Retained** ***Lease Impact*:** Continued long-term, minor, adverse impacts associated with noise from continuation of ongoing activities on the State-owned land retained. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as lease impacts.

Table 3-38: Potential Environmental Impacts	
	Land Not Retained New long-term, negligible, beneficial impacts from elimination of ongoing activities; and new short-term, negligible, adverse impacts associated with ~~completion of lease compliance actions and cleanup and restoration activities for hazardous substances and hazardous wastes~~ site restoration.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 2	**Land Retained** ***Lease Impacts*:** Impacts are anticipated to be the same as Alternative 1 lease. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as Alternative 1 fee simple title. **Land Not Retained** Impacts are anticipated to be the same as Alternative 1 land not retained.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 3	**Land Retained** ***Lease Impacts*:** Continued long-term, minor, adverse impacts due to ongoing activities. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as lease impacts. **Land Not Retained** New long-term, negligible to minor ~~to moderate~~, beneficial impacts ~~from impacts associated with noise~~ from eliminating ongoing activities; new long-term, negligible, adverse impacts due to reduced noise buffer between land retained and public use areas (land not retained); and new short-term, negligible, adverse impacts from ~~completion of lease compliance actions and cleanup and restoration activities~~site restoration in the State-owned land not retained.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
No Action Alternative	New long-term, minor to moderate, beneficial impacts associated with the end of ongoing activities within the State-owned land and reduced activities on portions of U.S. Government-owned land; continued long-term, negligible, adverse impacts on State-owned land from continuation of Army activities on U.S. Government-owned land that would extend onto the State-owned land; continued short-term, negligible, adverse impacts associated with noise generated from the operation of FARPs located on U.S. Government-owned land adjacent to State-owned land not retained; and new short-term, negligible, adverse impacts from ~~completion of lease compliance actions and cleanup and restoration activities at the end of the current lease~~ site restoration.
	Level of Significance: Less than significant.
Geology, Topography, and Soils	
Alternative 1	**Land Retained**

Table 3-38: Potential Environmental Impacts	
	***Lease Impacts*:** Continued long-term, minor, adverse impacts from the continuation of ongoing activities. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as lease impacts. **Land Not Retained** New long-term, negligible, beneficial impacts from ceasing ongoing activities; new short-term, negligible to minor, adverse impacts and new long-term, negligible, beneficial impacts from lease compliance actions and cleanup and restoration activities.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 2	**Land Retained** ***Lease Impacts*:** Impacts are anticipated to be the same as Alternative 1 lease. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as Alternative 1 fee simple title. **Land Not Retained** New long-term, negligible, beneficial impacts from ceasing ongoing activities within the State-owned land not retained at the end of the current lease; and new short-term, negligible to minor, adverse impacts and new long-term, negligible, beneficial impacts would result from lease compliance actions and cleanup and restoration activities.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 3	**Land Retained** ***Lease Impacts*:** Continued long-term, negligible to minor, adverse impacts from the continuation of ongoing activities. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as lease impacts. **Land Not Retained** New long-term, negligible to minor, beneficial impacts from ceasing ongoing activities within the State-owned land not retained at the end of the current lease; new short-term ~~long-term~~, negligible to minor, adverse impacts and new long-term ~~short-term~~, negligible to minor, beneficial impacts from lease compliance actions and cleanup and restoration activities.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
No Action Alternative	New long-term, moderate, beneficial impacts from ceased ongoing activities; new short-term, minor, adverse impacts and new long-term, minor, beneficial impacts from lease compliance actions and cleanup and restoration activities. ~~New long-term, negligible to minor, beneficial impacts from ceased of ongoing activities; new short-term, negligible to minor, adverse and new long-term, negligible to minor, beneficial impacts from lease compliance actions and cleanup and restoration activities.~~
	Level of Significance: Less than significant.
Water Resources	

Table 3-38: Potential Environmental Impacts	
Alternative 1	**Land Retained** ***Lease Impacts*:** Continued, ~~short~~long-term, minor, adverse impacts from ongoing activities. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as lease impacts. **Land Not Retained** New long-term, negligible, beneficial impacts from ceasing ongoing activities in the State-owned land not retained; new short-term, negligible, adverse impacts and new long-term, negligible, beneficial impacts from lease compliance actions and cleanup and restoration activities.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 2	**Land Retained** ***Lease Impacts*:** Continued long-term, negligible to minor, adverse impacts from ongoing activities. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as lease impacts. **Land Not Retained** New long-term, negligible, beneficial impacts from ceasing ongoing activities in the State-owned land not retained; new short-term, negligible, adverse and new long-term, negligible, beneficial impacts from lease compliance actions and cleanup and restoration activities.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 3	**Land Retained** ***Lease Impacts*:** Continued long-term, negligible, adverse impacts from continued ongoing activities. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as lease impacts. **Land Not Retained** New long-term, negligible to minor, beneficial impacts from ceasing ongoing activities; new short-term, negligible to minor, adverse and new long-term, negligible to minor, beneficial impacts from implementation of lease compliance actions and cleanup and restoration activities.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
No Action Alternative	New long-term, minor to moderate, beneficial impacts from ceasing ongoing activities; new short-term, minor, adverse and new long-term, minor, beneficial impacts from implementation of lease compliance actions and cleanup and restoration activities.
	Level of Significance: Less than significant.
Socioeconomics	
Alternative 1	**Land Retained**

Table 3-38: Potential Environmental Impacts	
	Lease Impacts*:** Continued long-term, direct and indirect, moderate, beneficial impacts on socioeconomic resources in the region from ongoing activities within the State-owned land retained. ***Fee Simple Title Impacts: Impacts are anticipated to be the same as lease impacts. **Land Not Retained** New long-term, direct and indirect, negligible, adverse impacts from reduction of the socioeconomic benefits related to military training within the State-owned land not retained; new short-term, negligible, beneficial impacts from lease compliance actions and cleanup and restoration activities.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 2	**Land Retained** ***Lease Impacts*:** Impacts are anticipated to be the same as Alternative 1 lease. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as Alternative 1 fee simple title. **Land Not Retained** Impacts are anticipated to be the same as Alternative 1 land not retained.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 3	**Land Retained** ***Lease Impacts*:** Continued long-term, direct and indirect, minor to moderate, beneficial impacts on socioeconomic resources in the region from ongoing activities within the State-owned land retained. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as lease impacts. **Land Not Retained** New long-term, direct and indirect, minor to moderate, adverse impacts from reduction of the socioeconomic benefits related to a reduction in permanent personnel, military training, resource management, and public use programs; and new short-term, negligible, beneficial impacts from lease compliance actions and cleanup and restoration activities due to hiring of contractors to perform the actions.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
No Action Alternative	New long-term, direct and indirect, significant, adverse impacts on socioeconomics from total loss of ongoing activities on the State-owned land, as well as a loss of ongoing activities within the impact area and training ranges and limited use of the Cantonment and the Army would no longer be able to provide community services that extend beyond the installation; new short-term, minor, beneficial impacts from conducting lease compliance actions and cleanup and restoration activities.
	Level of Significance: Significant, adverse impacts.

Table 3-38: Potential Environmental Impacts	
Environmental Justice	
Alternative 1	**Land Retained** ***Lease Impacts*:** Continued, long-term, significant, adverse, disproportionate impacts on communities with environmental justice concerns from Army retention of ceded public trust land; continued long-term, significant, adverse, disproportionate impacts on communities with environmental justice concerns from potential training-related wildland fires associated with ongoing activities that could impact biological resources that are important to the cultural practices of Native Hawaiians; continued, long-term, significant, adverse, disproportionate impacts on communities with environmental justice concerns from ongoing, limited cultural access and the ongoing perception that their sacred and traditionally and culturally important land is under an unjust military occupation; and continued, long-term, minor, adverse, disproportionate impacts on communities with environmental justice concerns from traffic associated with ongoing activities within the State-owned land retained. ***Fee Simple Title Impacts*:** New, long-term, significant, adverse, disproportionate impacts on communities with environmental justice concerns from loss of ʻāina; new, long-term, significant, adverse, disproportionate impacts on communities with environmental justice concerns from removal of ceded lands from public trust; continued long-term, significant, adverse, disproportionate impacts on communities with environmental justice concerns from potential training-related wildland fires associated with ongoing activities that could impact biological resources that are important to the cultural practices of Native Hawaiians; continued, long-term, significant, adverse, disproportionate impacts on communities with environmental justice concerns from ongoing, limited cultural access and the ongoing perception that their sacred and traditionally and culturally important land is under an unjust military occupation; new long-term, significant, beneficial impacts would be realized through land sale proceeds that fund Native Hawaiian and public programs; and continued, long-term, minor, adverse, disproportionate impacts on communities with environmental justice concerns from traffic associated with ongoing activities within the State-owned land retained. **Land Not Retained** New long-term, significant, beneficial impacts on land tenure would occur through resumption of State control of the DHHL-administered land for the use and benefit of Native Hawaiians and for the public, resulting in significant, beneficial impacts on communities with environmental justice concerns; new, short-term, negligible, adverse impacts to historic and cultural resources and cultural practices from lease compliance actions and cleanup and restoration activities; and new long-term, ~~negligible~~minor, beneficial impacts on communities with environmental justice concerns, including Native Hawaiians, from increased cultural access.
	Level of Significance: Significant, adverse impacts to communities with environmental justice concerns for lease and fee simple title; significant, beneficial impacts to communities with environmental justice concerns for land not retained.
Alternative 2	**Land Retained** ***Lease Impacts*:** Impacts to communities with environmental justice concerns are anticipated to be the same as Alternative 1 lease. ***Fee Simple Title Impacts*:** Impacts to communities with environmental justice concerns are anticipated to be the same as Alternative 1 fee

Table 3-38: Potential Environmental Impacts	
	simple title. **Land Not Retained** New short-term, negligible, adverse impacts on cultural practices from short-term limitations on cultural access during lease compliance actions and cleanup and restoration activities; new long-term, significant, beneficial impacts on land tenure would occur through resumption of State control of the land not retained for the use and benefit of Native Hawaiians and for the public, resulting in significant, beneficial impacts on communities with environmental justice concerns; and new long-term, minor beneficial impacts from the removal of limitations on cultural access that would support Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs.
	Level of Significance: Significant, adverse impacts to communities with environmental justice concerns for lease and fee simple title; significant, beneficial impacts to communities with environmental justice concerns for land not retained.
Alternative 3	**Land Retained** ***Lease Impacts*:** Impacts to communities with environmental justice concerns are anticipated to be the same as Alternative 1 lease. ***Fee Simple Title Impacts*:** Impacts to communities with environmental justice concerns are anticipated to be the same as Alternative 1 fee simple title. **Land Not Retained** New long-term, moderate, beneficial impacts on communities with environmental justice concerns from the discontinuation of military activities and associated impacts; new long-term, significant, beneficial impacts on land tenure through resumption of State control of the land not retained for the use and benefit of Native Hawaiians and for the public, resulting in significant, beneficial impacts on communities with environmental justice concerns; new short-term, minor, adverse impacts on cultural practices from cultural access limitations to support public safety during lease compliance actions and cleanup and restoration activities; and new long-term, moderate, beneficial impacts to cultural practices from the removal of limitations on cultural access.
	Level of Significance: Significant, adverse impacts to communities with environmental justice concerns for lease and fee simple title; significant, beneficial impacts to communities with environmental justice concerns for land not retained.
No Action Alternative	New long-term, significant, beneficial impacts on land tenure through resumption of State control of the State-owned land would occur, resulting in significant, beneficial impacts on communities with environmental justice concerns. New long-term, significant, beneficial impacts on cultural practices (from increased access) and the ongoing perception that their sacred and traditionally and culturally important land is under an unjust military occupation, resulting in significant, beneficial impacts on communities with environmental justice concerns. New, short-term, minor, adverse impacts on cultural practices from cultural access limitations during lease compliance actions and cleanup and restoration activities. New, long-term, minor, beneficial, disproportionate impacts on communities with environmental justice concerns from less traffic. New, long-term, significant, beneficial impacts on cultural practices from the elimination of potential training-related wildland fires from ongoing activities within the State-owned land and associated activities within U.S. Government-owned land.

Table 3-38: Potential Environmental Impacts	
	Level of Significance: Significant, beneficial impacts to communities with environmental justice concerns.
Transportation and Traffic	
Alternative 1	**Land Retained** ***Lease Impacts***: Continued long-term, minor, adverse impacts on PTA and regional transportation systems and traffic from ongoing activities. ***Fee Simple Title Impacts:*** Impacts are anticipated to be similar to lease impacts. **Land Not Retained** Continued long-term, negligible, adverse impacts on the roads and training trails within the State-owned land not retained due to State use~~; and continued long-term, minor, adverse impacts on regional transportation systems and traffic due to continuation of ongoing activities within the State-owned land retained. New short-term, negligible, adverse impacts on regional roads from contractor/construction traffic required to conduct the lease compliance actions and restoration activities after expiration of the current lease~~.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 2	**Land Retained** ***Lease Impacts***: New long-term, negligible, beneficial impacts on PTA ground transportation routes and traffic. Continued long-term, minor, adverse impacts on PTA and regional transportation systems and traffic from ongoing activities. ***Fee Simple Title Impacts***: Impacts are anticipated to be the same as Alternative ~~1 fee simple title~~ 2 lease. **Land Not Retained** Impacts are anticipated to be the same as Alternative 1 land not retained.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 3	**Land Retained** ***Lease Impacts***: Impacts are anticipated to be the same as Alternative 2 lease. ***Fee Simple Title Impacts***: Impacts are anticipated to be the same as Alternative 2 lease impacts. **Land Not Retained** New, long-term, negligible, beneficial impacts to the PTA transportation system and traffic; new long-term, negligible beneficial impacts ~~and continued long-term, minor, adverse impacts~~ to regional transportation system and traffic from ~~ongoing activities~~ less use~~; and new short-term, negligible, adverse impacts during lease compliance actions~~.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.

Table 3-38: Potential Environmental Impacts	
No Action Alternative	New long-term, minor, beneficial impacts and new, long-term, negligible to minor, adverse impacts on PTA transportation system; new long-term, negligible, adverse and beneficial impacts on regional transportation system and traffic; and new, short-term, negligible, adverse impacts from lease compliance actions.
	Level of Significance: Less than significant.
Airspace	
Alternative 1	**Land Retained** ***Lease Impacts*:** No new impacts on the use, configuration, or management of airspace resources; continued long-term, minor, adverse impacts on civilian air traffic from ongoing activities. ***Fee Simple Title Impacts*:** Impacts under a fee simple title method of land retention would be the same as described for a lease retention method. **Land Not Retained** No new impacts on the use, configuration, or management of airspace resources; there would be continued long-term, minor, adverse impacts on civilian air traffic from ongoing activities. No impacts from lease compliance actions and cleanup and restoration activities within any State-owned land not retained after the end of the current lease.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 2	**Land Retained** ***Lease Impacts*:** Impacts are anticipated to be the same as Alternative 1 lease. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as Alternative 1 fee simple title. **Land Not Retained** Impacts are anticipated to be the same as Alternative 1 land not retained.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 3	**Land Retained** ***Lease Impacts*:** Impacts are anticipated to be the same as Alternative 1 lease. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as Alternative 1 fee simple title. **Land Not Retained** New long-term, negligible, beneficial impacts due the reduced activation of R-3103 and reduced requirement to detour civilian aircraft; there would be continued long-term, minor, adverse impacts on civilian air traffic from ongoing activities. No impacts from lease compliance actions and cleanup and restoration activities within any State-owned land not retained after end of the current lease.

Table 3-38: Potential Environmental Impacts	
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
No Action Alternative	New long-term, minor beneficial impacts from reduced activation of R-3103 and reduced requirement to detour civilian aircraft.
	Level of Significance: Less than significant.
Electromagnetic Spectrum	
Alternative 1	**Land Retained** ***Lease Impacts*:** No new impacts. Continued long-term, negligible, adverse impacts on safety from continued use of EMS equipment. ***Fee Simple Title Impacts*:** Impacts under a fee simple title method of land retention would be the same as described for a lease retention method. **Land Not Retained** New long-term, negligible, beneficial impacts from a cessation in the use of radio systems within the State-owned land not retained. No impacts from lease compliance actions and cleanup and restoration activities within any State-owned land not retained after end of the current lease.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 2	**Land Retained** ***Lease Impacts*:** Impacts are anticipated to be the same as Alternative 1 lease. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as Alternative 1 fee simple title. **Land Not Retained** Impacts are anticipated to be the same as Alternative 1 land not retained.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 3	**Land Retained** ***Lease Impacts*:** Impacts are anticipated to be the same as Alternative 1 lease. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as Alternative 1 fee simple title. **Land Not Retained** Impacts are anticipated to be the same as Alternative 1 land not retained.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
No Action Alternative	New long-term, negligible, beneficial impacts would occur from the elimination of the use of EMS equipment within the State-owned land. No impacts from lease compliance actions and cleanup and restoration activities within the State-owned land after the end of the current lease.

Table 3-38: Potential Environmental Impacts	
	Level of Significance: Less than significant.
Utilities	
Alternative 1	***Lease Impacts*:** Continued long-term, minor, adverse impacts on U.S. Government-owned and non-U.S. Government-owned utilities due to continuation of ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land; and new short-term, negligible, adverse impacts on utilities outside of PTA due to increased demand for lease compliance actions and cleanup and restoration activities on land not retained after expiration of current lease. ***Fee Simple Title Impacts*:** Fee simple title impacts would be the same as lease impacts.
	Level of Significance: Less than significant for lease and fee simple title (land not retained impacts are included in the lease and fee simple title impacts).
Alternative 2	***Lease Impacts*:** Alternative 2 lease impacts are anticipated to be the same as Alternative 1 lease impacts. ***Fee Simple Title Impacts*:** Alternative 2 fee simple title impacts are anticipated to be the same as Alternative 2 lease impacts.
	Level of Significance: Less than significant for lease and fee simple title (land not retained impacts are included in the lease and fee simple title impacts).
Alternative 3	***Lease Impacts*:** New long-term, negligible, beneficial impacts on U.S. Government-owned and non-U.S. Government-owned utilities from decreased demand due to loss of access to and use of the State-owned land not retained; continued long-term, negligible to minor, adverse impacts on U.S. Government-owned and non-U.S. Government-owned utilities due to continuation of ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land; and new short-term, negligible, adverse impacts on utilities outside of PTA due to increased demand for lease compliance actions and cleanup and restoration activities on land not retained after expiration of the current lease. ***Fee Simple Title Impacts*:** Alternative 3 fee simple title impacts are anticipated to be the same as Alternative 3 lease impacts.
	Level of Significance: Less than significant for lease and fee simple title (land not retained impacts are included in the lease and fee simple title impacts).
No Action Alternative	New long-term, minor, beneficial impacts on U.S. Government-owned and non-U.S. Government-owned utilities due to reduced demand; new long-term, significant, adverse impacts on the provision of electricity services to PTA; new short-term, negligible, adverse impacts on utilities outside of PTA due to increased demand from completion of lease compliance actions and cleanup and restoration activities.
	Level of Significance: Significant, adverse impacts.

Table 3-38: Potential Environmental Impacts	
Human Health and Safety	
Alternative 1	**Land Retained** ***Lease Impacts*:** No new impacts. Continued long-term, minor, adverse impacts from ongoing aircraft operations and military munitions use; and continued long-term, minor, beneficial impacts from PTA providing emergency services beyond the installation and permitting non-DoD emergency services agencies to train. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as Alternative 1 lease. **Land Not Retained** No new or continued impacts on health and safety and wildfire risk in the State-owned land not retained from the Army no longer having access to the State-owned land not retained for wildfire protection and firefighting activities because state and county agencies would become the first responders for wildfire occurrences.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
Alternative 2	**Land Retained** ***Lease Impacts*:** No new impacts. Continued long-term, minor, adverse impacts from ongoing aircraft operations and military munitions use; and continued long-term, minor, beneficial impacts from PTA providing emergency services beyond the installation and permitting non-DoD emergency services agencies to train. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as described for ~~a~~ the Alternative 2 lease retention method. **Land Not Retained** No new impacts on human health and safety and wildfire risk or wildland fire management from the transfer of wildfire protection and firefighting activities. New long-term, negligible, adverse impacts on human health and safety due to the locations of APZs and ESQD arcs that would remain active on State-owned land not retained. New long-term, negligible, beneficial impacts from the potential decrease of feral ungulates along DKI Highway.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.

Table 3-38: Potential Environmental Impacts	
Alternative 3	**Land Retained** ***Lease Impacts*:** No new impacts. Continued long-term, minor, adverse impacts from ongoing aircraft operations and military munitions use, and continued long-term, minor, beneficial impacts from providing firefighting, police, and medical services beyond the installation and allowing non-DoD emergency services agencies to train within the State-owned land retained. ***Fee Simple Title Impacts*:** Impacts are anticipated to be the same as described for ~~a~~ the Alternative 3 lease retention method. **Land Not Retained** No new impacts on human health and safety and wildfire risk or wildland fire management due to transfer of wildfire protection and firefighting activities. New long-term, negligible, adverse impacts on human health and safety due to the locations of APZs and ESQD arcs that would remain active on State-owned land not retained; new long-term, minor, beneficial impacts from less military munitions storage and handling due to removal of the AHA and a reduction of wildfire hazards associated with less military activities; new, long-term, negligible, adverse impact from indirect-fie weapons from three FPs over State-owned land not retained; new, long-term, minor, beneficial impact on wildfire risk; ~~and~~ new long-term, minor, indirect adverse impacts from reduction of emergency services readiness; and new long-term, negligible, beneficial impacts from the potential decrease of feral ungulates along DKI Highway.
	Level of Significance: Less than significant for lease, fee simple title, and land not retained.
No Action Alternative	New, long-term, minor, beneficial impacts to health and human safety from ceasing ongoing activities; new long-term, negligible, adverse impacts on public safety associated with military munitions handling and transportation hazards would occur due to increased handling and transportation of military munitions; new long-term, minor, adverse impacts from potential exposure to safety hazards; no new impacts due to transfer of wildfire protection and firefighting activities; new long-term, minor, beneficial impacts to wildland fire risk; ~~and~~ new, long-term, moderate, adverse impacts from the loss of state and county emergency services training; and new long-term, negligible, beneficial impacts from the potential decrease of feral ungulates along DKI Highway.
	Level of Significance: Less than significant.

3.17.2 Summary of ~~Potential~~Mitigation Measures

Table 3-39: ~~Potential~~ Mitigation Measures				
Resource	**Alternative 1**	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Land Use	No mitigation measures recommended beyond existing management measures.~~The Army would consider adding non-barbed wire fencing and signage on State-owned land retained to minimize encroachment and accidental or intentional trespass from adjacent State-owned land not retained.~~	No mitigation measures recommended beyond existing management measures.~~Potential mitigation measures would be the same as those discussed under Alternative 1.~~	No mitigation measures recommended beyond existing management measures.~~Potential mitigation measures would be the same as those discussed under Alternative 1.~~	The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended.
Biological Resources	The Army will conduct (1) a multi-year research project to identify possible biological controls in the native range of *C. setaceus*; (2) installation invertebrate surveys; (3) an ungulate impact assessment; (4) negotiation of an agreement with the State to monitor wildfires on land not retained; and (5) implementation of additional thermal technology. ~~No mitigation measures recommended beyond existing conservation measures, implementation plans, management measures, and BMPs and SOPs.~~	Mitigation measures would be the same as those discussed under Alternative 1.~~No mitigation measures recommended beyond existing conservation measures, implementation plans, management measures, and BMPs and SOPs.~~	Mitigation measures would be the same as those discussed under Alternative 1.~~No mitigation measures recommended beyond existing conservation measures, implementation plans, management measures, and BMPs and SOPs.~~	The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended.

Historic and Cultural Resources and Cultural Practices	The Army will 1) develop a formalized access plan for quarterly access for Native Hawaiian organizations, individuals, and consulting parties, ‘ohana, lineal descendants, and cultural practitioners; 2) install interpretive panels at the Gilbert Kahele Recreation Area to illustrate the historical and cultural importance of the Saddle Region; 3) negotiate an agreement with the State to monitor wildfires on land not retained and an agreement document will be developed with the State; and 4) will add advanced technology which will include additional thermal technology equipment. The additional thermal technology equipment would enable firefighting personnel to locate and eliminate hot spots where a fire persists. The Army will install approximately six to eight infrared cameras that provide adequate coverage across the training area for wildland heat signature monitoring. ~~Through consultation with Native Hawaiians and cultural practitioners, the Army would formalize a cultural access request process to enable~~	~~Potential m~~Mitigation measures would be the same as those discussed under Alternative 1.	~~Potential m~~Mitigation measures would be the same as those discussed under Alternative 1.	The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended.

Table 3-39: ~~Potential~~ Mitigation Measures				
Resource	**Alternative 1**	**Alternative 2**	**Alternative 3**	**No Action Alternative**
	~~Native Hawaiians and cultural practitioners opportunities to promote and preserve cultural practices, beliefs, and resources. In addition, the Army would explore options to provide unlimited cultural access to specific locations to be determined in consultation with Native Hawaiians and cultural practitioners.~~			
Hazardous Substances and Hazardous Wastes	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended.
Air Quality and Greenhouse Gases	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended.
Noise	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures	No mitigation measures recommended beyond existing management measures	The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended.
Geology, Topography and Soils	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended.

Table 3-39: ~~Potential~~ Mitigation Measures				
Resource	**Alternative 1**	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Water Resources	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended.
Socioeconomics	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended.

Environmental Justice	The Army will 1) develop a formalized access plan for quarterly access for Native Hawaiian organizations, individuals, and consulting parties, ‘ohana, lineal descendants, and cultural practitioners; 2) install interpretive panels at the Gilbert Kahele Recreation Area to illustrate the historical and cultural importance of the Saddle Region; 3) negotiate an agreement with the State to monitor wildfires on land not retained and an agreement document will be developed with the State; and 4) add advanced technology which will include additional thermal technology equipment. The additional thermal technology equipment would enable firefighting personnel to locate and eliminate hot spots where a fire persists. The Army will install approximately six to eight infrared cameras that provide adequate coverage across the training area for wildland heat signature monitoring.~~Through consultation with Native Hawaiians and cultural practitioners, the Army would formalize a cultural access request process to enable~~	~~Potential m~~Mitigation measures would be the same as those discussed under Alternative 1.	~~Potential m~~Mitigation measures would be the same as those discussed under Alternative 1.	The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended.

Table 3-39: ~~Potential~~ Mitigation Measures				
Resource	**Alternative 1**	**Alternative 2**	**Alternative 3**	**No Action Alternative**
	~~Native Hawaiians and cultural practitioners opportunities to promote and preserve cultural practices, beliefs, and resources. In addition, the Army would explore options to provide unlimited cultural access to specific locations to be determined in consultation with Native Hawaiians and cultural practitioners.~~			
Transportation and Traffic	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended.
Airspace	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended.
Electromagnetic Spectrum	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended.
Utilities	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	No mitigation measures recommended beyond existing management measures.	The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended.

Table 3-39: ~~Potential~~ Mitigation Measures				
Resource	**Alternative 1**	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Human Health and Safety	The Army will (1) negotiate an agreement with the State to monitor wildfires on land not retained and an agreement document will be developed with the State; and 2) add advanced technology which will include additional thermal technology equipment. The additional thermal technology equipment would enable firefighting personnel to locate and eliminate hot spots where a fire persists. The Army will install approximately six to eight infrared cameras that provide adequate coverage across the training area for wildland heat signature monitoring.~~The Army would consider (1) negotiation of an agreement with the State to allow the Army to monitor the State-owned land not retained for wildfires, and (2) continue or renegotiate its MOA with the Hawai'i County Fire Department to assist wildfire responders with wildfire suppression outside of the PTA AOR.~~	~~Potential m~~Mitigation measures would be the same as those discussed under Alternative 1.	~~Potential m~~Mitigation measures would be the same as those discussed under Alternative 1.	The No Action Alternative does not include proposed Army actions, so no mitigation measures are recommended.

Chapter 4

CUMULATIVE IMPACTS

4.1 Introduction

Assessment of cumulative impacts of a proposed action is required under the CEQ regulations implementing NEPA (40 CFR Parts 1500–1508). The Army's NEPA regulations [32 CFR Section 651.51(a)(1)(ii)] and the State's HEPA regulations [HAR Section 11-200.1-24 (l)] both require that an EIS include an assessment of cumulative impacts.

CEQ regulations define cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR Section 1508.7, 1978 version of CEQ regulations, as amended). The Army NEPA regulations [32 CFR Section 651.16(a)] and HEPA regulations [HAR Section 11-200.1-2] define cumulative impacts nearly the same, word for word, as the CEQ regulations do.

This chapter analyzes the potential cumulative impacts of the Proposed Action and lease compliance actions when combined with other past, present, and reasonably foreseeable future actions. Past actions are actions from the beginning of military activity at PTA to the present time and are captured in the existing conditions analysis of each resource area. **Section 4.2** describes the methodology for analyzing cumulative impacts. **Section 4.3** provides background information on other actions within the ROI. **Section 4.4** presents the analysis of cumulative impacts for each of the resource areas analyzed in **Chapter 3**.

4.2 Methodology

4.2.1 Resources Considered

Cumulative impacts analysis was conducted for all resource areas analyzed in **Chapter 3** because each resource area would be impacted under the Proposed Action.

4.2.2 Region of Influence and Timeframe

The ROI for cumulative impacts generally correlates with the ROI established for each respective resource, as described in **Chapter 3**. 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 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 (e.g., the connection between Native Hawaiians and the maintenance of customary practices).

As noted in **Section 2.1**, 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, lease compliance actions and cleanup and restoration activities for State-owned land not retained are connected actions but~~ Lease compliance actions 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. As noted in **Section 2.1**, the timing of the three elements of the combined single action is as follows: (1) arrangement for land retention (2029), (2) continuation of ongoing activities and compliance with new lease or easement conditions within the State-owned land retained (2029 through the length of the land retention arrangement), and (3) lease compliance actions ~~and cleanup and restoration activities~~ associated with termination of the current lease for State-owned land not retained (start in 2029 and continue until completed or regulatory standards are met~~, respectively~~).

~~For most resources, the impacts of past actions are now part of existing conditions. Additionally, the Proposed Action, including connected actions, would start in 2029 but not end until all lease compliance actions have been completed and all cleanup and restoration activities have met regulatory standards.~~ Past actions are actions from the beginning of military activity at PTA to the present time and are captured in the existing conditions analysis of each resource area. The duration for land retention is not identified because it would be negotiated with the State following completion of this EIS. Consequently, the timeframe for potential cumulative impact contributions from present and reasonably foreseeable future actions addressed in this analysis begins in the present and has no defined end date.

4.2.3 Proposed Action Impacts

For the purposes of the cumulative impacts analysis, ~~T~~the potential impacts from the Proposed Action and lease compliance actions~~, including connected actions,~~ are~~is~~ the combination of State-owned land retained impacts (whether via lease or fee simple title) and State-owned land not retained impacts. For example, the total potential impacts for Alternative 1 under lease are the combination of Alternative 1 lease State-owned land retained impacts and Alternative 1 State-owned land not retained impacts. Hence, the total Proposed Action impacts for cumulative impacts analysis are presented only as lease or fee simple title impacts (see **Table 4-2** and **Table 4-3**). Additionally, the potential impacts of the Proposed Action and lease compliance actions~~, including connected actions,~~ vary by action alternative and land retention estate. Consequently, this EIS analyzes potential impacts from three action alternatives and two land retention estates, which results in six sets of potential impacts. For the purposes of cumulative impact analysis, the Proposed Action impacts are presented as the range of potential impacts from the combination of State-owned land retained impacts and State-owned land not retained impacts for all three action alternatives and both land retention estates. If one or more of the six sets of potential impacts would vary in significance from the others, then those potential impacts are identified separately.

4.2.4 Significance Criteria

As described in 40 CFR Section 1508.7 (1978 version of CEQ regulations, as amended) and HAR Section 11-200.1-2, cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative impacts occur when impacts from a proposed action and impacts from past, present, and reasonably foreseeable future actions are additive or interactive in some combination. Although impacts from individual actions may be negligible, the combined impacts, over a

period of time, may result in significant cumulative impacts. Significance criteria for cumulative impacts are often the same as discussed in **Chapter 3**.

Cumulative impacts are significant if the impacts from a proposed action, when added to past, present, and reasonably foreseeable impacts, would result in combined significant impacts. Significant cumulative impacts would not be identified when there is either no impact from a proposed action or no impact from the past, present, and reasonably foreseeable future actions.

In some cases, beneficial impacts may result from either a proposed action or from past, present, and reasonably foreseeable future actions. If beneficial impacts are involved, the net cumulative effect may be less than the most adverse impact as the beneficial impact would partially counteract the negative results of the adverse impact.

4.2.5 Approach to the Cumulative Analysis

Cumulative impacts are assessed by resource area. For some actions included in the list of past, present, and reasonably foreseeable future actions (see **Table 4-1**), no quantitative data were available for analysis purposes. In those instances, a qualitative analysis was conducted with the best information available.

The following approach was used to determine whether impacts associated with the Proposed Action would have the potential to combine with impacts of past, present, or reasonably foreseeable future actions to generate cumulative impacts:

1. Identity resource areas for cumulative impact analysis. Resource areas for which the Proposed Action would experience an impact would result in cumulative impacts and therefore were carried forward for analysis.
2. Describe impacts associated with past activities at PTA.
3. Describe impacts associated with the Proposed Action for each resource area.
4. Identify present or reasonably foreseeable future actions that have the potential for overlapping impacts with the Proposed Action.
5. Describe impacts associated with the present or reasonably foreseeable future 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 future actions would result in a significant cumulative impact.
7. Identify additional mitigation measures to avoid or minimize significant cumulative impacts, if necessary.

4.3 Past, Present, and Reasonably Foreseeable Future Actions

4.3.1 List of Projects

Analysis of cumulative impacts considers past, present, and reasonably foreseeable future actions within the ROI that have the potential to contribute to cumulative impacts. Past actions are considered already implemented and part of existing conditions that are described and analyzed in **Chapter 3** of this EIS and are summarized in **Section 4.4**. 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 an environmental review process, (2) the action has secured funding, or (3) the action has obtained a permit.

Actions listed in **Table 4-1** were identified through a review of recent NEPA and HEPA documents, review of County of Hawai‘i building permits, discussion with Army officials, and internet research. **Table 4-1** identifies other past, present, and reasonably foreseeable future actions considered in this chapter. No military construction projects (i.e., major construction costing at least $10 million) are proposed within the State-owned land, but two smaller maintenance-type projects (i.e., main supply route improvements, maintenance and rehabilitation of 400 series FPs) are proposed within the State-owned land and are identified in **Table 4-1** (see PTA Real Property Master Plan and Range Complex Master Plan).

Table 4-1: Other Past, Present, and Reasonably Foreseeable Future Actions

Action	Description	Year
Cantonment Facilities Improvement Program (FIP), PTA	The Cantonment FIP proposes modernization within the base camp portion of the PTA Cantonment, located on U.S. Government-owned land, and includes a building component and a utility component. The building modernization component will replace outdated buildings with code-compliant one-story structures, without increasing density or height. The utility modernizations in the FIP, including drainage, sewer, electrical and telecommunications, have already been approved under Records of Environmental Consideration and are underway (USAG-HI, 2018).	Construction: 2017–2028 Operation: 2028+
PTA Real Property Master Plan (RPMP)	USAG-HI has prepared a RPMP for PTA that outlines future installation improvements and the Garrison Commander’s strategy to address antiterrorism and force protection, reduced manpower and resources, base realignments and closures, and maintaining troop readiness. The RPMP is comprised of several components. Future modernization projects within a 20-year horizon are found in the short and long-range components of the RPMP. All projects proposed in the RPMP will require separate NEPA and HEPA analysis~~compliance~~, as applicable~~in accordance with Army regulations~~. The following is a summary of the projects in the short- and long-range components of the RPMP. Projects that are no longer planned or programmed since the RPMP was completed in 2020 are not in this list. The location of each proposed project is provided in parentheses. Short Range Projects (0–7 years): • Cantonment FIP (Cantonment, U.S. Government-owned land) • Kawaihae Harbor Ramp and Dolphin Repairs (Kawaihae Harbor) • BAAF Pavement and Infrastructure (BAAF) • AHA 1-3 de-licensing (Cantonment) • Communications Improvements (various locations) • State Training Lands Retention [State-owned land (current EIS action)] • ~~Production Water Well (Cantonment, U.S. Government-owned land)~~ • Equipment Canopy (Cantonment, U.S. Government-owned land) • Old Saddle Road Right of Way Acquisition (County of Hawai‘i land) Long-Range Projects (8–20 years):	Construction: 2020–2040 Operation: 2020+

Table 4-1: Other Past, Present, and Reasonably Foreseeable Future Actions		
Action	**Description**	**Year**
	• Dining Facility (Cantonment) • Pre-Positioned Storage Facilities (Cantonment) • BAAF (BAAF) • Main Supply Route Improvements (State- and U.S. Government-owned land) • Training Complex (Cantonment) • Unmanned Aerial System and UAV Hangar (U.S. Government-owned land) • Tactical Vehicle Area (Cantonment) • Logistics Readiness Center (Cantonment) • Troop Issue Subsistence Activity Warehouse (Cantonment) • Pavement Upgrades (Cantonment) • DPW Facility (Cantonment) • Tactical Equipment Maintenance Facility Building (Cantonment) • Hazardous Materials Storage Building Installation (Cantonment) • Recycling Facility (Cantonment) • Refuse Collection Area (Cantonment) • POL Storage Facility (Cantonment) • Vehicle Wash Facility (Cantonment) • Range Maintenance/Pacific Missile Range Facility Maintenance Facility (Cantonment) • Fire/Emergency Management Services/Provost Marshall Office facility (TBD) • East Land Acquisition (east of Cantonment, off-installation) These specific projects from the RPMP are programmed for implementation over the next 10 years: • Cantonment FIP (Cantonment) • Kawaihae Harbor Ramp and Dolphin Repairs (Kawaihae Harbor) • BAAF Pavement and Infrastructure (BAAF) • State Training Lands Retention [State-owned land (current EIS action)] • POL Storage Facility (Cantonment) These are the specific RPMP projects that will be considered in the cumulative analysis for this chapter (USACE-POH & USAG-HI, 2020b).	
Range Complex Master Plan (RCMP)	The RCMP establishes the training land and live-fire range requirements for USAG-HI. The plan is an online program that is updated annually and is a road map for development of the training land and ranges to meet current and future USAG-HI training missions. The following activities are programmed for PTA (project location is provided in parentheses): • Automatic pistol range at Range 2 (U.S. Government-owned land) • Hand grenade range at Range 5 (U.S. Government-owned land) • Maintenance and rehabilitation of 400 series FPs (State-owned land) • Tactical UAV runway and launch/recovery site (U.S. Government-owned land) (DA, 2021).	Construction: 2022+ Operation: 2022+

Table 4-1: Other Past, Present, and Reasonably Foreseeable Future Actions		
Action	**Description**	**Year**
Saddle Road Extension	The Saddle Road extension would connect the western terminus of the DKI Highway to the intersection of the Queen Kaʻahumanu Highway. A Draft EIS was published in April 2017 and a Final EIS was being prepared; however, the project went on hold in 2020. Completion of the Final EIS and project implementation is contingent upon funding (HDOT-HD & USDOT-FHWA, 2017; USDOT-FHWA, 2021).	Construction: 2025–2030 Operation: 2030+
Mauna Kea Observatories [Thirty Meter Telescope (TMT)]	The Mauna Kea Observatories TMT project consists of the construction, operation, and ultimate decommissioning of the TMT Observatory and ancillary facilities, with a 30-meter diameter optical/infrared telescope and the construction and operation of associated ancillary facilities. The TMT will address the outstanding constraints in astronomy and astrophysics research and was identified in the 2001 National Academy of the Sciences Decadal Survey for Astronomy as the most critical need for ground-based astronomy and recommendation to trace the evolution of galaxies and the formation of stars and planets (UH, 2010). The TMT Observatory is planned to be sited on the northern plateau of Mauna Kea. The TMT has become controversial due to its planned location on the Mauna Kea summit, considered a sacred place in Native Hawaiian culture. UH leases sites atop Mauna Kea to international observatories. The building and operation of the TMT Observatory on Mauna Kea requires a sublease from UH, which leases this ceded land from DLNR. All lands managed by UH on Mauna Kea, including the site for the TMT, are located within a conservation district, which requires a Conservation District Use Permit (CDUP) approved by the Hawaiʻi BLNR. In 2010, following the approval of the Final EIS, the UH - Hilo applied for a CDUP. The BLNR issued the CDUP to the UH - Hilo for the construction of the TMT on Mauna Kea with the authorization of a contested case. From 2011 to 2018, the CDUP was challenged in court and contested, involving multiple hearings and appeals. In 2018, the Hawaiʻi State Supreme Court affirmed BLNR's decision to issue the CDUP and construction was scheduled to begin in 2019. From August to December 2019, protestors blocked access to the construction site and prevented construction from commencing. In 2020, the COVID-19 pandemic delayed the timeline and schedule. In July 2022, the National Science Foundation published a Notice of Intent to prepare an EIS to evaluate potential environmental effects of a National Science Foundation investment in the construction and operation of the TMT (NSF, 2022).	Construction: 2025+ Operation: 2030+
Land Authorizations for Long-term Continuation of Astronomy on Maunakea	UH leases the approximately 11,288-acre Mauna Kea Science Reserve under general lease S-4191, which expires on December 31, 2033, and the approximately 19-acre Halepōhaku mid-level facility under general lease S-5529, which expires in 2041. In addition, UH holds non-exclusive Easement S-4697 for the Mauna Kea Access Road between the two leased properties. The easement area is approximately 71 acres and expires on December 31, 2033. The two leased properties plus a 400-yard-wide corridor on either side of the Mauna Kea Access Road, excluding areas within the adjacent Natural Area Reserve, make	Construction: None Operation: 2033+

Table 4-1: Other Past, Present, and Reasonably Foreseeable Future Actions		
Action	**Description**	**Year**
	up the UH Management Area on Maunakea. UH is seeking to replace its two existing leases and easement with a new land authorization well before they expire. The EISPN discusses a "No Action Alternative," an action alternative under which UH receives a new authorization for a much-reduced land area relative to its current encumbered area, and an action alternative under which it receives a new authorization for the same areas it currently leases or holds an easement over (UH, 2018).	
Nakahili Workforce Developers, LLC	Nakahili is envisioned to be an agricultural residential community proposed by Work Force Developers, LLC on approximately 1,560 acres near the intersection of Māmalahoa Highway and Waikoloa Road. The property is just west of the Keʻāmuku Maneuver Area. The Nakahili community is planned to include farm dwellings on agricultural lots, multi-family rental apartments for workforce housing, parks, and commercial and light industrial uses. The family agricultural district is designed to include approximately 700 one-acre agricultural lots surrounded by 150 larger agricultural lots varying from two to five acres. The neighborhood commercial area is planned to include approximately 300 multi-family apartments. A majority of the agricultural dwellings and lots and village rental apartment are planned to be affordable rental units, specifically for workforce housing. Planned neighborhood commercial uses include a grocery store, shops, and restaurants. Two parks are planned for Nakahili: (1) an approximately 6-acre neighborhood park, and (2) an approximately 29-acre regional park. In addition, community infrastructure will be provided onsite including individual wastewater systems on each lot, water wells, water tanks, and a small wastewater treatment facility to service the neighborhood commercial area (WFD, 2019).	Construction: 2023+ Operation: 2030+
ʻĀina Mauna Legacy Program (DHHL)	Under the ʻĀina Mauna Legacy Program, DHHL manages approximately 56,200 acres of land located to the east of PTA in the Humuʻula-Piʻihonua area on the northeast slopes of Mauna Kea. The ʻĀina Mauna Legacy Program is a comprehensive, long-range planning program and implementation strategy to guide DHHL in its restoration and management of the Humuʻula-Piʻihonua lands, which represents the most important native forest area remaining in the DHHL trust. The mission of the program and its implementation is to restore and protect the lands of Humuʻula-Piʻihonua, while also providing an ecological, cultural, and economical self-sustaining resource for DHHL, its beneficiaries, and the community. The initial phase of the program includes restoration and protection of the native forest areas, gorse (evergreen shrub) eradication, and unmanaged-ungulate eradication. Following this phase, homestead, pasture uses, and commercial development would begin. Overall, DHHL seeks to establish areas for conservation, rural homesteads, and mixed land uses including a community center, campground, and commercial retail. The ultimate long-term goal for DHHL is an economically sustainable healthy native forest ecosystem, homesteading, pasture use for beneficiaries, gathering and traditional practices,	Some programs underway

Table 4-1: Other Past, Present, and Reasonably Foreseeable Future Actions		
Action	**Description**	**Year**
	educational and research, eco-tourism, and commercial activities. The time commitment for the program and restoration of the land is long-term, essentially for the next 100 years and beyond. Current efforts underway include the Native Forest Restoration, Koa Salvage and Reforestation Project, Demonstration Game Management Program, ʻĀina Mauna Christmas Tree Demonstration Project, and Gorse Removal and Harvesting Pilot Program. The Native Forest Restoration has begun restoration of the Humuʻula-Piʻihonua lands, including approximately 17,800 acres to be restored back to a healthy, diverse native koa and ʻōhiʻa forest ecosystem, and approximately 10,000 acres to be restored to māmane forest, a critical Palila bird habitat. The Native Forest Restoration Project will provide a variety of benefits and opportunities through gathering, cultural practices, and opportunities to see and understand native forest ecosystems. The Koa Salvage and Reforestation Project promotes forest-based economic opportunities, with the focus on sustainable commercial forestry management practices on approximately 498 acres of Humuʻula lands. The Demonstration Game Management Program manages feral sheep on DHHL lands bordering the Saddle Road, restores native vegetation on nearby puʻu, and conducts research to help direct future decisions about managing feral sheep and other game animals on approximately 1,559 acres of Humuʻula lands. Only archery hunting is allowed as proximity to Saddle Road makes gun hunting unsafe. The Feral Cattle Removal Project is underway to remove feral cattle on approximately 14,315 acres of Humuʻula lands and approximately 5,690 acres of Piʻihonua lands. The Hawaiʻi Forest Institute ʻĀina Mauna Christmas Tree Demonstration Project involves importing and propagating seed and outplanting Douglas fir seedlings on DHHL lands in Humuʻula/Piʻihonua. The Gorse Removal and Harvesting Pilot Program is ongoing, established to remove and harvest gorse from Mauna Kea and develop it as a marketable product to expand economic opportunities for Native Hawaiians. Future improvements planned include 100–200 rural homesteads, an administration base facility, outplanting centers and field worker accommodations, campgrounds, adaptive reuse of the Humuʻula Sheep Station, eco-tourism activities, and commercial facilities, including a visitor center, restaurant, general store, rest stop, lodging, and retail facilities (DHHL, 2012).	
ʻĀina Mauna Legacy Program (DoD)	In partnership with the DHHL, $1M of REPI funding was awarded to protect Palila habitat within the Mauna Kea Forest Reserve on the island of Hawaiʻi in 2023. Project activities include new fence construction as well as repair and maintenance of older fencing to create a nearly 9-kilometer enclosure that to encompass 2,400 acres of Palila critical habitat on DHHL lands. Removal of invasive weeds (particularly Gorse) and out-planting of native species in and	Construction: 2024+ Operation: 2024+

Table 4-1: Other Past, Present, and Reasonably Foreseeable Future Actions		
Action	**Description**	**Year**
	around remnant māmane dominant forest will improve connectivity between remnant native forest patches and increase diversity in plant communities. These efforts support the continuation of the ʻĀina Mauna Legacy Program that was implemented by DHHL in 2012 (DA, 2024).	
Parker Ranch Mauna Kea Reforestation Project	In 2024, Parker Ranch Foundation Trust was awarded $1.3M to restore approximately 3,300 acres of remnant native forest and pasture lands in the upper elevations of Mauna Kea. This project will involve the construction of new conservation fences, implementation of improved cattle grazing practices, expansion of wildfire mitigation resources, reduction of non-native feral ungulates, and the implementation of an accelerated native forest restoration project that will yield long-term environmental and ecological benefits across the leeward Mauna Kea region. This collaborative approach will see the restoration of forest habitat for several species of native forest birds and numerous native plant species back into the historical ranges that they were once found and will also mitigate wildfire and other anticipated climate change impacts that pose threats to Parker Ranch's livestock operations, PTA training capabilities, overall military readiness, and the resiliency of neighboring communities (DA, 2024).	Construction: 2025+ Operation: 2025+
PTA Climate Resilience Initiatives	In 2024, DLNR DOFAW was awarded $1.7M in REPI funding for the purposes of various climate resilience initiatives on the island of Hawai'i. Lines of effort include: Palila critical habitat restoration at Puʻu Mali and predator control/habitat restoration at Mauna Kea Forest Reserve; Manuka Natural Area Reserve Fountain Grass Control; and seabird monitoring and predator control in Mauna Kea and Mauna Loa. This work synergizes with previous REPI awards and aims to implement specific control measures as recommended by the results of surveys and studies conducted in 2022-2023. This phased approach of using REPI funding to conduct initial investigations in years 1 and 2, and then request follow-on funds to implement tailor-made solutions in years 3 and 4 has become the basis for REPI project implementation in Hawaiʻi (DA, 2024).	Construction: 2025+ Operation: 2025+
Waimea Nui Emergency Operations Center	Defense Community Infrastructure Program project to fund construction of an Emergency Operations Center that houses emergency fire equipment and technology hardware to support a distributed emergency operations center to assist in responding to emergency situations such as wildfires, earthquakes, hurricanes, and volcanic eruptions. The project would enable better coordinated emergency response between the Army, Hawaiʻi County, DHHL, and the Waimea Nui homestead community. The proposed facility would be located approximately 1 mile from the Waimea airport on land owned and managed by the DHHL (DCIP, ND).	Construction: 2024+ Operation: 2025+
Napuʻu Natural Resource Protection Mitigating Rare Plant	DoD REPI Program project that provides off-site protection (off PTA) for critical habitat for the endangered Palila within the DHHL ʻĀina Mauna lands and adjacent Mauna Kea Forest Reserve (DoD-REPI, 2023). In 2023, DLNR DOFAW was awarded $1.3M in REPI funding to conduct invasive species management actions and institute at-risk species protection measures in the Napuʻu region northwest of PTA. This work consists of installing fencing	Construction: 2023+

Table 4-1: Other Past, Present, and Reasonably Foreseeable Future Actions		
Action	**Description**	**Year**
Impacts Project	to prevent feral ungulates from denuding native vegetation and restoring habitat through out-planting of native fire-resilient plants. Additionally, this project includes outreach and education opportunities for the community to learn about bio-cultural restoration and fire awareness while conducting volunteer work such as out planting of native species and weeding of restoration areas (DA, 2024).	
Napuʻu and Mauna Kea Invasive Species Management Project	DoD REPI Program project that reduces the impact of invasive species on native dryland forests and offers protection of native ecosystems on Mauna Kea (DoD-REPI, 2023). To-date, $1.1M in REPI funding has been awarded to DLNR DOFAW for the purposes of invasive species management in the Napuʻu and Mauna Kea regions surrounding PTA. The proposed work includes installation of endangered plant fencing in the Puʻu Anuhulu Game Management Area, surveys and studies on the invasive Myoporium (Naio) thrips and trials to address its eradication, and a Palila demography study with predator fencing feasibility testing. This was initially intended to be a 3-year project when first proposed in 2023, but as survey and study results are received, its duration may be extended (DA, 2024).	Construction: 2023+
Napuʻu Wildland Fire Management Project	DoD REPI Program project that provides wildland fire management planning to reduce fire risk to 9 threatened and endangered species and 15 at-risk species while providing critical habitat restoration (DoD-REPI, 2023). To-date, $2.5M in REPI funding has been awarded to DLNR DOFAW to accomplish goals within a multi-year project portfolio developed in 2022 that addresses wildland fire concerns in the Napuʻu region northwest of PTA. Efforts include mapping, seed collection, invasive grass removal and fuel load reduction, creation of fire breaks and green breaks, staff capacity, and improvements to existing Puʻu Waʻawaʻa base yard and fire suppression infrastructure. The project has also received an additional $2.5M from the Office of Local Defense Community Cooperation Defense Community Infrastructure Program for gray infrastructure needs. This is an ongoing project that will continue to be included in annual REPI funding requests (DA, 2024).	Construction: 2023+

4.4 Cumulative Impacts Analysis

~~This section~~ **Table 4-2** provides a summary of past impacts of activities at PTA, potential impacts of the Proposed Action (including all three action alternatives), and impacts of present and reasonably foreseeable future actions, and then assesses the combined effects in terms of cumulative impacts. A significant cumulative impact may be identified under the circumstances described in **Section 4.2.3**. If there is no potential for cumulative impacts (i.e., there is either no impact from the Proposed Action or no impact from past, present, and reasonably foreseeable future actions), then the reason for no cumulative impacts is explained and the resource is not analyzed further.

Table 4-2: Cumulative Impacts Analysis
Land Use
Impacts of Past PTA Activities PTA's current military use of the State-owned land is a legal, nonconforming use as defined in HAR ~~Section~~ Chapter 13-5, Conservation District. Hunting is the primary recreational use of State-owned land at PTA. Hunting is subject to training schedule compatibility and a permit from the PTA Garrison Commander. As identified in **Section 3.2**, incompatibility of military use of the State-owned land 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 and restrictions on public access to hunting areas are~~is~~ the primary land use adverse impacts associated with past PTA activities. Military presence and lack of access for Native Hawaiians have affected multiple generations who cite historical trauma due to historic and current military actions. *Summary of Potential Impacts of the Proposed Action* The action alternatives would result in: • No impacts to new, long-term, minor, beneficial impacts on vistas. • No impacts to new, long-term, negligible to minor, adverse impacts on encroachment management. • Continued, long-term, minor to moderate, adverse impacts; ~~and~~ new, short-term, negligible to minor, adverse impacts; and new, long-term, negligible to minor, beneficial impacts on recreation. With respect to land tenure, the action alternatives would result in: • New, long-term, significant, adverse impacts based on incompatibility with HAR Chapter 13-5 that 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 (lease). • New, long-term, moderate, beneficial impacts from annual revenue generation (lease). The State-owned land would be retained at no less than an equitable, fair market value. • Continued, long-term, significant, adverse impacts 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 (lease). • New, long-term, minor, beneficial impacts from sale of the land (fee simple title). The State-owned land would be retained at no less than an equitable, fair market value. • New long-term, significant, adverse impacts from transfer of land control and ownership of conservation district land from the State to the U.S. Government (fee simple title). • New, long-term, significant, adverse impacts from elimination of potential future revenue generation and use of public trust lands (fee simple title). • New, long-term, significant, beneficial impacts from the State controlling the State-owned land not retained for use and benefit of Native Hawaiians and the public (land not retained).

Table 4-2: Cumulative Impacts Analysis
In total, the action alternatives would result in significant, adverse impacts on land use under lease and fee simple title. Military presence and lack of access for Native Hawaiians would continue to affect multiple generations of Native Hawaiians who cite historical trauma due to historic and current military actions. *Impacts of Present and Reasonably Foreseeable Future Actions* The Cantonment FIP Environmental Assessment (EA) indicated that construction would require siting of temporary laydown spaces, internal road closures, and utility service interruptions that may result in some level of temporary disruption to onsite personnel, which is considered a less than significant impact. The PTA RPMP and RCMP indicated compatibility with existing and planned land uses surrounding PTA and result in less than significant, and potentially beneficial, impacts on land use. The TMT EIS indicated that the project would be in compliance with land use policies and controls and would have less than significant impacts on land use. The Saddle Road Extension EIS noted consistency with goals, objectives, and standards in local land use plans, including the County of Hawai'i General Plan, and the Kona and South Kohala Community Development Plans. *Cumulative Impacts* The action alternatives as well as present and reasonably foreseeable future actions are consistent with existing and planned land uses. The action alternatives would have less than significant impacts on vistas, recreation, and encroachment management, and significant, adverse and beneficial impacts on land tenure under lease and fee simple title. Impacts of past, present, and reasonably foreseeable future actions are assessed to be less than significant on vistas, recreation, and encroachment management, and significant, adverse on land tenure~~land use~~. The action alternatives, when combined with past, present, and reasonably foreseeable future actions, would result in less than significant cumulative impacts on vistas, recreation, and encroachment management, and significant, adverse, cumulative impacts on land tenure under lease and fee simple title. The action alternatives, when combined with past, present, and reasonably foreseeable future actions, would continue to affect multiple generations of Native Hawaiians who cite historical trauma due to historic and current military actions associated with military presence and lack of access for Native Hawaiians.
Biological Resources
Impacts of Past PTA Activities **Section 3.3** indicates that State-owned land at PTA provides potential habitat for 20 federally listed plant species, two federally listed invertebrates, three federally listed bird species, one protected mammal species, and one USFWS-designated critical habitat. The military is required to follow all minimization and mitigation measures outlined in the ~~Biological Opinions~~BOs, which is the USFWS response to a Section 7 consultation. Biological resources management programs at PTA have been beneficial; however, ~~increased risk of wildfires~~repeated wildland fires, caused by climate change and training activity, have destroyed individual federally listed plants and have affected threatened and endangered species habitat, including surpassing annual and cumulative allowances for authorized incidental take of potential available treeland roosting habitat for the federally endangered Hawaiian hoary bat, resulting in significant, adverse impacts.

Table 4-2: Cumulative Impacts Analysis
Summary of Potential Impacts of the Proposed Action Impacts of the action alternatives would be mixed for Alternatives 1, 2, and 3, ranging from continued, long-term, significant, adverse impacts on Hawaiian hoary bat habitat and protected and native species from potential training-related wildfires~~ that could be reduced to less than significant with continued implementation of the BMPs, SOPs, and additional management measures discussed in **Section 3.3.4**,~~ to continued, long-term, moderate, beneficial impacts; and new long-term, moderate, adverse impacts to new, long-term, moderate, beneficial impacts. Overall, continued impacts would be significant and adverse~~, but could be reduced to less than significant,~~ and new impacts would be less than significant. *Impacts of Present and Reasonably Foreseeable Future Actions* The Cantonment FIP EA indicated that construction would have no impact on ~~terrestrial wildlife or~~ critical habitat, although there would be short-term, less than significant, impacts on the Hawaiian goose, Hawaiian hoary bat, and ~~seabirds~~Hawaiian petrel and band-rumped storm petrel; also, there would be no effect for Blackburn's sphinx moth and yellow-faced bees. Section 7 consultation with the USFWS for the Cantonment FIP EA resulted in a determination that the proposed program was not likely to adversely affect the Hawaiian goose, Hawaiian hoary bat, Hawaiian petrel, or band-rumped storm petrel with implementation of identified avoidance and minimization measures (USAG-HI, 2018). The Saddle Road Extension EIS indicated that there would be effects on habitat of non-native vegetation that supports non-native animals, with no critical animal habitat affected; impacts would be less than significant. The TMT EIS indicated that the projects would displace approximately 0.2 acre of weiku bug (a flightless seed bug) habitat and approximately 6 acres of alpine stone desert lava flow habitat; these impacts were determined to be less than significant after mitigations; long-term continuation of astronomy would likely have similar types of effects. The DHHL ʻĀina Mauna EA indicated that there would be anticipated benefits to forest resources associated with the project, stemming from feral animal eradication, pig management, and gorse (*Ulex europaeu*) eradication. The Defense Community Infrastructure Program project would improve wildland fire responses; thus, reducing adverse impacts on biological resources from wildland fires. DoD REPI Program projects, such as the Napuʻu Natural Resource Protection Mitigating Rare Plant Impacts Project, Napuʻu and Mauna Kea Invasive Species Management Project, and the Napuʻu Wildland Fire Management Project, would provide long-term, beneficial impacts from improving Palila critical habitat, reducing invasive species impacts and wildland fire risks, and out-planting of native species. The Parker Ranch Mauna Kea Reforestation Project would restore 3,300 acres of remnant native forest and pasture lands, expand wildfire mitigation resources, and reduce non-native feral ungulates on the upper elevations of Mauna Kea. The PTA Climate Resilience Initiatives include restoring Palila critical habitat at Puʻu Mali, predator control/habitat restoration at Mauna Kea Forest Reserve, Manuka Natural Area Reserve Fountain Grass Control, and seabird monitoring and predator control in Mauna Kea and Mauna Loa. The Napuʻu Natural Resource Protection Mitigating Rare Plant Impacts project would protect biological resources via invasive species management actions and at-risk species protection measures.

Table 4-2: Cumulative Impacts Analysis
Cumulative Impacts The action alternatives would have continued, long-term, significant, adverse impacts on Hawaiian hoary bat habitat and protected and native species from potential training-related wildfires~~that could be reduced to less than significant with continued implementation of BMPs, SOPs, and additional management measures discussed in **Section 3.3.4**~~. Impacts of past, present, and reasonably foreseeable future actions include significant, adverse impacts (past actions, particularly repeated wildland fires) and less than significant impacts (present and reasonably foreseeable future actions). The action alternatives, when combined with past, present, and reasonably foreseeable future actions, would result in additive impacts on the Hawaiian hoary bat and protected and native species. Although the Proposed Action includes measures that could be used to reduce its impacts~~to less than significant~~, the action alternatives, when combined with past, present, and reasonably foreseeable future actions, would result in cumulative impacts that would be significant and adverse for lease and fee simple title.
Historic and Cultural Resources and Cultural Practices
Impacts of Past PTA Activities The 2018 Section 106 PA for PTA determined that previous military training and related activities have had long-term, moderate, adverse impacts on historic properties (historic and cultural resources) at PTA, primarily within the impact area on U.S. Government-owned land. Additionally, there have been long-term, significant, adverse impacts on cultural practices related to limitations on cultural access as well as long-term, significant, adverse impacts on cultural practices due to repeated wildland fires from ongoing activities that have impacted biological resources that are important to cultural practices of Native Hawaiians. The impacts on historic properties and cultural practices have affected multiple generations of Native Hawaiians during the current lease. On the other hand, there have been moderate, beneficial impacts on historic and cultural resources due to CRM programs and actions that preserve and protect historic and cultural resources. *Summary of Potential Impacts of the Proposed Action* The impacts of ongoing activities at PTA described previously would continue to varying degrees under the action alternatives and are described in **Section 3.4** as moderate, adverse and moderate, beneficial for historic and cultural resources and significant, adverse for cultural practices. New impacts would vary from minor, adverse to moderate, beneficial. The significant, adverse impacts on cultural practices would remain significant, even with mitigation. The impacts on historic properties and cultural practices would continue to affect multiple generations of Native Hawaiians. *Impacts of Present and Reasonably Foreseeable Future Actions* The Cantonment FIP EA indicated that no historic properties would be affected by the Cantonment FIP. Additionally, in a letter dated April 8, 2016, the SHPD concurred with USAG-HI's determination of "no historic properties affected" for ground-disturbing activities (i.e., archaeological resources at or below ground surface level), and in a letter dated March 20, 2018, the SHPD concurred with USAG-HI's determination of "no historic properties affected" for architectural resources for the Cantonment FIP (USAG-HI, 2018a). The RPMP EA indicated that there would be no impact on archaeological resources.

Table 4-2: Cumulative Impacts Analysis
The DHHL ʻĀina Mauna EA indicated that the project would provide benefits for the exercise of cultural traditions and opportunities for a variety of koa wood production. *Cumulative Impacts* Past actions at PTA have had less than significant impacts on historic and cultural resources, and significant, adverse impacts on cultural practices. The action alternatives would have the same continued impacts and new, less than significant impacts. Impacts of present and reasonably foreseeable future actions would vary from no impacts to beneficial impacts. The action alternatives, when combined with past, present, and reasonably foreseeable future actions, would result in less than significant cumulative impacts on historic and cultural resources under lease and fee simple title and significant, adverse, cumulative impacts on cultural practices for multiple generations of Native Hawaiians ~~for~~ under lease and fee simple title.
Hazardous Substances and Hazardous Wastes
Impacts of Past PTA Activities **Section 3.5** identifies 11 sites that have potential to have hazardous substances or petroleum products on or adjacent to State-owned land at PTA. The contaminants detected in site soils have a low likelihood to become mobilized off-site due to the low rainfall in the area and lack of streams or a developed drainage system across the property. The surface contamination is also unlikely to infiltrate to the underlying localized perched aquifer and more regional high-level aquifer present at PTA due to the low rainfall in the area and the considerable depth to these groundwater systems. *Summary of Potential Impacts of the Proposed Action* The action alternatives would, to varying degrees, lead to a continuation of past adverse impacts. **Section 3.5** indicates that these continued adverse impacts would tend to be negligible to minor due to existing management measures that would continue to be in practice. Additionally, new negligible to moderate, adverse and beneficial impacts would occur due to ending ongoing activities and conducting lease compliance actions and cleanup and restoration activities in State-owned land not retained. *Impacts of Present and Reasonably Foreseeable Future Actions* The Cantonment FIP EA indicated that there would be the potential for release of petroleum products or other substances during construction but that the impact would be less than significant. The RPMP EA indicated that the action would have beneficial impacts due to modernization of waste collection and storage processes. The TMT EIS indicated that the project would generate additional waste, but the impact would be less than significant because the project would comply with all applicable requirements and regulations. *Cumulative Impacts* The action alternatives would have less than significant impacts on hazardous substances and hazardous wastes. Impacts of past, present, and reasonably foreseeable future actions are assessed to

Table 4-2: Cumulative Impacts Analysis
be less than significant. Hazardous substances and hazardous wastes are subject to strict handling and monitoring procedures. Given these procedures and the unlikelihood for infiltration, water resources would not be substantially affected; therefore, additive effects are unlikely to occur and would be minimal in an instance that they do. Consequently, the action alternatives, when combined with past, present, and reasonably foreseeable future actions, would result in less than significant cumulative impacts on hazardous substances and hazardous wastes under lease and fee simple title.
Air Quality and Greenhouse Gases
Impacts of Past PTA Activities As indicated in **Section 3.6**, air emission sources associated with training and other activities on State-owned land at PTA include exhaust from military vehicles and aircraft flight operations, dust from vehicle use on gravel and dirt roads and near-ground helicopter and tilt-rotor operations, military munitions use, and an internal combustion engine for an emergency generator at Building 601. This engine has a permitted potential to operate for up to 500 hours per year but operates for approximately 18 hours per year. Actual emissions from these sources are far below maximum allowable levels. These emissions constitute negligible to minor, adverse impacts that are ~~classified as~~ less than significant. The Army has implemented measures at PTA, such as replacing gasoline-fueled generators with more than 450 solar panels, to reduce reliance on carbon-based energy and lower air emissions for negligible, beneficial impacts. Long-term, minor, direct and indirect, adverse impacts from GHG emissions have occurred from ongoing activities within the State-owned land and associated activities outside the State-owned land; however, the generation of GHGs has not meaningfully contributed to the impacts of global or local climate change. *Summary of Potential Impacts of the Proposed Action* The action alternatives would generally present similar continued adverse impacts as those described for past PTA activities, and none would lead to an increase in long-term emissions. Additionally, the action alternatives would result in new short-term, negligible to minor, adverse impacts on air quality due to lease compliance actions and cleanup and restoration activities, and new long-term, negligible, beneficial impacts from the end of ongoing activities in the State-owned land not retained. Less than significant impacts would tend to continue over the long term. *Impacts of Present and Reasonably Foreseeable Future Actions* The Cantonment FIP EA indicated that there would be a less than significant adverse impact on air quality during construction from use of construction equipment. The RPMP EA indicated that the action would have less than significant impacts as it would not contribute to a violation of air quality regulations or substantially increase GHG emissions. The TMT EIS indicated that some dust would be produced during construction of the project but that this would not substantially affect the environment and the impact is considered less than significant. The Saddle Road Extension EIS indicated that the build alternatives for the action would lead to better air quality than no build alternatives. DoD REPI funding associated with PTA Climate Resilience Initiatives would be used to conduct various climate resilience initiatives, such as habitat restoration, on the island of Hawai'i. The Parker Ranch Mauna Kea Reforestation Project would mitigate wildfire and other anticipated climate change impacts that pose threats to Parker Ranch's livestock operations, PTA training capabilities, overall military

Table 4-2: Cumulative Impacts Analysis
readiness, and the resiliency of neighboring communities (DA, 2024). *Cumulative Impacts* The action alternatives would have less than significant impacts on air quality and from GHGs. Impacts of past, present, and reasonably foreseeable future actions are assessed to be less than significant. Because there is limited opportunity for locally generated air pollutants to accumulate, additive effects on regional air quality and from GHGs are unlikely. Consequently, the action alternatives, when combined with past, present, and reasonably foreseeable future actions, would result in less than significant cumulative impacts on air quality and from GHGs (i.e., impacts on climate change) under lease and fee simple title.
Noise
Impacts of Past PTA Activities Existing sources of noise on and adjacent to PTA include military vehicles and aircraft, road traffic, and military munitions use during training exercises. **Section 3.7** indicates that noises that extend beyond the installation boundaries overlap with uninhabited forest reserve areas; there are no noise-sensitive lands impacted. Nonetheless, public comments on this EIS have mentioned adverse effects from military munitions noise affecting multiple generations of the public, including Native Hawaiians, during the current lease. **Section 3.7** also indicates that noise generated at PTA may cause wildlife startle, alarm, and alert behaviors, potentially causing rapid movement or flight in avoidance behavior. This could increase the risk of wildlife being struck by live-fire, abandoning nest or young, receiving auditory damage, or increasing energy expenditure and food demands. It is also possible that 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~~ such as the ICUZ and the 2010 SONMP, to address major noise sources, including airfield noise. *Summary of Potential Impacts of the Proposed Action* Under the action alternatives, the Army would continue operations in accordance with federal and local noise ordinances and guidance, including the SONMP and ICUZ, resulting in continued long-term, minor, adverse noise impacts on biological resources and multiple generations of the public, including Native Hawaiians. The action alternatives also would result in new short-term, negligible, adverse noise impacts due to lease compliance actions and cleanup and restoration activities as well as new long-term, negligible to moderate, beneficial impacts from ending ongoing activities in the State-owned land not retained. Long-term noise levels at PTA would tend to decrease under Alternatives 2 and 3. *Impacts of Present and Reasonably Foreseeable Future Actions* The Cantonment FIP EA indicated that there would be limited noise during construction and that the noise would have a less than significant impact on personnel and wildlife. Impacts such as these could also be expected with other PTA construction projects associated with the RCMP and the RPMP. The TMT EIS indicated that noise produced during construction of the project would not substantially degrade environmental quality in noise-sensitive areas and impacts are considered less than significant.

Table 4-2: Cumulative Impacts Analysis
Cumulative Impacts The action alternatives would have less than significant impacts on noise. Impacts of past, present, and reasonably foreseeable future actions are assessed to be less than significant. Noise impacts from the action alternatives would tend to only have additive effects in combination with present and reasonably foreseeable future actions at PTA to include the Cantonment FIP and planned construction projects associated with the RCMP and RPMP, actions which also would occur in accordance with the ICUZ. These planned construction projects would be implemented over a long period of time and are expected to overlap only occasionally. Consequently, the action alternatives, when combined with past, present, and reasonably foreseeable future actions, would result in less than significant cumulative impacts on noise that would continue adverse effects on biological resources and multiple generations of the public, including Native Hawaiians, under lease and fee simple title.
Geology, Topography, and Soils
Impacts of Past PTA Activities **Section 3.8** indicates that adverse impacts of activities at PTA have been negligible to minor and primarily relate to runoff, erosion, sedimentation, and soil disturbances. *Summary of Potential Impacts of the Proposed Action* Under the action alternatives, continued long-term, negligible to minor, adverse impacts related to soil disturbance would continue due to ongoing activities. Additionally, new short-term, negligible to minor, adverse impacts and new long-term, negligible to minor, beneficial impacts associated with soil disturbance could occur from lease compliance actions and cleanup and restoration activities in the State-owned land not retained. Lastly, new, long-term, negligible to minor, beneficial impacts would result from ending ongoing activities within the State-owned land not retained. *Impacts of Present and Reasonably Foreseeable Future Actions* The Cantonment FIP EA indicated that there would be less than significant impacts on natural hazards, geology, and soils associated with construction and operations. The RPMP EA indicated that the action would not result in alteration to soils or geological features that could cause soil erosion or loss or increase natural hazard risks. Impacts identified in the TMT EIS are expected to be minimal and, therefore, considered less than significant. *Cumulative Impacts* The action alternatives would have less than significant impacts on geology, topography, and soils. Impacts of past, present, and reasonably foreseeable future actions are assessed to be less than significant. The potential for additive effects would occur only at PTA, and numerous programs have been established to limit impacts associated with federal actions (**Section 3.8**). Consequently, the action alternatives, when combined with past, present, and reasonably foreseeable future actions, would result in less than significant cumulative impacts on geology, topography, and soils under lease and fee simple title.

Table 4-2: Cumulative Impacts Analysis
Water Resources
Impacts of Past PTA Activities Groundwater has never been extracted from the State-owned land of PTA, and potable water required for operations at PTA is trucked in. Groundwater beneath PTA is likely high quality due to its distance inland from the coast. **Section 3.9** indicates that activities at PTA have led to negligible to minor, adverse impacts on the watershed, underlying aquifer systems, and stormwater and flooding within the State-owned land. There are no perennial streams, rivers, lakes, or other surface water bodies within the State-owned land due to the low annual rainfall in the area and the highly porous nature of the relatively young volcanic rocks that cover most of the property. *Summary of Potential Impacts of the Proposed Action* The action alternatives would result in continued long-term, negligible to minor, adverse impacts on the watershed, underlying aquifer systems, and stormwater and flooding. Additionally, the action alternatives would result in new short-term, negligible to minor, adverse and new long-term, negligible to minor, beneficial impacts due to lease compliance actions and cleanup and restoration activities as well as new long-term, negligible to minor, beneficial impacts from ending ongoing activities in the State-owned land not retained. Overall, impacts would be less than significant. *Impacts of Present and Reasonably Foreseeable Future Actions* The Cantonment FIP EA indicated that any potential adverse impacts on water resources would be mitigated to a level of negligible impact. The TMT EIS indicated that the project would increase the amount of impervious surfaces, use of potable water, and wastewater discharge; however, design features and compliance with requirements and regulations would lead to impacts being less than significant. The DHHL ʻĀina Mauna EA indicated that, for potable water, the project would likely implement a catchment or groundwater well, storage, and distribution system for uses on the property. *Cumulative Impacts* The action alternatives would have less than significant impacts on water resources. Impacts of past, present, and reasonably foreseeable future actions are assessed to be less than significant. The action alternatives and the present and reasonably foreseeable future actions would follow requirements and regulations related to use and discharge of water resources. Additive effects would tend to relate to use of water from the aquifer and the long-term availability of water on the island of Hawaiʻi. None of the projects, however, are particularly water intensive as, for instance, a new agricultural operation may be. Consequently, the action alternatives, when combined with past, present, and reasonably foreseeable future actions, would result in less than significant cumulative impacts on water resources under lease and fee simple title.

Table 4-2: Cumulative Impacts Analysis
Socioeconomics
Impacts of Past PTA Activities As noted in **Section 3.10**, military activity has been an important contributor to the State's economy for decades supporting 1,962 jobs with approximately $92 million in associated labor income in the County of Hawai'i as of 2016. Army expenditures in the County of Hawai'i also include local purchases of potable water, equipment, and other services. Additionally, various DoD, state, and local agencies and groups contribute to the local economy by traveling to PTA for training and spending in the County of Hawai'i. Overall, socioeconomic impacts were determined to be less than significant. *Summary of Potential Impacts of the Proposed Action* Alternatives 1, 2, and 3 would result in increasingly reduced levels of ongoing activities at PTA, respectively, which would lead to reductions in employment and personal income; however, the adverse impacts would be less than significant. The lease compliance actions and cleanup and restoration activities would result in new short-term, negligible, beneficial impacts on socioeconomics in the State-owned land not retained. *Impacts of Present and Reasonably Foreseeable Future Actions* Documents indicated that the present and reasonably foreseeable future actions would tend to generate beneficial economic impacts through increases in employment and income, and the Nakahili Workforce Developers and DHHL 'Āina Mauna projects also would have beneficial impacts on housing supply. The DHHL 'Āina Mauna project would provide increased economic and subsistence opportunity for homestead beneficiaries. The Defense Community Infrastructure Program project and DoD REPI Program projects provide beneficial impacts on the local economy via purchase of local supplies and use of local contractors. *Cumulative Impacts* The action alternatives would have less than significant adverse impacts on socioeconomics. Impacts of past, present, and reasonably foreseeable future actions are assessed to be beneficial and less than significant. The action alternatives, when combined with past, present, and reasonably foreseeable future actions, would result in less than significant cumulative impacts on socioeconomics under lease and fee simple title.
Environmental Justice
Impacts of Past PTA Activities As noted in **Section 3.11**, there have been adverse impacts related to reduced access to recreation and cultural practices, loss of 'āina, military use that degraded the sacred nature or otherwise desecrated the traditionally and culturally important land at PTA, repeated wildland fires that affect biological resources that are important to the cultural practices of Native Hawaiians, and traffic impacts that tend to disproportionately affect low-income, minority, or Native Hawaiian populations. These adverse

Table 4-2: Cumulative Impacts Analysis
impacts have affected the aforementioned populations for multiple generations during the current lease. The impacts associated with loss of ʻāina, repeated wildland fires that affect biological resources that are important to the cultural practices of Native Hawaiians, and reduced cultural practices access were determined to be significant in the context of environmental justice. *Summary of Potential Impacts of the Proposed Action* The action alternatives would represent a continuation of the significant, and less than significant, adverse impacts described previously from past PTA activities that would continue to affect multiple generations of communities with environmental justice concerns under lease and fee simple title. New impacts include long-term, significant, adverse, disproportionate impacts on communities with environmental justice concerns from loss of ʻāina (fee simple title); long-term, significant, adverse, disproportionate impacts on communities with environmental justice concerns from removal of ceded lands from public trust (fee simple title); and long-term, significant, beneficial impacts on communities with environmental justice concerns due to resumption of State control of land not retained for the use and benefit of Native Hawaiians and the public (land not retained). *Impacts of Present and Reasonably Foreseeable Future Actions* Neither the Cantonment FIP EA nor the TMT EIS indicated that there would be an impact on environmental justice. The PTA RPMP EA indicated that there would be no impacts on low-income or minority residents and that there would be no increased environmental health and safety risks that would disproportionately affect children. The DHHL ʻĀina Mauna EA indicated that the project would tend to be beneficial by providing homesteading and increased economic opportunity for homesteading beneficiaries. *Cumulative Impacts* The action alternatives would have significant, adverse impacts on environmental justice for historic and cultural resources and cultural practices (lease and fee simple title) and land use (lease and fee simple title), as well as significant, beneficial impacts on land tenure (land not retained). Impacts of past actions were significant and adverse, while impacts of present and reasonably foreseeable future actions are assessed to be less than significant. The action alternatives, when combined with past, present, and reasonably foreseeable future actions, would continue to result in significant, adverse, cumulative impacts on multiple generations of communities with environmental justice concerns under lease and fee simple title.
Transportation and Traffic
Impacts of Past PTA Activities The Army uses several regional roadways to transport military materiel and soldiers, and civilian personnel commute to and from PTA. Soldiers permanently stationed at PTA and civilian personnel employed at the Cantonment commute daily from Hilo, Kailua-Kona, Waikōloa, Waimea, and other island of Hawaiʻi residential communities via the DKI Highway and other public roadways. Army activities do not disrupt or displace harbor or airport operations. As indicated in **Section 3.12**, adverse

Table 4-2: Cumulative Impacts Analysis
impacts on regional transportation are considered minor and less than significant. *Summary of Potential Impacts of the Proposed Action* Alternatives 1 and 2 would have similar minor, adverse impacts to those described from past PTA activities, while Alternative 3 would have lower levels of adverse impacts due to reduced levels of training. ~~All action alternatives could result in new short-term, negligible, adverse impacts due to lease compliance actions and cleanup and restoration activities within the State-owned land not retained.~~ *Impacts of Present and Reasonably Foreseeable Future Actions* The Cantonment FIP EA indicated that traffic would be generated from the ~~east~~ west (Kailua-Kona) and ~~west~~ east (Hilo) sides of the island and that impacts would be less than significant. The TMT EIS indicated that the project would not lead to a decrease in LOS and no additional roadways would be required; therefore, impacts would be less than significant. According to the ʻĀina Mauna Legacy Program EA, some new roadways would be required for the DHHL ʻĀina Mauna project, these roadways would be managed by DHHL. The Saddle Road Extension EIS indicated that the action would improve traffic in the long-term. *Cumulative Impacts* The action alternatives would have less than significant impacts on transportation and traffic. Impacts of past, present, and reasonably foreseeable future action are assessed to be less than significant. The action alternatives, when combined with past, present, and reasonably foreseeable future actions, would not substantially add to roadway traffic or cause harbor or airport disruption; therefore, the combined cumulative impacts would be less than significant under lease and fee simple title.
Airspace
Impacts of Past PTA Activities Due to activities at PTA, civilian air traffic must avoid restricted airspace, which reduces the optimization of civilian routes, causes detours, and adds time and cost to civilian flights as discussed in **Section 3.13**. This impact is considered adverse but less than significant. *Summary of Potential Impacts of the Proposed Action* Similar to the impacts described from past PTA activities, minor, adverse impacts on civilian air traffic would continue under Alternatives 1, 2, and 3. Impacts under each of these action alternatives are considered less than significant. *Impacts of Present and Reasonably Foreseeable Future Actions* Documentation indicated that none of the listed projects would have impacts on airspace.

Table 4-2: Cumulative Impacts Analysis
Cumulative Impacts The action alternatives would have less than significant impacts on airspace. Past actions at PTA have less than significant impacts on airspace, and present and reasonably foreseeable future actions would have no impacts on airspace. The action alternatives, when combined with past, present, and reasonably foreseeable future actions, would have less than significant impacts on airspace under lease and fee simple title.
Electromagnetic Spectrum
Impacts of Past PTA Activities **Section 3.14** indicates that EMS equipment at PTA is below ERLs established in IEEE C95.1-2345 and is inventoried on an annual basis (USAG-HI, 2021d). Department of the Army Pamphlet 385-24 notes that current scientific evidence indicates that no adverse health effects occur with exposures that are within the ERLs, even under repeated or long-term exposure conditions. These impacts are considered less than significant. *Summary of Potential Impacts of the Proposed Action* The less than significant, adverse impacts described above would continue under the action alternatives, although they would be reduced under Alternative 3. Overall, impacts of the action alternatives, related to EMS emissions, would be less than significant. *Impacts of Present and Reasonably Foreseeable Future Actions* Documentation indicated that none of the listed projects would have impacts from EMS; however, some would likely contribute to the overall use of EMS equipment. *Cumulative Impacts* The action alternatives would have less than significant impacts from the use of EMS equipment. Impacts from past, present, and reasonably foreseeable future actions are assessed to be less than significant. Neither the action alternatives nor present and reasonably foreseeable future actions are centered on equipment or activities that are EMS intensive. The action alternatives, when combined with past, present, and reasonably foreseeable future actions, would result in less than significant impacts from use of EMS equipment under lease and fee simple title.
Utilities
Impacts of Past PTA Activities Public utilities that are utilized by PTA include potable water, wastewater, electrical power, solid waste, and telecommunications services. **Section 3.15** indicates that PTA use of those utilities does not place an unreasonable demand on public utility capacity, and impacts of activities at PTA have been less than significant. PTA activities have had long-term, minor, adverse impacts on U.S. Government-owned utilities.

Table 4-2: Cumulative Impacts Analysis
Summary of Potential Impacts of the Proposed Action The less than significant, adverse impacts described above would continue under the action alternatives, although they would be reduced under Alternative 3. New short-term, negligible, adverse impacts on utilities outside of PTA could increase due to increased demand for lease compliance actions and cleanup and restoration activities in the State-owned land not retained. *Impacts of Present and Reasonably Foreseeable Future Actions* The Cantonment FIP EA indicated that there would be beneficial impacts on Army facilities and infrastructure. The TMT EIS indicated that the project would not substantially affect HELCO capacity nor power capacity for nearby telescopes; therefore, impacts would be less than significant. The Nakahili Workforce Developers EA indicated that utility usage by the project would not have substantial adverse effects. *Cumulative Impacts* The action alternatives would have less than significant impacts on utilities. Impacts of past, present, and reasonably foreseeable future actions are assessed to be less than significant. Use of public utilities under the action alternatives and present and reasonably foreseeable future actions would have additive effects on public utility capacity but no additive effects on U.S. Government-owned utilities. The additive effects would not likely lead to a condition where public utility providers lack capacity to provide services, and under some circumstances (such as electricity provision), increases in utility usage can be beneficial for utility providers. The action alternatives, when combined with past, present, and reasonably foreseeable future actions, would result in less than significant cumulative impacts on utilities under lease and fee simple title.
Human Health and Safety
Impacts of Past PTA Activities **Section 3.16** indicates adverse impacts from ongoing activities and beneficial impacts associated with the Army providing emergency services beyond the installation boundary. All impacts are less than significant. *Summary of Potential Impacts of the Proposed Action* The action alternatives would result in continued long-term, minor, adverse impacts from ongoing activities and continued long-term, minor, beneficial impacts from providing emergency services beyond PTA borders. Impacts on human health and safety under Alternatives 2 and 3 would be adverse because the 1,250-foot ESQD arc associated with the hazardous cargo pad and APZs I and II would extend onto State-owned land not retained, access to which could not be controlled by the Army. This new, long-term, adverse impact is considered negligible due to the low likelihood of an aircraft mishap or civilians occupying areas under the ESQD arc (an area difficult to access due to terrain). Alternatives 2 and 3 also would result in new long-term, negligible, beneficial impacts from the potential decrease in feral ungulates along DKI Highway. Alternative 3 would also result in new long-term, minor, beneficial impacts from less military munitions storage and handling and a reduction of wildfire hazards associated with less military activities; new, long-term, negligible, adverse impacts from the firing of indirect-fire weapons over the State-owned land not retained and into the impact area; and new, long-

Table 4-2: Cumulative Impacts Analysis
term, minor, adverse impacts from loss of emergency services readiness. *Impacts of Present and Reasonably Foreseeable Future Actions* None of the listed projects indicated that they would have impacts on human health and safety, except for the Napuʻu Wildland Fire Management Project that would reduce fire risk via quicker response times and result in long-term, minor, beneficial impacts. *Cumulative Impacts* The action alternatives would have a less than significant impact on human health and safety. Impacts of past actions are less than significant, present and reasonably foreseeable future actions are assessed to have no impacts on human health and safety. The action alternatives, when combined with past, present, and reasonably foreseeable future actions, would result in less than significant cumulative impacts on human health and safety under lease and fee simple title.

4.5 Summary

~~Table 4-2~~Table 4-3 presents a summary of the cumulative impacts analysis for each resource area presented in this EIS. The analysis reviewed past impacts of activities at PTA, impacts of the action alternatives (impacts provided by action alternative and retention method when necessary), and impacts of present and reasonably foreseeable future actions, and provided a cumulative impact determination for each resource. Additional details on past activities at PTA, as well as impacts of the action alternatives by retention method, are presented in **Chapter 3**.

Table 4-3: Cumulative Impacts Summary

	Past PTA Activities	Action Alternatives	Present and Reasonably Foreseeable Future Actions	Cumulative Impacts
Land Use	~~Land~~ The military use of the State-owned land is a legal, nonconforming use as defined in HAR ~~Section~~ Chapter 13-5, Conservation District. Impacts include incompatibility of military use of the State-owned land with the objectives and policies of the State to hold lands in trust for the use and benefit of Native Hawaiians and the public as well as r~~R~~estrictions on public access to recreation areas.	New, minor, beneficial impacts on vistas, and new, negligible to minor, adverse impacts on encroachment management. Less than significant adverse and beneficial impacts on public access to recreation areas. New, significant, adverse impacts based on incompatibility with HAR Chapter 13-5 that 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 (lease). Continued, significant, adverse impacts on land tenure from use of public lands for military activities rather than for Native Hawaiians (lease). New significant, adverse impacts on land tenure from transfer of land control and ownership of conservation district land from the State to the U.S. Government and from loss of revenue and use of public trust lands (fee simple title). New, significant, beneficial impacts on land tenure from the State using the land in trust for use and benefit of Native Hawaiians and the public (land not retained).	Less than significant impacts on land use.	Significant (lease and fee simple title).

Table 4-3: Cumulative Impacts Summary				
	Past PTA Activities	**Action Alternatives**	**Present and Reasonably Foreseeable Future Actions**	**Cumulative Impacts**
Biological Resources	Beneficial resource management programs. ~~Increased risk of~~ Repeated wildland fires, caused by climate change and training activity, have destroyed individual federally listed plants and have affected threatened and endangered species habitat, resulting in significant, adverse impacts.	Continued, significant, adverse impacts~~, that could be reduced to less than significant,~~ from ongoing activities and associated wildland fires under each action alternative. Beneficial impacts under Alternatives 1, 2, and 3 related to reductions in ongoing activities coupled with lease compliance actions (e.g., reforestation) and cleanup and restoration activities.	Less than significant impacts on critical habitat,~~. Less than significant impacts on~~ threatened and endangered species, and invasive species.	Significant (lease and fee simple title).
Historic and Cultural Resources and Cultural Practices	Moderate, adverse damage to archaeological sites and significant, adverse impacts on cultural practices due to limitations on cultural access and repeated wildland fires that impact biological resources used for cultural practices. Moderate, beneficial impacts due to CRM programs.	Continued, moderate, adverse impacts on historic and cultural resources; significant, adverse impacts on cultural ~~access~~practices; and moderate, beneficial impacts due to CRM programs. New impacts would vary from minor, adverse to moderate, beneficial.	No loss of archaeological or historic resources associated with the identified projects. Potential increase in opportunities for the exercise of cultural traditions with the DHHL ʻĀina Mauna project. Potential damage to historic and cultural resources.	Significant (lease and fee simple title).
Hazardous Substances and Hazardous Wastes	Soil contamination within the State-owned land has occurred via a variety of release mechanisms. The contaminants have a low likelihood to become mobilized off-site and are also unlikely to infiltrate to the underlying aquifers.	The action alternatives would, to varying degrees, lead to a continuation of negligible to minor, adverse impacts. New, less than significant, adverse and beneficial impacts from ending ongoing activities and conducting lease compliance actions and cleanup and restoration activities in State-owned land not retained.	The Cantonment FIP EA indicated that there would be the potential for release of petroleum products or other substances during construction. Additive effects unlikely due to strict handling procedures.	Less than significant (lease and fee simple title).

Table 4-3: Cumulative Impacts Summary				
	Past PTA Activities	**Action Alternatives**	**Present and Reasonably Foreseeable Future Actions**	**Cumulative Impacts**
Air Quality and Greenhouse Gases	Air emission sources associated with training and other activities on State-owned land at PTA from multiple sources result in negligible to minor, adverse impacts. Air emission reduction measures have resulted in negligible, beneficial impacts. Long-term, minor, adverse impacts from GHG emissions.	Continued, negligible to minor, adverse impacts ~~due to emissions~~ from ongoing activities; negligible, beneficial impacts from air emission reduction measures; and long-term, minor, adverse impacts from GHG emissions. New, less than significant, adverse and beneficial impacts from ending ongoing activities and conducting lease compliance actions and cleanup and restoration activities in State-owned land not retained. Less than significant impacts overall.	Some localized additive effects from PTA-related actions. Also, construction related dust from reasonably foreseeable future actions. Less than significant impacts on regional air quality.	Less than significant (lease and fee simple title).
Noise	Noise sources at PTA include military vehicles and aircraft, road traffic, and military munitions use during training exercises. Noise does not generally extend into populated areas. Minor, adverse noise impacts from ongoing activities.	Continued, minor, adverse noise impacts on the public and biological resources from ongoing activities. New, less than significant, adverse and beneficial impacts from ending ongoing activities and conducting lease compliance actions and cleanup and restoration activities in State-owned land not retained. Less than significant impacts overall.	Primarily construction noise with less than significant impacts on populations and wildlife.	Less than significant (lease and fee simple title).
Geology, Topography and Soils	Negligible to minor, adverse impacts primarily related to runoff, erosion, sedimentation, and soil disturbances.	Continued, negligible to minor, adverse impacts related to soils from ongoing activities. New negligible to minor, adverse and beneficial impacts associated with soil disturbance from ending ongoing activities and conducting lease compliance actions and cleanup and restoration activities in State-owned land not retained. Less than significant impacts.	Some additive effects at PTA. Overall, minimal impacts considered less than significant.	Less than significant (lease and fee simple title).

Table 4-3: Cumulative Impacts Summary				
	Past PTA Activities	**Action Alternatives**	**Present and Reasonably Foreseeable Future Actions**	**Cumulative Impacts**
Water Resources	Activities at PTA have led to negligible to minor, adverse impacts on the watershed, underlying aquifer systems, and stormwater and flooding impacts within the State-owned land.	Continued, negligible to minor, adverse impacts on the watershed, underlying aquifer systems, and stormwater and flooding. New, negligible to minor, adverse and beneficial impacts from ending ongoing activities and conducting lease compliance actions and cleanup and restoration activities in State-owned land not retained. Less than significant impacts.	Management and mitigation measures would lead to less than significant impacts.	Less than significant (lease and fee simple title).
Socioeconomics	Army expenditures have been beneficial, but less than significant, to the County of Hawaiʻi economy.	Continued, beneficial impacts that would be reduced under all action alternatives. New short-term, negligible, beneficial impacts from lease compliance actions and cleanup and restoration activities in the State-owned land not retained.	Generally beneficial impacts related to construction and operations of present and reasonably foreseeable future actions.	Less than significant (lease and fee simple title).
Environmental Justice	Significant, disproportionate, adverse impacts for historic and cultural resources and cultural practices and land use. Long-term, minor, adverse, disproportionate impacts for traffic.	A continuation of significant, disproportionate, adverse impacts for historic and cultural resources and cultural practices (lease and fee simple title) and land use (lease and fee simple title). Continued long-term, minor, adverse, disproportionate impacts for traffic (lease and fee simple title). New, long-term, significant, adverse, disproportionate impacts from loss of ʻāina, and new, long-term, significant, adverse, disproportionate impacts from removal of ceded lands from public trust (fee simple title).	Documents did not indicate impacts on environmental justice. The DHHL ʻĀina Mauna EA indicated that the project would tend to be beneficial by providing homesteading and increased economic opportunity for homesteading beneficiaries.	Significant (lease and fee simple title).

Table 4-3: Cumulative Impacts Summary				
	Past PTA Activities	**Action Alternatives**	**Present and Reasonably Foreseeable Future Actions**	**Cumulative Impacts**
Transportation and Traffic	Minor, adverse impacts on regional transportation related to traffic due to transport of military materiel and soldiers, as well as employee commutes.	Alternatives 1 and 2 would have similar impacts to those described for past activities, while Alternative 3 would have lower levels of adverse impacts due to less training.	Minimal additional adverse and beneficial impacts.	Less than significant (lease and fee simple title).
Airspace	Reduced optimization of civilian routes, detours, and added time and cost to civilian flights. This impact is considered adverse but less than significant.	Less than significant impacts on civilian air traffic would continue under Alternatives 1, 2, and 3.	No additive impacts.	Less than significant (lease and fee simple title).
Electromagnetic Spectrum	Use of EMS emitting equipment with less than significant impacts.	Less than significant, adverse impacts would continue under the action alternatives but would be reduced under Alternative 3.	No additive impacts.	Less than significant (lease and fee simple title).
Utilities	Demand on public utilities that do not strain capacity. Minor, adverse impacts on PTA utilities. Less than significant impacts overall.	Less than significant impacts would continue under the action alternatives but would be reduced under Alternative 3. New short-term, negligible, adverse impacts on utilities outside of PTA due to increased demand for lease compliance actions and cleanup and restoration activities on State-owned land not retained.	No substantial additive impacts.	Less than significant (lease and fee simple title).

Table 4-3: Cumulative Impacts Summary				
	Past PTA Activities	**Action Alternatives**	**Present and Reasonably Foreseeable Future Actions**	**Cumulative Impacts**
Human Health and Safety	Minor, adverse impacts on health and safety from past and ongoing activities at PTA. Minor, beneficial impacts from providing emergency services beyond PTA.	Continued, minor, adverse impacts from ongoing activities and minor, beneficial impacts from providing emergency services. New negligible, adverse impacts under Alternatives 2 and 3 due to an ESQD arc and APZs 1 and 2 that would extend over State-owned land not retained. Alternative 3 would result in new minor, beneficial impacts from less military munitions storage and handling and a reduction of wildfire hazards; new, negligible, adverse impacts from firing indirect-fire weapons over land not retained; ~~and~~ new minor, adverse impacts from loss of readiness; and new long-term, negligible, beneficial impacts from the potential decrease in feral ungulates along DKI Highway.	No additive impacts.	Less than significant (lease and fee simple title).

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Chapter 5

OTHER REQUIRED CONSIDERATIONS

5.1 Introduction

This section supports the impact analysis summarized in **Section 3.17**. NEPA and HEPA require that incomplete information be disclosed (**Section 5.2**), and that 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 EIS under NEPA Section 107(a)(2)(D, E); 32 CFR Part 651, Appendix E(b)(2); 40 CFR Section 1502.25(b); and HAR Section 11-200.1-24(k). **Table 1-1** fulfills the NEPA and HEPA requirement to list all considered and potential permits, licenses, authorizations, and approvals necessary for implementation of the Proposed Action, along with the status for each.

NEPA and HEPA require the action's relationship to environmental reviews, laws, and EOs be integrated into this EIS to the extent practicable. Compliance with most plans and policies may be undertaken separately from the EIS process, but discussion is included here to provide decision makers with a concise and comprehensive view of the primary environmental issues (**Section 5.3**). NEPA and HEPA also require that significant adverse impacts that cannot be avoided are identified (**Section 5.4**). Other required disclosures include the irreversible and irretrievable commitment of resources associated with the Proposed Action, which is discussed in **Section 5.5**, 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 5.6**.

5.2 Incomplete Information / Unresolved Issues

In accordance with 32 CFR Section 651.44 and 40 CFR Section 1502.21, 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 11-200.1-24(q). This section presents issues to be resolved following the EIS process.

5.2.1 Land Retention Estate(s) and Method(s)

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 are described in **Section 2.3**. Additionally, negotiation is required with the State to determine what estate(s) and method(s) would be considered. This negotiation would follow issuance of the Army ROD. 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.

While the estate(s) and method(s) are not known at this time, the impact analysis conducted for each alternative in this EIS is based on land retention via fee simple title and lease.

5.2.2 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, 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 analyses, as applicable).

5.2.3 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. The conditions may be subject to negotiation between the Army and the State; however, the Army and the State would agree on the conditions prior to implementing the Proposed Action.

~~5.2.2~~5.2.4 Lease Compliance Actions and Cleanup and Restoration Activities

Following expiration of the current lease and in accordance with the lease or otherwise negotiated with the State, the Army would ~~conduct various lease compliance actions~~ comply with lease conditions that would be applicable after expiration of the lease (e.g., reforestation)~~, to the extent feasible,~~ within the State-owned land not retained. **Appendix F** includes a copy of the 1964 lease and 2010 amendment. The current lease compliance actions are not part of the Proposed Action but would be triggered by expiration of the current lease for the State-owned land not retained under the various alternatives. The parameters for these lease compliance actions are subject to the conditions of the current lease and n~~N~~egotiation ~~of the current lease compliance actions~~ with the State, which cannot commence until this EIS process is completed and an alternative has been selected for implementation; therefore, the parameters for ~~the current~~these lease compliance actions within the State-owned land not retained would be defined and determined after completion of this EIS. ~~Lease compliance actions for a new lease or easement are unknown but are assumed to be the same as the current lease, except for lease compliance actions that are no longer relevant, and assumed Army obligations based on State requirements in the COMP, and may be subject to future negotiation.~~

The conditions in a new lease or easement are unknown but are assumed to be similar to those in the current lease except for necessary updates (see **Section 2.3**) and may be subject to negotiation between the Army and the State. It is assumed the Army would conduct the lease compliance actions during a new lease or easement (due to the conditions in a new lease or easement) under various applicable DoD programs and that the lease compliance actions 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.

~~Furthermore, the extent of any State-owned land not retained after expiration of a new lease or easement is unknown. Secondly, 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 (i.e., State-owned land~~

~~not retained); therefore, after expiration of the current 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.~~ In accordance with the lease and under the provisions of existing law, the Army retains responsibility for cleanup of closed ranges (i.e., State-owned land not retained); therefore, after expiration of the current lease, the Army would follow 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 process, which is outside this EIS process. The cleanup and restoration activities for State-owned land not retained would be triggered by and conducted after expiration of the current lease and therefore are not part of the Proposed Action. These activities would be completed in accordance with applicable future cleanup and restoration requirements and standard processes (i.e., requirements and standard processes at the time the activities are initiated). These future cleanup and restoration requirements, standard processes, and associated costs are not known.

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**, **2.2, 2.3**, and **3.1.3** to characterize the potential impacts, but the lease compliance actions may require further evaluation to determine if additional NEPA ~~compliance is~~ and HEPA analyses, as applicable, are required.

5.2.5 Greenhouse Gas Emissions

This EIS qualitatively addresses direct and indirect greenhouse gas (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 land as well as from indirect activities such as manufacturing and shipping equipment and materiel and troop movements to and from PTA) and their associated social costs has not been performed because there are no data inputs reasonably available to support such calculations for a real estate transaction such as the Proposed Action. In this context, reasonably available means the Army does not have GHG emission data specifically for ongoing activities on the State-owned land and cannot reasonably estimate such data.

5.3 Consistency with other Federal, State, and County Land Use Plans, Policies, and Controls

A list of all permits, licenses, authorizations, and approvals from federal, state, and county agencies necessary for implementation of the Proposed Action is required in this EIS under NEPA Section 107(a)(2)(D, E); 32 CFR Part 651, Appendix E(b)(2); 40 CFR Section 1502.25(b); and HAR Section 11-200.1-24(k). **Table 1-1** ~~in **Chapter 1**~~ lists all considered and potential permits, licenses, authorizations, and approvals related to the proposed real estate action. The Proposed Action is an individual action but is a necessary precedent to the continuation of ongoing activities within any State-owned land retained by the Army. Therefore, **Table 1-1** also includes existing and potential permits, licenses, authorizations, or approvals for continuation of ongoing activities. No County of Hawaiʻi permits, licenses, authorizations, or approvals are anticipated.

In accordance with NEPA Section 107(a)(2)(D, E); 32 CFR Part 651, Appendix E (b)(7)(iii); and 40 CFR Section 1502.16(c), 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 it discusses how the Proposed Action may conform or conflict. Consistency with regulations that govern more than one resource area are also discussed here rather than in the regulatory framework sections of **Chapter 3**.

5.3.1 Federal

Table 5-1 provides federal land use plans, policies, and controls that are applicable to the Proposed Action and the Army's ongoing activities, as well as a discussion on how the Proposed Action may conform or conflict.

Table 5-1: Federal Plans, Policies, and Controls
Armed Forces, 10 U.S.C. – Relevant Sections Related to Real Property
Miscellaneous administrative provisions relating to real property, 10 U.S.C. Section 2661 The Secretary concerned is authorized to lease buildings and facilities for the purpose of conducting field exercises and maneuvers under 10 U.S.C. Section 2661. The Secretary may also maintain defense access roads that are certified as important to national defense under the provisions of 23 U.S.C. Section 210. **Discussion:** The Proposed Action falls under the authority of Armed Forces 10 U.S.C. Section 2661 under the land retention estates and methods considered in this EIS.
Land acquisition authorities, 10 U.S.C. Section 2663 The Secretary is authorized to acquire any interest in land that is needed for national defense or to maintain the operational integrity of a military installation under 10 U.S.C. Section 2663. The Secretary will pursue all available options for the acquisition or use of land, such as the purchase of an easement, before commencing any legal proceeding to acquire land by non-negotiated acquisition strategies. The Secretary is required to submit a report to the congressional defense committees, including certification that negotiations with landowner(s) occurred and a rationale as to why alternative acquisition strategies are inadequate. **Discussion:** The land acquisition authority in 10 U.S.C. Section 2663 enables the Proposed Action under the land retention estates and methods presented in the EIS.
Military construction, 10 U.S.C. Section 2802 Land acquisitions, military construction, and defense access road projects are authorized by 10 U.S.C. Section 2802. Proposed projects are submitted to the President, with recommendations, and to Congress, with a budget. **Discussion:** This section of 10 U.S.C. covers the Proposed Action across all alternatives as well as the land retention estates and methods for continuance of ongoing activities at PTA.
Sikes Act, as Amended, 16 U.S.C. Section 670a-670o The Sikes Act relates to mutual agreements with federal and state agencies in regard to conservation, protection, and management of fish and wildlife resources, and establishes that lands and waters used by DoD will be made available to the public for educational or recreational use when such access is compatible with military mission, ecosystem sustainability, and other security and safety considerations. **Section 3.2.2** provides further description. **Discussion:** Ongoing activities on State-owned land 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.

Table 5-1: Federal Plans, Policies, and Controls
Coastal Zone Management Act of 1972, 16 U.S.C. Section 1451, as amended In 1972, the U.S. Congress enacted the CZMA to establish a federal-state partnership to provide comprehensive management of coastal resources focused on protecting natural resources, managing development in high hazard areas, giving development priority to coastal dependent uses, providing public access for recreation, and coordinating state and federal actions. CZMA aids states in effectively exercising their responsibilities in coastal zones through development and implementation of management programs. Hawai'i CZM Law (HRS Chapter 205A) was passed in 1977 and received federal approval the following year. The State CZM program guides the use, protection, and development of land and ocean resources within the coastal zone. The CZM area is defined in HRS Chapter 205A to include all lands of the State. Federal agencies are required to conduct planning, management, development, and regulatory activities consistent with the State coastal management program. 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. **Section 5.3.2** provides further discussion. **Discussion:** The Proposed Action is consistent with the goals, policies, and objectives of Hawai'i's CZM program and would have no effects on coastal uses or resources because it does not involve new development, alteration of existing land or facilities, changes in land use, or changes in ongoing activities. The Army initiated a CZM federal consistency review process for the Proposed Action with the State; the initial application was rescinded. The Army has re-initiated 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 Army initiated the federal consistency assessment process with the State. Its initial application was rescinded; the Army will resubmit a timely application for CZM Consistency Review in accordance with the regulations in 15 CFR Section 930.36(b)(1) and after public comments are received on the Second Draft EIS.~~
Endangered Species Act of 1973, 16 U.S.C. Section 1531 et seq. The ESA was established to protect and recover imperiled species and the ecosystems needed to survive. The ESA requires federal agencies, in consultation with 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. **Section 3.3** provides further information on ESA. The Army is moving toward a programmatic approach to ESA consultation for PTA. In this approach, specific species, activities, avoidance and minimization measures, and conservation measures would be incorporated into a new programmatic BO. The existing BOs now applicable to activities at PTA could then be superseded by the programmatic BO, or subsequent amendments required thereafter, pursuant to 50 CFR Section 402.16, resulting from a major land use change. **Discussion:** Ongoing activities on the State-owned land ~~retained~~ have been consistent with the ESA. The Proposed Action also would be consistent with the ESA. BOs issued by USFWS identify specific conservation programs and conservation measures for activities on PTA that are carried out by USAG-HI NRP staff. Additionally, the INRMP guides biological conservation and restoration of biological resources including species with federal and/or State status. The analyses of potential changes to conservation efforts for State-owned land not retained under Alternatives 1, 2, and 3 are provided in **Section 3.3**. No Section 7 consultation for the Proposed Action is anticipated at this time, as the action is a land retention (real estate) action that does not propose new training or activities. All ongoing PTA training and activities are covered under previous NEPA and associated consultations including the 2003, 2008 and 2013 BOs.

Table 5-1: Federal Plans, Policies, and Controls
***Clean Water Act of 1972, 33 U.S.C. Sections 1251 to 1387* et seq.** The CWA establishes federal limits, through the NPDES program, 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 NPDES is a permit program that regulates the discharge point (i.e., end of pipe) and non-point (i.e., stormwater) sources to waters of the United States. The State DOH administers the NPDES program in Hawai'i under HAR Chapter 11-55. Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill into wetlands and other waters of the United States. Any discharge of dredge or fill into waters of the United States requires a permit from USACE. The Proposed Action does not include the discharge of dredge or fill, and there are no wetlands or waters of the United States within the State-owned land; therefore, Section 404 does not apply to the Proposed Action. Section 10 of the Rivers and Harbors Act provides for USACE permit requirements for in-water construction. The Proposed Action does not include in-water construction, and there are no waters of the United States within the State-owned land; therefore, Section 404 does not apply to the Proposed Action. **Discussion:** The Proposed Action would be consistent with the Clean Water Act. Ongoing activities on State-owned land retained would continue to comply with all federal, state, and local regulations related to water as detailed in **Section 3.9.2**.
Clean Air Act, 42 U.S.C. Section 85 Under the Clean Air Act, USEPA has established NAAQS for several different air pollutants that are considered harmful to public health and the environment. **Section 3.6** provides further description of the Clean Air Act and PTA's attainment of air quality standards. **Discussion:** The Proposed Action, an administrative action, would be consistent with the Clean Air Act, as it would generate no pollutants. Ongoing activities on State-owned land 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, 42 U.S.C. Section 11001* et seq.** The Emergency Planning and Community Right-to-Know Act of 1986 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 substances into the environment. Congress requires federal, state, and local governments, tribes, and industries to report on the production, storage, use, and release of hazardous substances (if amounts exceed specified threshold quantities) so that communities and the environment are protected from potential chemical hazards. **Discussion:** The Proposed Action, an administrative action that does not propose construction or operations, would be consistent with this act as it would not utilize hazardous substances. Ongoing activities on State-owned land retained would continue to be consistent with the Emergency Planning and Community Right-to-Know Act.

Table 5-1: Federal Plans, Policies, and Controls
***National Flood Insurance Act of 1968, 42 U.S.C. Section 4001* et seq.** The National Flood Insurance Act of 1968 (as amended) establishes the NFIP, a voluntary floodplain management program for communities, which is implemented by FEMA. Congress found that flood disasters created an unforeseen economic burden on the country's resources. NFIP makes flood insurance available to persons nationwide who have a need for such protection, where the private insurance industry has been insufficient. At minimum, every five years FEMA assesses the need to revise and update floodplain areas and flood risk zones on FIRMs. FEMA FIRMs are available to federal and state agencies, and community representatives participating in the NFIP. Any action within a FEMA-designated floodplain in a participating community must adhere to the community's FEMA-approved floodplain management regulations. **Discussion:** The Proposed Action would be consistent with the National Flood Insurance Act. **Section 3.9** identifies the FIRM classification and notes that the State-owned land is not located within a floodplain.
***Resource Conservation and Recovery Act, 42 U.S.C. Section 6901* et seq.** The RCRA gives the USEPA authority to control hazardous waste from cradle to grave. This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. The RCRA refers to the collective federal laws and USEPA regulations, policies, and guidance that address hazardous and non-hazardous waste management. Subtitle C of RCRA sets criteria for hazardous waste generators, transporters, and treatment, storage, and disposal facilities. **Discussion:** The Proposed Action, an administrative action that does not propose construction, modernization, or changes in ongoing activities, would be consistent with this act, as it would not generate hazardous waste. Ongoing activities on State-owned land retained would continue to be consistent with RCRA; **Section 3.5** documents that the State-owned land does not contain designated RCRA cleanup sites.
***National Historical Preservation Act, 54 U.S.C. Section 300101* et seq.** 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. The NHPA defines a process considering those impacts and is the primary federal historic preservation law applicable to the Proposed Action. **Section 3.4** provides additional detail on PTA and State-owned land consistency with NHPA. **Discussion:** The Proposed Action would be consistent with NHPA. For ongoing activities facilitated by the Proposed Action, mitigation measures have been established through a PA executed with the SHPD and the Advisory Council on Historic Preservation in 2018. The 2018 Section 106 PA for PTA resolves adverse effects on historic and cultural resources that may result from ongoing military actions and related activities at PTA, including those activities on the State-owned land. The PA is a 15-year agreement that will remain in effect until at least 2033 and includes a process to extend the life of the agreement (**Section 1.4.2**).

5.3.2 State

Consistency with state land use plans, policies, and controls (laws, regulations, and permits) pertinent to the Proposed Action is evaluated in this section. HAR Section 11-200.1-24(o) requires that a Draft EIS include possible adverse environmental effects through discussion of specific statutes relating to pollution control and abatement. **Table 5-2** identifies the required HRS and notes any that are not relevant to the Proposed Action and ongoing activities. The EIS section in which the regulation is discussed is also noted.

Historic Preservation, Hawai'i Revised Statutes Chapter 6E

Under HRS Chapter 6E, state agencies issuing a permit or entitlement must determine if a project would affect historic properties, aviation artifacts, or burial sites. The state agency provides a determination as to whether a project may have an effect on historic properties and could include commitments to mitigation to address potential effects. SHPD can review the agency's determination and concur or advise further action under Chapter 6E.

Discussion: 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 transfer of title). Thus, compliance with Chapter 6E would ~~follow~~ occur after the EIS process. SHPD was notified of the intent to prepare an EIS and of the Draft EIS and Second Draft EIS availability, although it has no regulatory review responsibility.

The impacts of the Proposed Action on historic and archaeological resources are presented in **Section 3.4**. An Archaeological Literature Review was prepared to summarize existing archaeological conditions, which is included in **Appendix J**.

Hawai'i Revised Statutes and Administrative Rules

Adverse effects such as water or air pollution, urban congestion, threats to public health, or other consequences adverse to the State's environmental goals and guidelines are to be addressed in an EIS as specified in HAR Chapter 11-200.1, Environmental Impact Statement Rules. **Table 5-2** identifies where in this EIS specific statutes and rules listed in HAR Section 11-200.1-24(o), Content requirements; draft EIS, are discussed if relevant, with a complete explanation of full HEPA compliance in **Appendix A**.

Note that additional HRS and HAR relevant to the Proposed Action are discussed in more detail separately within this section.

Hawai'i Revised Statute Chapter 195D, Conservation of Aquatic Life, Wildlife, and Land Plants

The State provides protection for threatened species, endangered species, and species of concern under HRS Chapter 195D and its implementing rules. Under the rules, the Army holds permits that authorize collection of threatened and endangered plants for scientific purposes, possession of salvaged bird carcasses on PTA, and off-site mitigation with threatened or endangered plants (**Sections 3.3.4** and **3.3.6**).

Table 5-2: Consistency with Hawai'i Revised Statutes 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 comply with the Statewide Contingency Plan through fulfillment of the USAG-HI SPCCP. (See **Section 3.5**.)
Air Pollution Control, HRS Chapter 342B	The Proposed Action and ongoing activities would comply with air quality standards. (See **Section 3.6**.)
Ozone Layer Protection, HRS Chapter 342C	Not applicable. The Proposed Action and ongoing activities do not utilize 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. Stormwater is infrequently generated in the developed area of PTA on U.S. Government-owned land and does not exit the installation. (See **Section 3.9**.)
Nonpoint Source Pollution Management and Control, HRS Chapter 342E	Army obtains NPDES permits when required for industrial activities at Ahi Quarry on State-owned land. (See **Section 3.9.4.6**.) The Proposed Action and ongoing activities would comply with the state water pollution regulations. (See **Section 3.9**.)
Integrated Solid Waste Management, HRS Chapter 342G	Not applicable. State-owned land at PTA does not contain a solid waste processing, management, or disposal facility. (See **Section 3.15**.)
Solid Waste Pollution, HRS Chapter 342H	The Proposed Action would comply with HRS Chapter 342H; there are no solid waste landfills in operation on State-owned land. (See **Section 3.15**.)
Special Wastes Recycling, HRS Chapter 342I	Not applicable. State-owned land at PTA does 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 3.5**.)
Underground Storage Tanks, HRS Chapter 342L	The Proposed Action would comply with HRS Chapter 342L; there are no USTs on State-owned land. (See **Section 3.5**.)
Asbestos and Lead, HRS Chapter 342P	The Proposed Action and ongoing activities would comply with HRS Chapter 342P. (See **Section 3.5**.)

Hawai'i Administrative Rules Chapter 11-62, Wastewater Systems

The USEPA and the Hawai'i DOH, as its agent, administer the enforcement of the Safe Drinking Water Act through 40 CFR Parts 141–149. HAR ~~Section~~ Chapter 11-62 includes state regulations for wastewater systems. Use of portable toilets with permanent structures requires approval by the Hawai'i DOH Director (**Section 3.15.2**).

Hawai'i Revised Statute Chapter 171-18, Public Land Trust

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 land at PTA is 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**.

Hawai'i State Plan, Hawai'i Revised Statutes Chapter 226

The Hawai'i State Planning Act was adopted in 1978 as HRS Chapter 226, and created the *Hawai'i State Plan* (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. HRS Section 226-1 states the purpose of the act as "…to improve the planning process in the State, to increase the effectiveness of government and private actions, to improve coordination among different agencies and levels of government, to provide for wise use of Hawai'i's resources and to guide the future development of the State."

The *Hawai'i State Plan* provides a basis for determining priorities and allocating limited resources such as public funds, services, land and other resources. A consistency review of the *Hawai'i State Plan*, shown in **Table 5-3**, evaluates the State's goals pertinent objectives and policies to the Proposed Action. **Table L-1**, **Appendix L**, presents all goals in the *Hawai'i State Plan* and identifies the goals that are not applicable to the Proposed Action.

Table 5-3: Hawai'i State Plan, Hawai'i Revised Statues Chapter 226
§226-4 State goals.
In order to guarantee, for the present and future generations, those elements of choice and mobility that ensure 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 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

Table 5-3: Hawai‘i State Plan, Hawai‘i Revised Statues Chapter 226
community responsibility, of caring, and of participation in community life.”
Discussion: *The following State objectives and policies are outside the scope of the Proposed Action and are not discussed: population; economies related to agriculture, visitor industry, potential growth, and information industry; the State’s facility systems; and socio-cultural advancement related to housing, health, education, social services, leisure, individual rights and well-being, and government.*
§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.
Discussion: *The Proposed Action supports the State objective of diversified employment opportunities and job choice. The Army supports 75,920 employees in the State, with 1,962 in the County of Hawai‘i. The Army spends approximately $4.4B in labor income in the State, $92M of which is spent in the County of Hawai‘i. Without the Proposed Action, loss of training and Army-funded activities within the State-owned land would result in a significant reduction in spending in the local economy. For further information, see* ***Section 3.10****.*
§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.
(2) Promote Hawai‘i’s supportive role in national defense.
(3) Promote the development of federally supported activities in Hawai‘i that respect state-wide 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: *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. For further information, see* ***Section 3.10****.* *The Proposed Action aligns with Hawai‘i’s policy to play a supportive role in U.S. national defense. USARHAW’s mission and training requirements are based on national and Army security and defense strategies, and training at PTA supports the Army’s fulfillment of its role. Hawai‘i is a strategic location for national defense and rapid deployment of military forces, as it lies between the west coast of the continental United States and the countries in the USINDOPACOM AOR. For further information, see* ***Chapters 1*** *and* ***2****.*

Table 5-3: Hawai‘i State Plan, Hawai‘i Revised Statues Chapter 226
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. PTA is also used by non-profit organizations such as the Red Cross, Boy Scouts, Girl Scouts, and Youth Challenge. Community outreach activities conducted by personnel at PTA include maintaining adjacent properties by keeping grass and other materials that pose a risk of fire cleared and under control; assisting in cleanup after weather events; and donating manpower and food to the local communities. The support to community emergency response provided by the Army at PTA is further discussed under §226-26 Objectives and policies for socio-cultural advancement--public safety. *The Proposed Action supports Hawai‘i’s policy to promote federal use of local commodities and services. Army expenditures in the County of Hawai‘i include local purchases of equipment and services in support of inter-island travel for troops. For further information, see **Section 3.10**.* *The Proposed Action proposes retaining up to approximately 22,750 acres of the 23,000 acres of State-owned land leased from the State since 1964. Over the past six decades, the State-owned land has been the keystone of PTA and an important portion of the approximately 132,000-acre training area. **Chapter 1** describes the ongoing need of this land for the nation’s defense.*
§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 use without generating costly or irreparable environmental damage.
(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 of and protection of Hawai‘i’s natural resources. The Proposed Action would not impact shoreline or marine resources. The Army is committed to environmental stewardship and protection, guided by federal regulations. The ESA requires federal agencies, in consultation with the 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**. The Army invests over $12M annually in biological and cultural resources management actions and additional funds for associated activities such as emergency services throughout its training land in Hawai‘i (**Section 3.10**). **Chapter 3** of this EIS analyzes potential impacts on land use and historic and cultural resources and cultural practices at PTA from the Proposed Action and includes mitigation to conduct consultation with Native Hawaiians, and/or other ethnic groups as appropriate, and provide, or continue to provide, access to cultural*

Table 5-3: Hawai‘i State Plan, Hawai‘i Revised Statues Chapter 226
resources. Additionally, portions of PTA would continue to be available for hunting for recreational purposes, subject to training constraints.
§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 objectives, 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. There would be no new adverse impacts on vistas stemming from Alternatives 1, ~~and~~ 2, and 3. 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 ethnic heritage. Built resources within PTA are primarily located within the Cantonment and BAAF, which are outside the State-owned land. No historic buildings or structures have been recorded within the State-owned land (****Section 3.4****). Management of historic and cultural resources and compliance with the State policy is further discussed under §226-25 Objectives and policies for socio-cultural advancement—culture.*
§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.
(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 complies with maintenance or improvement of land, air and water resources at PTA. This EIS describes existing environmental conditions from ongoing activities and lists the regulatory environment and minimization measures employed by the Army. For further information, see* ***Chapter 3****.*
§226-25 Objectives 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

Table 5-3: Hawai‘i State Plan, Hawai‘i Revised Statues Chapter 226
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 Proposed Action would not result in new impacts on known or undiscovered historic and cultural resources beyond those already assessed in previous NEPA/NHPA ~~compliance~~ analysis associated with ongoing military use. Continued long-term, significant, adverse impacts have been identified to cultural practices from ongoing limitations on access to State-owned land, and mitigation is proposed. Impacts on historic and cultural resources and cultural practices would continue to be mitigated in compliance with existing regulatory requirements. For further information, see* ***Section 3.4****.*
§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. State and county agencies, such as Hawai‘i Emergency First Responders, Hawai‘i Emergency Management, and the Hawai‘i Police Department, periodically use PTA for training. PTA personnel also act as first and secondary responders to car accidents, brush fires, and emergency incidents in the region around PTA. For further information, see* ***Section 3.10****.*

State Land Use Law, Hawai‘i Revised Statutes 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 land in the State into one of four land use districts: (1) Urban, (2) Rural, (3) Agriculture, or (4) Conservation. The State legislature established the Land Use Commission to administer this statewide 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. The conservation district is governed by DLNR under HRS Chapter 183C.

Discussion: The region including and surrounding PTA was included in the conservation district in 1964. Conservation districts are regulated by the State DLNR under HRS Chapter 183C and its enacting rule HAR Chapter 13-5, Conservation District. For further information, see the discussion of Conservation District Rules, HAR Chapter 13-5.

Conservation District Rules, Hawai'i Administrative Rules 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 conservation district boundaries supplanted the boundaries of the forest and water reserve zones established in 1957. The conservation district purpose 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). The Special subzone defines a unique land use on a specific site. 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 and uses allowed in the Limited subzone are incorporated into the allowable uses for the Resource subzone and so on. Allowable uses vary in requirements for approval and are administered by DLNR's Office of Conservation and Coastal Lands; approvals range from no formal approval to submittal and approval of a site plan by the Office of Conservation and Coastal Lands, to approval by the BLNR. ~~Uses that are not listed require a discretionary permit from the BLNR.~~

Discussion: The State-owned land at PTA lies in the Resource subzone. Military use of State-owned land in PTA was authorized by the terms of the lease signed in August 1964, prior to the enactment of HRS Chapter 183C. The current legal nonconforming use of State conservation district lands would cease with the expiration of the lease in 2029. Military training is not included as an allowable use for any conservation district subzone. As stated in **Section 1.4.2**, HAR Chapter 13-5 provides for rule amendment to create a new subzone with certain identified land uses (HAR Section 13-5-5). The amendment process would be considered and decided by the BLNR with public input. For analysis purposes, this EIS assumes that the BLNR would approve a rule amendment for a new subzone that allows military uses in the conservation district per HAR Chapter 13-5 under a new lease or easement. Any request to create a new subzone would follow the NEPA/HEPA process and determination of the land retention estate(s) and method(s) (**Section 2.3**).

Coastal Zone Management, Hawai'i Revised Statutes 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 coastal zone management program. Ten over-arching resources are addressed through objectives and policies: (1) recreational resources, (2) historic resources, (3) scenic and open space resources, (4) coastal ecosystems, (5) economic uses, (6) coastal hazards, (7) managing development, (8) public participation, (9) beach protection, and (10) marine resources. Virtually all of the resources relate to potential development impacts on the shoreline, near shore, and ocean area environments. Under the State CZM program, each county designates and regulates SMAs within the State's coastal areas. For further information, see the discussion under County of Hawai'i SMA in **Section 5.3.3**.

Discussion: The Proposed Action is not located on or near the coastline. The State-owned land at PTA is approximately 30 miles inland. The action alternatives represent a real estate action (i.e., administrative action) that would allow continuation of ongoing activities on the retained State-owned land. This

discussion of CZM consistency includes minimization measures for impacts of ongoing activities that could stem from the action alternatives. The Proposed Action's compliance with specific objectives and policies of CZM as defined in HRS Chapter 205A is shown in **Table 5-4**.

Table 5-4: 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; and	
(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; and
	(viii)	Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the Land Use Commission, BLNR, and county authorities; and crediting such dedication against the requirements of Section 46-6, HRS.
Discussion: *The State-owned land at PTA is not near the shoreline and is not in the SMA. The Proposed Action would not impact access to coastal resources and would not provide or impact shoreline or coastal recreation. The analysis of potential impacts on water resources from the action alternatives is discussed in* ***Section 3.9****.*		
(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; and	
(C)	Support state goals for protection, restoration, interpretation, and display of historic resources.	

Table 5-4: Coastal Zone Management, HRS Chapter 205A Objectives and Policies	
Discussion: *The Proposed Action would not impact special areas, structures or elements that are a part of Hawai'i's ethnic heritage. Built resources within PTA are primarily located within the Cantonment and BAAF, which are on U.S. Government-owned land. No historic buildings or structures have been recorded within the State-owned land (**Section 3.4**). An Archaeological Literature Review was prepared for this EIS and is included in **Appendix J**.* *The analysis of impacts on historic and cultural resources (**Section 3.4**) identifies that the action alternatives would not result in new impacts on known or undiscovered historic and cultural resources beyond those already assessed in previous NEPA/NHPA ~~compliance~~ analysis associated with ongoing military use. Continued long-term, significant, adverse impacts have been identified to cultural practices from ongoing limitations on access to State-owned land, and mitigation is proposed (**Section 3.4**). Impacts on historic and cultural resources would continue to be minimized 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; and
(D)	Encourage those developments that are not coastal dependent to locate in inland areas.
Discussion: *The Proposed Action supports policies related to preservation of Hawai'i's scenic assets. There would be no new adverse impacts on vistas stemming from Alternatives 1, ~~and~~ 2, and 3. 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; and
(E)	Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and non-point source water pollution control measures.

Table 5-4: Coastal Zone Management, HRS Chapter 205A Objectives and Policies	
Discussion: *The Proposed Action complies 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 the 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 its training land in Hawai'i (****Section 3.10****).* ***Chapter 3*** *of this EIS analyzes potential impacts on biological resources at PTA from the Proposed Action.*	
(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; and
(C)	Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when: (i) Use of presently designated locations is not feasible; (ii) Adverse environmental effects are minimized; and (iii) The development is important to the State's economy.
Discussion: *The State-owned land at PTA is not located near the coast.*	
(6)	**Coastal hazards;**
	Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.
(A)	Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and 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; and
(D)	Prevent coastal flooding from inland projects.
Discussion: *The State-owned land at PTA is inland and approximately 30 miles from the coastline.* ***Section 3.8*** *includes a section on Natural Hazards. The State-owned land is not in an area prone to erosion, flooding, sea level rise or hurricanes. A discussion of the lava hazard zone and seismic activity associated with volcanic eruptions is presented in* ***Section 3.8****. The action alternatives and use of PTA would not exacerbate natural hazard conditions. FEMA defines the State-owned land at PTA as located within Flood Zone X, an area that is outside of the 0.2 percent annual chance flood or 500-year floodplain (****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;

Table 5-4: Coastal Zone Management, HRS Chapter 205A Objectives and Policies	
(B)	Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and
(C)	Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.
Discussion: *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; and
(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 1.6*** *provides information on the public input process associated with this EIS.*	
(9)	**Beach Protection**
	Protect beaches for public use and recreation
(A)	Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;
(B)	Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and
(C)	Minimize the construction of public erosion-protection structures seaward of the shoreline.
(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; and
(E)	Prohibit private property owners from creating a public nuisance by allowing the private property owner's unmaintained vegetation to interfere or encroach upon a beach transit corridor.
Discussion: *The State-owned land at PTA is inland and approximately 30 miles from the coastline; these policies are not applicable.*	
(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

Table 5-4: Coastal Zone Management, HRS Chapter 205A Objectives and Policies	
	relate to and impact upon ocean and coastal resources; and
(E)	Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.
Discussion: *The State-owned land at PTA is inland and approximately 30 miles from the coastline; these policies are not applicable. The Army's commitment to protect coastal ecosystems and marine water quality is explained under Coastal Ecosystems in this table, and in* ***Section 3.9****.*	

State Environmental Policy, Hawai'i Revised Statutes Chapter 344

HRS Chapter 344, State Environmental Policy, is a state policy which 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, preserving or augmenting natural resources, and safeguarding the State's unique natural environmental characteristics in a manner that 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. This consistency review of the Proposed Action focuses on the pertinent state guidelines, shown in **Table 5-5**. Guidelines not applicable to the Proposed Action are not discussed in **Table 5-5**, including: population; transportation; energy; community life and housing; and education and culture. **Table L-2**, **Appendix L**, presents all policies detailed in the *State Environmental Policy* and identifies the guidelines that are not applicable to the Proposed Action.

Table 5-5: State Environmental Policy, HRS Section 344-4
(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: *The Proposed Action is consistent with the guidelines of managing biological and natural resources. Army management activities and programs are described in* ***Chapter 3****. The Army adheres 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 animals only upon assurance of negligible ecological hazard.
Discussion: *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 threatened, endangered, and other species of concern as guided by state and federal regulations. 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, educational, 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 for its people.
Discussion: *The Army supports hunting as a recreational use on State-owned land at PTA within state hunting guidelines and when not in conflict with the PTA mission. For State-owned land retained under the action alternatives, there would be no new impacts on recreation and public access would continue to be restricted. The Proposed Action supports policies related to preservation of Hawai'i's scenic assets and historic resources. There would be no new adverse impacts on vistas stemming from Alternatives 1, ~~and~~ 2, and 3. For further information, see* ***Section 3.2****.* *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* ***Section 3.3****.*
(5) Economic development.
(C) Encourage federal activities in Hawai'i to protect the environment;
Discussion: *The Proposed Action is consistent with the guideline for federal activities in Hawai'i to protect the environment. The Army invests over $12M annually for biological and cultural management actions and additional funds for associated activities such as emergency services throughout its training land in Hawai'i. For further information, see* ***Section 3.10****.*

5.3.3 County of Hawai‘i

County of Hawai‘i, 2005 General Plan

The County of Hawai‘i General Plan is the policy document for the long-range comprehensive development of the island of Hawai‘i. The purposes of the 2005 General Plan are as follows:

- Guide the pattern of future development in the county based on long-term goals.
- Identify the visions, values, and priorities important to the people of the county.
- Provide the framework for regulatory decisions, capital improvement priorities, acquisition strategies, and other pertinent government programs within the county organization and coordinated with state and federal programs.
- Improve the physical environment of the county as a setting for human activities; to make it more functional, beautiful, healthful, interesting, and efficient.
- Promote and safeguard the public interest and the interest of the county as a whole.
- Facilitate the democratic determination of community policies concerning the utilization of its natural, man-made, and human resources.
- Effect political and technical coordination in community improvement and development.
- Inject long-range considerations into the determination of short-range actions and implementation.

The county’s existing General Plan was adopted in 2005. A revision, entitled the *General Plan 2040,* has undergone public review, which will be followed by a multi-step revision, review, and adoption process. Accordingly, the project consistency is reviewed under the approved 2005 General Plan. This consistency review of the Proposed Action and alternatives (“action alternatives”) under the county’s General Plan evaluates only goals and policies relevant to the project.

The 2005 General Plan organizes its goals and policies within 13 subject areas of public policy concerning the needs of the people and the functions of the government. The subject areas applicable to the Proposed Action include economic activity, environmental quality, flooding and other natural hazards, historic sites, natural beauty, natural resources and shoreline, recreation, and land use.

The subject areas not applicable to the Proposed Action are not discussed, and include energy, housing, public utilities, transportation, and public facilities including health and education services. **Table L-3**, **Appendix L**, presents all goals in the 2005 General Plan and identifies which goals are not applicable to the Proposed Action.

Specific General Plan goals most applicable to the Proposed Action are described below in **Table 5-6**.

Table 5-6: County of Hawai‘i General Plan
Economic
A. Provide residents with opportunities to improve their quality of life through economic development that enhances the County’s natural and social environments.
B. Economic development and improvement shall be in balance with the physical, social and cultural environments of the island of Hawai‘i.
C. Strive for diversity and stability in the economic system.
D. Provide an economic environment that allows new, expanded, or improved economic opportunities that are compatible with the County’s cultural, natural and social environment.
E. Strive for an economic climate that provides its residents an opportunity for choice of occupation.
F. Strive for diversification of the economy by strengthening existing industries and attracting new endeavors.
G. Strive for full employment.
H. Promote and develop the island of Hawai‘i into a unique scientific and cultural model, where economic gains are in balance with social and physical amenities. Development should be reviewed on the basis of total impact on the residents of the County, not only in terms of immediate short run economic benefits.
Discussion: *The Proposed Action supports the Ceounty goals of choice of occupation and diversity and stability in the economy. The Army spends approximately $4.4B in labor income in the State, $92M of which is spent in the County of Hawai‘i. The Army supports 75,920 employees in the State, with 1,962 in the County of Hawai‘i. Without the Proposed Action, loss of training and Army-funded activities within the State-owned land would result in a significant reduction in spending in the local economy. For further information, see* ***Section 3.10****.*
Environmental Quality
A. Define the most desirable use of land within the County that achieves an ecological balance providing residents and visitors the quality of life and an environment in which the natural resources of the island are viable and sustainable.
B. Maintain and, if feasible, improve the existing environmental quality of the island.
C. Control pollution.
Discussion: *The Proposed Action complies with maintenance and improvement of environmental quality and natural resources at PTA. The action alternatives represent a real estate action (i.e., administrative action) that would allow continuation of ongoing activities on the retained State-owned land. This EIS describes existing environmental conditions from ongoing activities and lists the regulatory environment and minimization measures employed by the Army. For further information, see* ***Chapter 3****.*
Flooding and Other Natural Hazards
A. Protect human life.
B. Prevent damage to man-made improvements.
C. Control pollution.
D. Prevent damage from inundation.
E. Reduce surface water and sediment runoff.
F. Maximize soil and water conservation.
Discussion: *Implementation of an action alternative would be consistent with this guideline. The Army would continue ongoing activities in accordance with Army requirements and guidelines and federal and state programs described throughout* ***Chapter 3*** *and in this section. The State-owned land is not located within a floodplain, so impacts on floodplains are not analyzed in this EIS. For further information, see* ***Section 3.9****.*

Table 5-6: County of Hawai‘i General Plan
Historic Sites
A. Protect, restore, and enhance the sites, buildings, and objects of significant historical and cultural importance to Hawai‘i.
B. Appropriate access to significant historic sites, buildings, and objects of public interest should be made available.
C. Enhance the understanding of man’s place on the landscape by understanding the system of ahupua‘a.
Discussion: *The Proposed Action would not result in new impacts on known or undiscovered historic and cultural resources beyond those already assessed in previous NEPA/NHPA ~~compliance~~ analysis associated with ongoing activities. The Proposed Action would not impact any buildings of historic importance, as no historic buildings or structures have been recorded within the State-owned land. Built resources within PTA are primarily located within the Cantonment and BAAF on U.S. Government-owned land. For further information, see* ***Section 3.4****.*
Natural Beauty
A. Protect, preserve and enhance the quality of areas endowed with natural beauty, including the quality of coastal scenic resources.
B. Protect scenic vistas and view planes from becoming obstructed.
C. Maximize opportunities for present and future generations to appreciate and enjoy natural and scenic beauty.
Discussion: *The Proposed Action supports policies related to preservation of Hawai‘i’s natural beauty and scenic vistas. The State-owned land at PTA is not near coastal resources. This EIS evaluated impacts on vistas and has identified that there would be no new adverse impacts from Alternatives 1, ~~and~~ 2, and 3. For further information, see* ***Section 3.2****.*
Natural Resources and Shoreline
A. Protect and conserve the natural resources from undue exploitation, encroachment and damage.
B. Provide opportunities for recreational, economic, and educational needs without despoiling or endangering natural resources.
C. Protect and promote the prudent use of Hawai‘i’s unique, fragile, and significant environmental and natural resources.
D. Protect rare or endangered species and habitats native to Hawai‘i.
E. Protect and effectively manage Hawai‘i’s open space, watersheds, shoreline, and natural areas.
F. Ensure that alterations to existing land forms, vegetation, and construction of structures cause minimum adverse effect to water resources, and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation, or failure in the event of an earthquake.
Discussion: *The Proposed Action would not impact shoreline or marine resources. The Army is committed to environmental stewardship and protection, guided by federal regulations. The ESA requires federal agencies, in consultation with the 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 throughout its training land in Hawai‘i (****Section 3.10****).* ***Chapter 3*** *of this EIS analyzes potential impacts on biological and historic and cultural resources at PTA from the Proposed Action.*
Recreation

Table 5-6: County of Hawai‘i General Plan
A. Provide a wide variety of recreational opportunities for the residents and visitors of the County.
B. Maintain the natural beauty of recreation areas.
C. Provide a diversity of environments for active and passive pursuits.
Discussion: *The Proposed Action provides limited consistency with this guideline. Recreational opportunities on the State-owned land at PTA are primarily for hunting of game birds and game animals within state hunting guidelines and when not in conflict with the PTA mission. For further information, see* ***Section 3.2****.*
Land Use
A. Designate and allocate land uses in appropriate proportions and mix and in keeping with the social, cultural, and physical environments of the County.
B. Protect and encourage the intensive and extensive utilization of the County's important agricultural lands.
C. Protect and preserve forest, water, natural and scientific reserves and open areas.
Discussion: *The Proposed Action is consistent with the county's land use guidelines for Open and Forest Reserve zoning of the State-owned land at PTA. Continued activities on the State-owned land at PTA would be consistent with the past 65 years of military use. Zoning for the Open district includes areas that contribute to the general welfare; and objectives include to buffer uses and preserve valuable scenic vistas. The Forest Reserve district is considered non-zoned by the county and is instead regulated under State conservation district rules. PTA is outside of the SMA established by the County of Hawai‘i under CZM. There is no State agricultural district land within PTA. For further information, see* ***Section 3.2****.* *The Army invests over $12M annually in biological and cultural management activities throughout its training land in Hawai‘i. For further information, see* ***Section 3.10****.* ***Chapter 3*** *of this EIS analyzes ongoing impacts on biological and historic and cultural resources at PTA from the action alternatives.*

Hāmākua Community Development Plan

The *Hāmākua Community Development Plan* (Hāmākua CDP) was adopted by County Ordinance No. 2018-78 on August 22, 2018. The purpose of the Hāmākua CDP is to create a long-range plan (a 20-year horizon) that implements and translates the broad goals and objectives of the County of Hawai‘i *General Plan* (2005) to the meet the unique needs of the Hāmākua CDP Planning Area. The Hāmākua CDP Planning Area encompasses the judicial districts of Hāmākua and North Hilo, and a portion of the South Hilo district Rural South Hilo. The Hāmākua CDP is guided by community objectives, which were developed and adopted by the Hāmākua Steering Committee. The 13 community objectives are based on the values and visions statement and fall into three major themes: ‘āina, community, and economy. The community objectives are to be implemented through the identification of three different types of actions/strategies: "County Actions" (within the jurisdiction of county agencies), "Community Actions" (within the jurisdiction of the community), and "Kōkua Actions" (within the jurisdiction of federal / state agencies or non-governmental organizations).

The Hāmākua CDP discusses PTA and the DoD only under four Kōkua Actions, naming them as under the jurisdiction of the DoD. **Table 5-7** evaluates the Proposed Action's consistency with pertinent county and community actions.

Table 5-7: Hāmākua Community Development Plan Department of Defense, Pōhakuloa Training Area (PTA) Kōkua Actions
Kōkua Action 44: Complete the large-scale firebreak that extends completely across Puʻu Anahulu between the Keʻamuku and the 1859 lava flows.
Discussion: *This Kōkua Action is not in the vicinity of the State-owned land at PTA; therefore, a discussion of consistency with this action is not applicable to this analysis. However, ongoing activities facilitated by the Proposed Action would continue to be consistent, including continued wildfire protection and firefighting activities on State-owned land retained (**Section 2.2**; **Section 3.16**).*
Kōkua Action 45: Improve Mauna Kea Trail and Infantry Road to firebreak standards and to extend Mauna Kea Trail slightly in the area behind Puʻu Pōhakuloa.
Discussion: *This Kōkua Action is not in the vicinity of the State-owned land at PTA; therefore, a discussion of consistency with this action is not applicable to this analysis. However, ongoing activities facilitated by the Proposed Action would continue to be consistent, including continued wildfire protection and firefighting activities on State-owned land retained. This includes maintenance of firebreaks/fuel breaks under the IWFMP to reduce and respond to wildfires under applicable federal, state, county, and DoD regulations on State-owned land retained.*
Kōkua Action 46: Complete the Remedial Investigation for the Puʻu Paʻa Area (PTA-003-R-01). Remaining actions include a focused Feasibility Study, Proposed Plan / Decision Document, followed by Remedial Design and Remedial Action for Munitions and Explosives of Concern removal.
Discussion: *This Kōkua Action is not in the vicinity of PTA. It is beyond the scope of this EIS and therefore a discussion of consistency with this action is not applicable to this analysis.*
Kōkua Action 47: Address the potential hazards of depleted uranium at the Pōhakuloa Training Area. Consider the eight-point plan as outlined in County Res. No. 639-08. See also House Bill 2011 H.C.R. No. 181, "Pōhakuloa Training Area; Testing and Monitoring of Radioactive Contamination." County RES. 639 Draft 01 2006- 2008
Discussion: *This DoD Kōkua Action is beyond the scope of this analysis, which focuses on the Proposed Action, an administrative action (e.g., real estate). However, ongoing activities facilitated by the Proposed Action would continue to be consistent. The Army performed a series of health and risk assessments from 2008 to 2010 to determine the potential impacts on human health from past use of DU at PTA. Data from a 2009 air monitoring program showed that DU had not impacted air quality at PTA or in the surrounding area because the total airborne uranium levels in the collected particulate matter samples were within the range of naturally occurring uranium in Hawaiian soils and rock and were several orders of magnitude below U.S. and international chemical and radiological health guidelines. (Discussions of DU at PTA are covered in **Sections 3.5** and **3.6**).*

SMA

Hawaiʻi CZM, HRS Chapter 205A, charges the counties with designating and administering an SMA within the State's coastal areas to provide for ". . . *special controls on developments within an area along the shoreline are necessary to avoid permanent losses of valuable resources and the foreclosure of management options, and to ensure that adequate access, by dedication or other means, to public owned or used beaches, recreation areas, and natural reserves is provided."* (HRS Chapter 205A Part II.) Any

"development," as defined by HRS Chapter 205A and county regulations, located within the SMA requires an SMA permit.

Discussion: The Proposed Action alternatives represent a real estate action (i.e., administrative action) that would allow continuation of ongoing activities on the retained State-owned land. The Army initiated a CZM federal consistency review process for the Proposed Action with the State; the initial application was rescinded. The Army has re-initiated 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 Army initiated the federal consistency assessment process for the Proposed Action. Its initial application was rescinded; the Army will resubmit a timely application for CZM Consistency Review in accordance with the regulations in 30 CFR Section 930.36(b)(1) and after public comments are received on the Second Draft EIS.~~

5.4 Unavoidable Significant Adverse Impacts

The Proposed Action is expected to result in unavoidable significant adverse impacts. **Table 3-31** in **Section 3.17.1** summarizes the potential environmental impacts of the Proposed Action. The adverse impacts that are significant but not mitigable to less than significant are discussed below.

Land Use: For Alternatives 1, 2, and 3 under a lease method of land retention, 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 under a fee simple title method of land retention, there would be new, long-term, significant adverse impacts because of the permanent transfer of land control and ownership of the State-owned land from the State to the U.S. Government and 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. More information can be found in **Section 3.2**.

Biological Resources: For Alternatives 1, 2, and 3 under both lease and fee simple title methods of land retention, there would be continued long-term, significant, adverse impacts on Hawaiian hoary bat habitat and protected and native species from potential training-related wildland fires. ~~With implementation of existing management measures, these impacts could be reduced to less than significant.~~ More information can be found in **Section 3.3**.

Cultural Practices: For Alternatives 1, 2, and 3 under both lease and fee simple title methods of land retention, 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. More information can be found in **Section 3.4**, including the Army's existing management measures and mitigation measures.

Environmental Justice: For Alternatives 1, 2, and 3 under a lease and fee simple title method of land retention, 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 I**). 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, as discussed in **Section 3.2**. 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. More information can be found in **Section 3.11**, including the Army's existing management measures such as engagement with the Native Hawaiian community.

Continued, disproportionate, long-term, significant, adverse impacts on communities of environmental concern would also occur from limited cultural access that impedes Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs, as discussed in **Section 3.4**. 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 scoping, as well as an ongoing perception that their traditional and culturally important land is under an unjust military occupation.

There could also be continued long-term significant, adverse impacts on protected and native species from potential training-related wildland fires associated with ongoing activities within the State-owned land retained and associated activities within the U.S. Government-owned land. Such fires could impact biological resources that are important to the cultural practices of Native Hawaiians and thus adversely affect communities with environmental justice concerns.

The Proposed Action envisions that land retention would promote long-term productivity at PTA by supporting the Army's mission and thus national defense, notwithstanding the unavoidable impacts discussed above. Continued use of the State-owned land is paramount to the Army's readiness in Hawai'i; the maneuver area and training and support facilities and features on the State-owned land at PTA are needed for USARHAW to fulfill its mission.

5.5 Irreversible and Irretrievable Commitment of Resources

NEPA and HEPA require evaluation of irreversible and irretrievable commitment of resources should the Proposed Action be implemented. **Section 5.3** provides the Proposed Action's consistency with federal, state, and local plans, policies and controls. The analysis of irreversible and irretrievable resources ~~generally~~ can 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 Alternatives 1, 2, and 3, the short-term use of fuel to conduct lease compliance actions in the State-owned land not retained would be offset by the end of ongoing activities in these areas due to lease expiration, which would decrease long-term use of fuel.

The analysis of irreversible and irretrievable commitment of resources also pertains to cultural resources, including both historic and cultural resources as well as cultural practices. While there may be potential for irreversible and irretrievable commitment of cultural resources that would impact these resources for future generations through the continuance of ongoing activities, CRM programs and actions would continue to preserve and protect historic and cultural resources. For land not retained in Alternatives 1, 2, and 3, there may be impacts associated with end of lease compliance actions and cleanup and restoration activities as well as an increase in public access. Cultural practices are dependent upon cultural access, which is the ability of Native Hawaiians and cultural practitioners to enter an area for the purposes of connecting with cultural beliefs, participating in cultural practices, and/or engaging with culturally significant resources that are directly associated with the area, as described in **Section 3.4.5.2**. While cultural access is not wholly prohibited in the State-owned land, the ability of Native Hawaiian cultural practitioners to access cultural resources and practices is limited in that it must meet certain requirements for it to be granted. The ongoing 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 constitute a significant impact on cultural practices; however, they are not considered to be irreversible and irretrievable commitment of resources in terms of cultural practices.

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 are no further anticipated irreversible or irretrievable commitments of resources beyond the baseline impacts previously analyzed and discussed in **Chapter 3**.

5.6 Relationship Between Short-term Use of the Environment and Long-term Productivity / Foreclosure of Future Options

NEPA requires a discussion of trade-offs among short-term uses of the environment and the maintenance and enhancement of long-term productivity ~~(~~[NEPA Section 102(2)(C)(iv); 32 CFR Part 651, Appendix E (b)(7)(iii); 40 CFR Section 1502.16]~~)~~. 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 (**Chapter 3**). On the State-owned land retained, the Army would continue to implement existing management measures that minimize adverse impacts, including existing management measures for biological resources (**Section 3.3.4**) and historical and cultural resources (**Section 3.4.4.6**).

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.

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)~~, the assumed Army obligations due to State requirements in the COMP, and 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 Hawaiʻi.

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 Hawaiʻi.

Loss of key features and facilities within the State-owned land would foreclose the opportunity for the Army to train in Hawaiʻi above the company level (i.e., battalion and brigade level) for infantry, artillery, and aviation units. Due to the lack of some required training, USARHAW would not be able to support ready forces to provide the Pacific Response Force per USINDOPACOM order or the Army Contingency Response Force per USARPAC order. Army readiness and joint training with other component commands of USINDOPACOM would be reduced at a time when revisionist powers and rogue regimes threaten democracy and the United States.

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Chapter 6

Reference List

Please note that the References chapter reflects the links available as of the date the information was retrieved. Links to publicly available references cited in this EIS have been updated on the PTA ATLR EIS website (see "Supporting Documents" under the "Documents" tab, https://home.army.mil/hawaii/ptaeis/documents).

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Ali et al., 2023	Ali, S., Tyagi, A., Park, S., and Bae, H. (2023). Understanding the mechanobiology of phytoacoustics through molecular lens: Mechanisms and future perspectives. *Journal of Advanced Research*. Retrieved on September 19, 2024 from: https://doi.org/10.1016/j.jare.2023.12.011
Army, 2021:	U.S. Army. (2021). *Army Climate Assessment Tool (Version 4.09): Hawaiʻi and Pacific Islands*.
Athens & Kaschko, 1989:	Athens, J. S., Ph.D. and Kaschko, M. W. (1989). *Prehistoric Upland Bird Hunters: Archaeological Inventory Survey and Testing for the MPRC Project Area and the Bobcat Trail Road, Pohakuloa Training Area, Island of Hawaii.* International Archaeological Research Institute, Inc.
Athens et al., 1991:	Athens, J. S., Kaschko, M. W., and James, H. F. (1991). Prehistoric Bird Hunters: High Altitude Resource Exploitation on Hawaiʻi Island. *Bishop Museum Occasional Papers, 31,* 63-84. Bishop Museum Press. Retrieved on September 19, 2024 from: https://repository.si.edu/bitstream/handle/10088/7066/Athens-91-OccPapBishMus-Pohakuloa.pdf
Barber et al., 2010:	Barber, J. R., Crooks, K. R., & Fristrup, K. M. (2010). The costs of chronic noise exposure for terrestrial organisms. *Trends in Ecology and Evolution*, *25*(3), 180–189. Retrieved on November 4, 2024 from: https://www.sciencedirect.com/science/article/abs/pii/S0169534709002614h
Bayman et al., 2001:	Bayman, J. M., Ph.D., Moniz Nakamura, J. J., Ph.D., Reith, T. M., and Parasco, C. K. (2001). *Draft Final Report: The University of Hawaiʻi Archaeology Field School Pōhakuloa, Island of Hawaiʻi – The 1998 & 1997 Seasons*. University of Hawaiʻi at Mānoa, Department of Anthropology.

BCG & Mink, 1989: Barrett Consulting Group, Inc. and Mink, J. F. (1989). *Waikiʻi Ranch Water Well No. 2 at Waikoloa, South Kohala, Hawaii.* Prepared for Waikiʻi Ranch Associates II. Retrieved on January 7, 2025 from: https://www.higp.hawaii.edu/csav/WaterWells/Hawaii/8-5239-002/8-5239-002.pdf

BCT, 1864-1920: Boundary Commission Testimonies. (1864-1920). *Digitized collection from Microfilms of the Hawaiʻi State Archives.*

~~Bradshaw ATC, 2021: Bradshaw Air Traffic Control. (2021). *Tower Traffic Statistics.*~~

Brennan, 1974: Brennan, J. (1974). *The Parker Ranch of Hawaii: The Saga of a Ranch and a Dynasty.* John Day Company.

Brown et al., 2008: Brown, D. L., DeBaker, C. R. and Peterson, J. A., Ph.D. (2008). *Final: Phase II Archaeological Survey for Significance Determination of Cultural Resources in Stryker Brigade Combat Team Go/No Go Maneuver Areas and a 1,010-Acre Area Near Puʻu Keʻekeʻe, Pohakuloa Training Area, Island of Hawaiʻi, Hawaiʻi.* Garcia and Associates.

Buke Mahele, 1848: Buke Mahele. (1848). *Buke Kakau Paa no ka mahele aina i Hooholoia i waena o Kamehameha III a me Na Lii a me na Konohiki ana*. Retrieved on April 2, 2021 from: https://digitalcollections.hawaii.gov/docs/mahelebook.pdf

Buffum et al., 2004: Buffum, A. L., Desilets, M., Roberts, S., Robins, J. and Roberts, A. K. S. (2004). *Final Report: Archaeological Surveys of Proposed Training Areas for the Stryker Brigade Combat Team (SBCT), U.S. Army Hawaii, Schofield Barracks Hawaii.* Garcia and Associates.

Bunkley & Barber, 2015: Bunkley, J. P., & Barber, J. R. (2015). Noise Reduces Foraging Efficiency in Pallid Bats (*Antrozous pallidus*). *Ethology*, *121*(11), 1116–1121. Retrieved on November 4, 2024 from: https://onlinelibrary.wiley.com/doi/10.1111/eth.12428

CALL, 2016: The Center for Army Lessons Learned. (2016). *Security Cooperation Bulletin: Lessons and Best Practices.* Retrieved on September 13, 2024 from: https://api.army.mil/e2/c/downloads/2023/01/19/7d7e0e33/16-09-security-cooperation-lessons-and-best-practices-bulletin-mar-16-public.pdf

Cao et al., 2003 Cao, X., Ma, L. Q., Chen, M., Hardison Jr., D.W., and Harris, W.G. (2003). Weathering of lead bullets and their environmental effects at outdoor shooting ranges. *Journel of Environmental Quality, 32 (2),* 526-534. Retrieved on October 14, 2024 from: https://pubmed.ncbi.nlm.nih.gov/12708676/

~~CEMML, 2021: Center for Environmental Management of Military Lands, Colorado State University. (2021). *Technical Report and Post-Disturbance Assessment July 2021 Wildland Fires: Keʻāmuku Maneuver Area (LZ Dove)/Palila Critical Habitat Firing Point 519 (Training Area 16), Pōhakuloa Training Area, Island of Hawaiʻi.* Prepared for United States Army Garrison, Pōhakuloa Training Area.~~

~~CEMML, 2023: Center for Environmental Management of Military Lands, Colorado State University. (2023). *Technical Report and Post-Disturbance Assessment Leilani Fire in Training Area 22 July and August 2022 Pōhakuloa Training Area, Island of Hawaiʻi.* Prepared for United States Army Garrison, Pōhakuloa Training Area.~~

CEQ, 1997: Council on Environmental Quality. (1997). *Environmental Justice: Guidance Under the National Environmental Policy Act.* Retrieved on April 12, 2021 from: https://www.epa.gov/sites/production/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf

CEQ, 2021: Council on Environmental Quality. (2021). *National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions: Federal Register, Vol. 86, No. 32, 10252.* Retrived on September 13, 2024 from: https://www.govinfo.gov/content/pkg/FR-2021-02-19/pdf/2021-03355.pdf

Clark, 1983: Clark, J. T. (1983). *The Waimea-Kawaihae Region – Historical Background in Clark, J. T. and Kirch, P. V. (eds), pp. 61-137, Archaeological Investigations of the Mudlane-Waimea-Kawaihae Road Corridor, Island of Hawaii: An Interdisciplinary Study of an Environmental Transect. Historic Preservation Report 83-1.* Bernice P. Bishop Museum, Department of Anthropology.

COH, 2017a: County of Hawaiʻi. (2017). *Fire Stations-Island of Hawaiʻi.* Retrieved on February 28, 2021 from: https://geoportal.hawaii.gov/datasets/fire-stations-island-of-hawaii

COH, 2017b: County of Hawaiʻi. (2017). *Police Stations-Island of Hawaiʻi.* Retrieved on February 28, 2021 from: https://geoportal.hawaii.gov/datasets/police-stations-island-of-hawaii

COH, 2019: County of Hawaiʻi. (2019). *Planning Department, Draft General Plan 2040.*

COH-MTA, 2021: County of Hawaiʻi, Mass Transit Agency. (2021). *Hawaiʻi Island Hele-On Bus.* Retrieved on February 22, 2021 from: https://www.heleonbus.hawaiicounty.gov/

Conomy et al., 1998: Conomy, J. T., Dubovsky, J. A., Collazo, J. A., & Fleming, W. J. (1998). Do Black Ducks and Wood Ducks Habituate to Aircraft Disturbance? *The Journal of Wildlife Management*, 62(3), 1135. https://doi.org/10.2307/3802568

Cordy, 1994: Cordy, R. H. (1994). *A Regional Synthesis of Hamakua District, Island of Hawaii*. State of Hawaiʻi, Department of Land and Natural Resources, Historic Preservation Division.

Cordy, 2000: Cordy, R. H. (2000). *Exalted Sits the Chief: The Ancient History of Hawaiʻi Island*. Mutual Publishing.

Crowell et al., 2010: Crowell, D. M., Head, J., Kerr, K. and Stine, C. (2010). *Phase I Cultural Resources Survey of a Proposed Fence Unit Around Training Area 21 at Pōhakuloa Training Area, Island of Hawaiʻi, Hawaiʻi*. Research Corporation of the University of Hawaiʻi, Pacific Cooperative Studies.

Cuddihy & Stone, 1990: Cuddihy, L. W. and Stone, C. P. (1990). *Alteration of Native Hawaiian Vegetation: Effects of Humans, Their Activities and Introductions.* University of Hawaii, Cooperative National Park Resources Studies Unit. University of Hawaii Press. Retrieved on September 19, 2024 from: https://downloads.regulations.gov/FWS-R1-ES-2007-0024-0177/attachment_6.pdf

DA, 2007: Department of the Army. (2007). *Army Regulation 200-1, Environmental Protection and Enhancement.* Retrieved on September 19, 2024 from: https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/r200_1.pdf

DA, 2011: Department of the Army. (2011). *Davy Crockett M101 Spotting Round Information Guide*. Retrieved on March 7, 2023 from: https://home.army.mil/hawaii/application/files/4615/5961/0076/Info_Booklet.pdf

DA, 2018a: Department of the Army. (2018). *The Army Strategy*. Retrieved on June 09, 2021 from: https://www.army.mil/e2/downloads/rv7/the_army_strategy_2018.pdf

DA, 2018b: Department of the Army. (2018). *Programmatic Agreement Among the U.S. Army Garrison, Pōhakuloa Training Area, the U.S. Army Garrison, Hawaiʻi, the Hawaiʻi State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Routine Military Training Actions and Related Activities at United States Army Installations on the Island of Hawaiʻi, Hawaiʻi.* Retrieved on September 13, 2024 from: https://home.army.mil/hawaii/application/files/3916/0210/3455/USAG-P_Hawaii_Island_Training_PA_Signed_27SEP18_PUBLIC_RELEASE_VERSION.pdf

DA, 2018c: Department of the Army. (2018). *FY18 Army Training Land Strategy.*

DA, 2018d: Department of the Army. (2018). *DDESB Final Approval for Ammunition Supply Point at Pohakuloa Training Area, Hawai'i (File Number 2901).*

DA, 2018e: Department of the Army. (2018). *DDESB Final Approval for the Training Support System, Pohakuloa Training Area (File Number 2949).*

DA, 2018f: Department of the Army. (2018). *Additional Information for the July 2018 Fire at Training Areas 18, 19, and 22 located at the Pōhakuloa Training Area, Island of Hawai'i, Hawai'i*.

DA, 2019a: Department of the Army. (2019). *Training: Enlisted Initial Entry Training Policies and Administration, TRADOC Regulation 350-6.* Retrieved on September 13, 2024 from: https://adminpubs.tradoc.army.mil/regulations/TR350-6.pdf

DA, 2019b: Department of the Army. (2019). *Memorandum: Integrated Training Area Management (ITAM) Roles and Responsibilities for Integrated Natural Resource Management Plan (INRMP) Development.*

DA, 2020: Department of the Army. (2020). *Implementation Guidance for Army Compatible Use Buffers*. September 11, 2020.

DA, 2021a: Department of the Army. (2021). *Memorandum: Army Environmental Per- and Polyfluoroalkyl Substances (PFAS) Policy.* Retrieved on September 19, 2024 from: https://www.denix.osd.mil/army-pfas/denix-files/sites/11/2022/03/Army-PFAS-Policy.pdf

DA, 2021b: Department of the Army. (2021). *FY21-22+POM 23-27 Range Programming*.

DA, 2023: Department of the Army. (2023). *Community Partnerships Key to Quick Containment of Wildland Fire*. Prepared by Phillips, A. Retrieved on March 13, 2023 from: https://www.army.mil/article/264113/community_partnerships_key_to_quick_containment_of_wildland_fire

DA, 2024: Department of the Army, Army Environmental Command. (2024). Readiness and Environmental Protection Integration (REPI) Program. Received via email on November 8, 2024.

DA-ASAIEE, 2022: Department of the Army, Office of the Assistant Secretary of the Army for Installations, Energy and Environment. (2022). *United States Army Climate Strategy.* Retrieved on January 20, 2023 from: https://www.army.mil/e2/downloads/rv7/about/2022_army_climate_strategy.pdf

DA & HIARNG, 2013: Department of the Army and Hawaii Army National Guard. (2013). Draft *Environmental Assessment: 25th Combat Aviation Brigade and Army National Guard, Hawaii Aviation Landing Zones at Pōhakuloa Training Area.* Retrieved on September 19, 2024 from: https://home.army.mil/hawaii/application/files/4915/6262/2741/PTA_AviationLandingZones_EA.pdf

DA & USACE-POH, 2004: Department of the Army and U.S. Army Corps of Engineers-Honolulu Engineer District. (2004). *Final Environmental Impact Statement, Transformation of the 2nd Brigade, 25th Infantry Division (L) to a Stryker Brigade Combat Team in Hawai'i.*

Davis et al., 2018 Davis, A. K., Schroeder, H., Yeager, I., and Pearce, J. (2018). Effects of simulated highway noise on heart rates of larval monarch butterflies, Danaus plexippus: implications for roadside habitat suitability. *Biology Letters*. Retrieved on September 18, 2024 from: http://dx.doi.org/10.1098/rsbl.2018.0018

DBEDT, 2021a: State of Hawai'i, Department of Business, Economic Development and Tourism. (2021). *Economic Impact of Defense Spending*. Retrieved on February 19, 2021 from: https://defenseeconomy.hawaii.gov/economic-impact/

DBEDT, 2021b : State of Hawai'i, Department of Business, Economic Development, and Tourism. (2021). *SWOT Analysis and Action Plan Identify Challenges and Opportunities for Economic Growth*. Retrieved on February 24, 2021 from: http://dbedt.hawaii.gov/blog/21-02/

DBEDT-OP, 2020: State of Hawai'i, Department of Business, Economic Development, and Tourism, Office of Planning. (2020). *2020 Ocean Resources Management Plan: Coastal Zone Management Mauka to Makai*. Retrieved on September 19, 2024 from: https://files.hawaii.gov/dbedt/op/czm/ormp/ormp_update_reports/2020_ormp_final.pdf

DCIP, ND: Defense Community Infrastructure Program. (Not Dated). *Waimea Nui Emergency Operations Center*.

~~DENIX, 2021: DoD Environment, Safety and Occupational Health Network and Information Exchange. (2021). *DoD Recovered Chemical Warfare Material (RCWM) Program: Glossary*. Retrieved on March 22, 2021 from: https://www.denix.osd.mil/rcwmprogram/references/glossary/#:~:text=Discarded%20Military%20Munitions%20(DMM)%20%2D%20the%20purpose%20of%20disposal~~

Desilets & Roberts, 2005: Desilets, M. and Roberts, A. K. S. (2005). *Final Report: Phase I Archaeological Reconnaissance Survey of 1,010 acres of Puʻu Keʻekeʻe Lands at U.S. Army Pohakuloa Training Area, Waikoloa Ahupuaʻa, South Kohala District, Island of Hawaiʻi, Hawaiʻi*. Garcia and Associates.

Desilets et al., 2005: Desilets, M., Roberts, A., Buffum, A. and Roberts, S. (2005). *Final Report: Phase I Archaeological Reconnaissance Survey for SBCT Go/No Go Maneuver Areas at U.S. Army Pohakuloa Training Area, Kaʻohe Ahupuaʻa, Hāmākua District and Puʻuanahulu Ahupuaʻa, North Kona District, Island of Hawaiʻi, Hawaiʻi.* Garcia and Associates.

DHHL, 2012: State of Hawaiʻi, Department of Hawaiian Home Lands. (2012). *Final Environmental Assessment: ʻĀina Mauna Legacy Program.* Retrieved April 10, 2021: https://files.hawaii.gov/dbedt/erp/EA_EIS_Library/2012-02-08-HA-FEA-Aina-Mauna-Legacy-Program.pdf

DLNR, 1964: State of Hawaiʻi, Department of Land and Natural Resources. (1964). *State General Lease No. S-3849 and U.S. Lease Contract No. DA-94-626-ENG-80*.

DLNR, 2014: State of Hawaiʻi, Department of Land and Natural Resources. (2014). *Inspection Report*. Document Number: GLS 3849. December 23, 2014.

DLNR, 2015a: State of Hawaiʻi, Department of Land and Natural Resources. (2015). *Inspection Report*. Document Number: GLS 3849. December 4, 2015.

DLNR, 2015b: State of Hawaiʻi, Department of Land and Natural Resources. (2015). *Hawaiʻi's State Wildlife Action Plan - Terrestrial Invertebrates: Blackburn's Sphinx Moth Manduca blackburni*. Retrieved on March 6, 2023 from: https://dlnr.hawaii.gov/wildlife/files/2019/02/SWAP-2015-Blackburns-Sphinx-Moth-Final.pdf

DLNR, 2021: State of Hawaiʻi, Department of Land and Natural Resources. (2021). *Mana Road Fire Fight was a Community Effort: Interagency Cooperation & Support Highlighted.* Retrieved on March 13, 2023 from: https://dlnr.hawaii.gov/blog/2021/09/08/nr21-163/

DLNR, 2022: State of Hawaiʻi, Department of Land and Natural Resources. (2022). *Inspection Report*. Document Number: GLS 3849. June 24, 2022.

~~DLNR, 2022: State of Hawaiʻi, Department of Land and Natural Resources. (2022). *Hawaiʻi Island Wildfire Declared Nearly Contained.* Retrieved on March 13, 2023 from: https://dlnr.hawaii.gov/blog/2022/08/17/nr22-119/~~

DLNR, 2023: State of Hawaiʻi, Department of Land and Natural Resources. (2023). *Inspection Report*. Document Number: GLS 3849. August 16, 2023.

DLNR-DOFAW, 2015: State of Hawai‘i, Department of Land and Natural Resources, Division of Forestry and Wildlife. (2015). *Hawai‘i’s State Wildlife Action Plan*. Retrieved on April 22, 2021 from: https://dlnr.hawaii.gov/wildlife/hswap

~~DLNR-DOFAW & UH, 2013: State of Hawai‘i, Department of Land and Natural Resources, Division of Forestry and Wildlife, Native Invertebrate Program and University of Hawai‘i at Mānoa, Department of Botany, Pacific Cooperative Studies Unit. (2013). *Assessing the presence and distribution of 23 Hawaiian yellow-faced bee species on lands adjacent to military installations on O‘ahu and Hawai‘i Island: Technical Report No. 185.*~~

DMDC, 2021: Defense Manpower Data Center. (2021). *Number of Military and DoD Appropriated Fund Civilian Personnel Permanently Assigned*. As of March 31, 2021. Retrieved on August 5, 2021 from: https://dwp.dmdc.osd.mil/dwp/app/dod-data-reports/workforce-reports

DN, 2012: Department of the Navy. (2012*). Final Environmental Impact Statement for the Basing of MV-22 and H-1 Aircraft in Support of III MEF Elements in Hawaii*. Retrieved on September 13, 2024 from: https://www.mcbhawaii.marines.mil/Portals/114/WebDocuments/MV22/Final%20EIS%20for%20Basing%20MV22%20and%20H1%20Aircraft%20in%20Support%20of%20III%20MEF%20Elements%20in%20Hawaii%20Vol1.pdf

DoD, 2015: U.S. Department of Defense. (2015). *Unified Facilities Criteria 3-530-01 Interior And Exterior Lighting Systems And Controls*. Retrieved on June 09, 2021 from: https://www.wbdg.org/FFC/DOD/UFC/ARCHIVES/ufc_3_530_01_2015_c4.pdf ~~https://www.wbdg.org/FFC/DOD/UFC/ufc_3_530_01_2015_c4.pdf~~

~~DoD, 2018a: U.S. Department of Defense. (2018). *Summary of the 2018 National Defense Strategy of The United States of America.*~~

DoD, 2018a~~b~~: U.S. Department of Defense. (2018). *Department of Defense Instruction 4715.03: Natural Resources Conservation Program.*

DoD, 2018b~~c~~: U.S. Department of Defense. (2018). *Department of Defense Manual 4715.03: Integrated Natural Resources Management Plan (INRMP) Implementation Manual.* Retrieved on September 17, 2024 from: https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/471503m.pdf

DoD, 2018c~~d~~: U.S. Department of Defense. (2018). *Department of Defense Instruction 4165.57: Air Installations Compatible Use Zones.* Retrieved on February 24, 2021 from: https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/416557p.pdf?ver=2019-04-15-094510-673

DoD, 2022: U.S. Department of Defense. (2022). *2022 National Defense Strategy.* Retrieved on October 16, 2024 from: https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.pdf

DoD-OSD, 2022: U.S. Department of Defense, Office of the Secretary of Defense. (2022). *Memorandum: Response and Reporting of Aqueous Film Forming Foam Usage, and Accidental Releases/Spills on Military Installations and National Guard Facilities.* Retrieved on September 17, 2024 from: https://media.defense.gov/2022/Apr/28/2002986243/-1/-1/1/RESPONSE-AND-REPORTING-OF-AQ[%E2%80%A6]INSTALLATIONS-AND-NATIONAL-GUARD-FACILITIES-APRIL-7-2022.PDF

DoD-OUSDAS, 2021: U.S. Department of Defense, Office of the Undersecretary of Defense (Acquisition and Sustainment). (2021). *Department of Defense Draft Climate Adaptation Plan*. Retrieved on September 17, 2024 from: https://media.defense.gov/2021/Oct/07/2002869699/-1/-1/0/DEPARTMENT-OF-DEFENSE-CLIMATE-ADAPTATION-PLAN-2.PDF

DoD-REPI, 2023: U.S. Department of Defense, Readiness and Environmental Protection Integration Program. (2023). *DOD's Readiness and Environmental Protection Integration (REPI) Program FY 2023 Investments in the Pacific Region*.

DoD & USFWS, 2022: U.S. Department of Defense and U.S. Fish and Wildlife Service. (2022). *Memorandum of Understanding Between the U.S. Department of Defense and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds [Addendum]*. Retrieved on September 17, 2024 from: https://www.fws.gov/sites/default/files/documents/memorandum-of-understanding-dod.pdf

DOH-CAB, 2021: State of Hawai'i, Department of Health, Clean Air Branch. (2021). *Hawaii Air Quality Data*. Retrieved on January 25, 2021 from: https://air.doh.hawaii.gov/home/map

DOH-EMD, 2017: State of Hawai'i, Department of Health, Emergency Management Division. (2017). *Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater, Volume 1: User's Guide, Hawai'i Edition*. Retrieved on September 17, 2024 from: https://health.hawaii.gov/heer/files/2019/11/Volume-1-HDOH-2017.pdf

DOH-IRHB, 2020: State of Hawai'i, Department of Health, Indoor and Radiological Health Branch. (2020). *Noise Section.* Retrieved on February 22, 2021 from: https://health.hawaii.gov/irhb/noise

DOH-OHCA, 2020: State of Hawai‘i, Department of Health, Office of Health Care Assurance. (2020). *Hospitals.* Retrieved on February 28, 2021 from: https://geoportal.hawaii.gov/datasets/hospitals-1?geometry=-157.089%2C19.252%2C-153.620%2C20.157

DOH-SDWB, 2021: State of Hawai‘i, Department of Health, Safe Drinking Water Branch. (2021). *Environmental Health Portal: Safe Drinking Water Branch System.* Retrieved on March 22, 2021 from: https://eha-cloud.doh.hawaii.gov/sdwb/#!/viewer

DOH-SHWB, 2020: State of Hawai‘i, Department of Health, Solid and Hazardous Waste Branch. (2020). *Hawaii DOH Underground Storage Tank Section (UST): UST Data Files on Regulated USTs and Release Sites in Hawaii – Nov. 2020*. Retrieved on April 2, 2021 from: https://health.hawaii.gov/shwb/underground-storage-tanks/

DOH & USACE, 2022: State of Hawai‘i, Department of Health & U.S. Army Corps of Engineers. (2022). *Department of Defense and State Memorandum of Agreement Program: Cooperative Agreement*.

DOH & USEPA, 2019: State of Hawai‘i, Department of Health and U.S. Environmental Protection Agency. (2019). *Pohakuloa Training Area Above-ground Oil Storage Tank Inventory.*

~~Emerson, 1895: Emerson, N. B. (1895). The Bird-Hunters of Ancient Hawaii. *Hawaiian Annual*, 100–111. Black & Auld, Printers.~~

Escott, 2006: Escott, G. (2006). *Phase I Archaeological Reconnaissance Survey of Trail SIHP Site # 19528 on Lands of the U.S. Army Pohakuloa Training Area and the State of Hawaii [TMK:3-7-1-004:001, 006, and 007] in the Districts of Kona and Hamakua, Island of Hawaii, Hawaii.* USAG-PTA, Environmental Office, Cultural Resources Section.

Fayiga and Saha, 2016: Fayiga, A.O. and U.K. Saha. (2016). *Soil Pollution at Outdoor Shooting Ranges: Health Effects, Bioavailability and Best Management Practices*. Environmental Pollution. Retrieved on October 19, 2024 from: https://www.sciencedirect.com/science/article/abs/pii/S0269749116304 50X?via%3Dihub

Francis & Barber, 2013: Francis, C. D., & Barber, J. R. (2013). A framework for understanding noise impacts on wildlife: An urgent conservation priority. *Frontiers in Ecology and the Environment*, *11*(6), 305–313. Retrieved on November 4, 2024 from: https://esajournals.onlinelibrary.wiley.com/doi/10.1890/120183

Giambelluca et al., 2013: Giambelluca, T. W., Chen, Q., Frazier, A. G., Price, J. P., Chen, Y.-L., Chu, P.-S., Eischeid, J. K. and Delparte, D. M. (2013). Online Rainfall Atlas of Hawai'i. *Bulletin of the American Meteorological Society,* 94, 313-316. Retrieved on September 17, 2024 from: http://www.soest.hawaii.edu/MET/Hsco/2013.Giambelluca.Chen.Frazier.Price.Chen.Chu.Rainfall.Atlas.pdf

Godby, 2003: Godby, W. (2003). *Memorandum for the Record: Site Visit and Finding of Human Remains at Site 23694, Cave System C, Entrance 3A, Training Area 22, Adjacent to Old Kona Highway.*USAG-PTA, Environmental Office, Cultural Resources Section.

Goudie & Jones, 2005: Goudie, R. I., & Jones, I. L. (2005). Dose-response relationships of harlequin duck behaviour to noise from low-level military jet over-flights in central Labrador. *Environmental Conservation*, *31*(4), 289–298. Retrieved on November 4, 2024 from: https://research.library.mun.ca/1703/1/Dose-response_relationships_of_harlequin_duck_behaviour_to_noise_from_low-level_military_jet_over-flights_in_central_Labrador.pdf

Habib et al., 2006: Habib, L., Bayne, E. M., & Boutin, S. (2006). Chronic industrial noise affects pairing success and age structure of ovenbirds *Seiurus aurocapilla*. *Journal of Applied Ecology*, *44*(1), 176–184. Retrieved on November 4, 2024 from: https://besjournals.onlinelibrary.wiley.com/doi/10.1111/j.1365-2664.2006.01234.x

Hardison et al., 2004: Hardison Jr. D. W., Ma, L. W., Luongo, T., and Harris, W. G. (2004). Lead contamination in shooting range soils from abrasion of lead bullets and subsequent weathering. *Science of the Total Environment, 328 (1-2),* 175-183. Retrieved on October 14, 2024 from: https://doi.org/10.1016/j.scitotenv.2003.12.013

Harris, 1997: Harris, C. M. (1997). *Handbook of Acoustical Measurement and Noise Control, Third Edition*. Acoustical Society of America.

Haun, 1986: Haun, A. E., Ph.D. (1986). *Archaeological Survey and Testing at the Bobcat Trail Habitation Cave Site (50-10-30-5004) Pohakuloa Training Area, Island of Hawaii, Hawaii.* Paul H. Rosendahl, Ph.D., Inc.

State of Hawai'i Supreme Court, 2019: State of Hawai'i Supreme Court. (2019). *Supreme Court SCAP-18-0000432: Clarence Ching and Mary Maxine Kahaulelio vs. Suzanne Case, Board of Land and Natural Resources and Department of Land and Natural Resources.* Retrieved on February 21, 2023 from: https://www.courts.state.hi.us/wp-content/uploads/2019/08/SCAP-18-0000432.pdf

HCCMAC, 2017: Hawaii Climate Change Mitigation and Adaptation Commission. (2017). *Hawai'i Sea Level Rise Vulnerability and Adaptation Report*. Retrieved on September 17, 2024 from: https://climateadaptation.hawaii.gov/wp-content/uploads/2017/12/SLR-Report_Dec2017.pdf

HCCMAC, 2021: Hawai'i Climate Change Mitigation and Adaptation Commission. (2021). *State of Hawai'i Sea Level Rise Viewer: Version 1.04.* Retrieved on March 28, 2023 from: https://www.pacioos.hawaii.edu/shoreline/slr-hawaii/

HDOT-AD, 2021: State of Hawai'i, Department of Transportation, Airports Division. (2021). *The State of Hawai'i 2020 Airport Activity Statistics.* Retrieved on February 17, 2021 from: https://hidot.hawaii.gov/airports/files/2021/02/2020-Air-Traffic-Statistics.pdf

HDOT-H, 2008: State of Hawai'i, Department of Transportation, Harbors Division. (2008). *Port Hawai'i Handbook: A Guide to Port Hawai'i*. Retrieved on February 17, 2021 from: https://hidot.hawaii.gov/harbors/library/port-hawaii-handbook/

HDOT-H, 2011: State of Hawai'i, Department of Transportation, Harbors Division. (2011). *Hawai'i Island Commercial Harbors 2035 Master Plan Update.* Retrieved on November 8, 2019 from: https://hidot.hawaii.gov/harbors/files/2013/01/HI-COM-HAR-2035-MP-Final.pdf

HDOT-HD, 2014a: State of Hawai'i, Department of Transportation, Highways Division. (2014). *Statewide Federal-Aid Highways 2035 Transportation Plan.* Retrieved on February 17, 2021 from: https://hidot.hawaii.gov/highways/files/2014/09/Statewide-Federal-Aid-Highways-2035-Transportation-Plan_Yong.pdf

HDOT-HD, 2014b: State of Hawai'i, Department of Transportation, Highways Division. (2014). *Federal-Aid Highways 2035 Transportation Plan for the District of Hawai'i.* Retrieved on February 17, 2021 from: https://hidot.hawaii.gov/highways/files/2014/09/Regional-Federal-Aid-Highways-2035-Transportation-Plan-for-the-District-of-Hawaii_Yong1.pdf

HDOT-HD, 2017a: State of Hawai'i, Department of Transportation, Highways Division. (2017). *New State Highways Data Now Available on HDOT Website.* Retrieved on March 2, 2021 from: https://hidot.hawaii.gov/blog/2017/11/01/new-state-highways-data-now-available-on-hdot-website/

HDOT-HD, 2017b: State of Hawai'i, Department of Transportation, Highways Division. (2017). *New Phase of Daniel K. Inouye Highway Opens Oct. 10, 2017*. Retrieved on March 11, 2020 from: https://hidot.hawaii.gov/highways/new-phase-of-daniel-k-inouye-highway-opens-oct-10-2017

HDOT-HD, 2021: State of Hawai'i, Department of Transportation, Highways Division. (2021). *HDOT Highways Program Status.* Retrieved on February 17, 2021 from: https://hidot.hawaii.gov/highways/

HDOT-HD & USDOT-FHWA, 2017: State of Hawai'i, Department of Transportation, Highways Division and U.S. Department of Transportation, Federal Highway Administration. (2017). *Draft Environmental Impact Statement: Saddle Road Extension, South Kohala, Hawai'i.* Retrieved on March 14, 2021 from: https://highways.dot.gov/sites/fhwa.dot.gov/files/DEIS-SADDLE-ROAD-EXTENSION-Vol1-1.pdf

HEMA, 2021: State of Hawai'i, Hawaii Emergency Management Agency. (2021). *Tsunami Evacuation Zones.* Retrieved on April 9, 2021 from: http://dod.hawaii.gov/hiema/public-resources/tsunami-evacuation-zone/

HGS, 1987: Hawai'i Geological Survey. (1987). *Generalized Geology of the Hawaiian Islands.* Retrieved on September 17, 2024 from: https://files.hawaii.gov/dlnr/cwrm/maps/generalgeo.pdf

HISC, 2021: Hawaii Invasive Species Council. (2021). *Hawaii Invasive Species Council: Cabinet-level Direction on Invasive Species Issues.* Retrieved on April 22, 2021 from: https://dlnr.hawaii.gov/hisc/

Hommon & Ahlo, 1983: Hommon, R. J. and Ahlo, H. M. Jr. (1983). *A Research Design for Archaeological Studies at the Pohakuloa Training Area, Island of Hawaii.* Science Management, Inc.

Horai et al., 2018: Horai, S., Nakashima, Y., Nawada, K., Watanabe, I., and Kunisue, T. (2018). Trace element concentrations in the small Indian mongoose (Herpestes auropunctatus) from Hawaii, USA. *Ecological Indicators, 91,* 92-104. Retrieved on October 14, 2024 from: https://digitalcommons.unl.edu/icwdm_usdanwrc/2184/?utm_source=digitalcommons.unl.edu%2Ficwdm_usdanwrc%2F2184&utm_medium=PDF&utm_campaign=PDFCoverPages

HQDA, 2008a: Department of the Army Headquarters, U.S. Army Sustainment Command. (2008). *Final Technical Memorandum, Depleted Uranium Scoping Investigations: Makua Military Reservation, Pohakuloa Training Area, Schofield Barracks Impact Area, Islands of Oahu and Hawai'i*. Retrieved on March 3, 2023 from: https://home.army.mil/hawaii/application/files/6915/5961/1805/Final_Schofield_Makua_Pohakuloa_Scoping_Surveys_Tech_Memo.pdf

HQDA, 2008b: Department of the Army, Headquarters. (2008). *Final Environmental Impact Statement: Permanent Stationing of the 2/25th Stryker Brigade Combat Team.*

HQDA, 2009: Department of the Army Headquarters, U.S. Army Sustainment Command. (2009). *Final Technical Memorandum for Pohakuloa Training Area (PTA) Aerial Surveys, The Big Island (Hawaii), Hawaii*. Retrieved on March 3, 2023 from: https://home.army.mil/hawaii/application/files/3215/5961/1854/PTAFlyoverTechRptFinal.pdf

HQDA, 2010: Department of the Army, Headquarters, U.S. Army Sustainment Command. (2010). *Final Pohakuloa Training Area Firing Range Baseline Human Health Risk Assessment for Residual Depleted Uranium.* Retrieved on September 17, 2024 from: https://home.army.mil/hawaii/application/files/6515/5961/1869/PTA_BHHRA_Report_Rev_2.pdf

Hurwitz et al., 2021: Hurwitz, S., Peek, S. E., Scholl, M. A., Bergfeld, D., Evans, W. C., Kauahikaua, J. P., Gingerich, S. B., Hsieh, P. A., Lee, R. L., Younger, E. F., and Ingebritsen, S. E. (2021). *Groundwater Dynamics at Kīlauea Volcano and Vicinity, Hawai'i, Chapter F of The 2008–2018 Summit Lava Lake at Kīlauea Volcano, Hawai'i: U.S. Geological Survey Professional Paper 1867. U.S. Department of the Interior, U.S. Geological Survey.* Retrieved on March 22, 2021 from: https://pubs.usgs.gov/publication/pp1867F ~~https://doi.org/10.3133/pp1867F~~

IMCOM, 2016: U.S. Army Installation Management Command. (2016). *Final Site-Specific Environmental Radiation Monitoring Plan, Pohakuloa Training Area, Hawaii: Annex 17, For Materials License SUC-1593, Docket No. 040-09083*. Retrieved on September 17, 2024 from: https://home.army.mil/hawaii/application/files/1715/5961/1873/PTA_ERMP.pdf

IMCOM, 2018: U.S. Army Installation Management Command. (2018). *Final Radiation Monitoring Report Including Appendices Summary of Results for Summer, Fall, and Winter 2017 Sampling Results for Materials License SUC-1593, Docket No. 040-09083.* Retrieved on March 16, 2023 from: https://home.army.mil/hawaii/application/files/7415/5961/1883/DavyCrocket_Final_ERM_report_for_CY17_NRC.pdf

Jibson & Baum, 1999: Jibson, R.W., and Baum, R. L. (1999). *Assessment of Landslide Hazards in Kaluanui and Maakua Gulches, Oahu, Hawaii, Following the 9 May 1999 Sacred Falls Landslide*. U.S. Department of the Interior, U.S. Geological Survey, Open-File Report 99-364. Retrieved on March 15, 2021 from: https://pubs.usgs.gov/of/1999/ofr-99-0364/index.html

Kamakau, 1961: Kamakau, S. M. (1961). *Ruling Chiefs of Hawaii*. The Kamehameha Schools Press. Retrieved on September 17, 2024 from: https://ulukau.org/ulukau-books/?a=d&d=EBOOK-CHIEFS.1.5&l=haw

Kelly, 1974: Kelly, M. (1974). *Historic Survey of the Waimea to Kawaihae Road Corridor: Island of Hawaii. Hawai'i Historic Preservation Report 74-1.* Bernice P. Bishop Museum, Department of Anthropology.

Khait et al., 2019: Khait, I., Obolski, U., Yovel, Y., and Hadany, L. (2019). Sound perception in plants. Seminars in Cell & Developmental Biology, *92,* 134-138. Retrieved on September 17, 2024 from: https://doi.org/10.1016/j.semcdb.2019.03.006

King & Head, 2004: King, A. C. and Head, J. (2004). *Memorandum for Record: Archaeological Reconnaissance Survey of Approximately 600 Acres in Training Areas 6, 7, and 8, Pohakuloa Training Area*. USAG-PTA, Environmental Office, Cultural Resources Section.

Klein et al., 2001: Klein, F.W., Frankel, A.D., Mueller, C.S., Wesson R.L., and Okubo P.G. (Klein et al.). (2001). Seismic Hazard in Hawaii: High Rate of Large Earthquakes and Probabilistic Ground-Motion Maps. *Bulletin of the Seismological Society of America, 91*(3), 479-498. Retrieved on September 17, 2024 from: https://www.researchgate.net/profile/Fred-Klein/publication/228714357_Seismic_hazard_in_Hawaii_High_rate_of_large_earthquakes_and_probabilistic_ground_motion_maps/links/543fd12d0cf21227a11b8534/Seismic-hazard-in-Hawaii-High-rate-of-large-earthquakes-and-probabilistic-ground-motion-maps.pdf

Knight & Gutzwiller, 1995: Knight, R., L., and Gutzwiller, K., J. (1995). Wildlife and recreationists: Coexistence through management and research. Retrieved on September 17, 2024 from: https://www.academia.edu/16799312/Wildlife_and_Recreationists_Coexistence_through_Management_and_Research

Laidlaw et al., 2017: Laidlaw, M., Filippelli, G., Mielke, H., Gulson, B., and Ball, A. (2017). *Lead Exposure at Firing Ranges – A Review*. Retrieved on October 18, 2024 from: https://pmc.ncbi.nlm.nih.gov/articles/PMC5379568/#CR69

Langlas et al., 1999: Langlas, C., Ph.D., Wolforth, T. R. and Head, J. (1999). *The Saddle Road Corridor: An Archaeological Inventory Survey and Traditional Cultural Property Study for the Hawai'i Defense Access Road A-AD-6(1) and Saddle Road (SR 200) Project: Districts of South Kōhala, Hāmākua, North Hilo, and South Hilo, Hawai'i.* Paul H. Rosendahl, Ph.D. Inc.

Lawrence et al., 2015: Lawrence, M. J., Stemberger, H. L., Zolderdo, A. J., Struthers, D. P., and Cooke, S. J. (2015). The effects of modern war and military activities on biodiversity and the environment. *Environmental Reviews, 23 (4).* Retrieved on October 8, 2024 from: https://cdnsciencepub.com/doi/full/10.1139/er-2015-0039

Luo et al., 2015: Luo, J., Siemers, B. M., & Koselj, K. (2015). How anthropogenic noise affects foraging. *Global Change Biology*, *21*(9), 3278–3289. Retrieved on September 17, 2024 from: https://pubmed.ncbi.nlm.nih.gov/26046451/

Luscomb, 2007: Luscomb, K. L. (2007). *Memorandum for Record: Trip Report for Historic Property Survey and Corridor Marking for Proposed Construction of Firebreak 7 in Training Area 22, p. 28 in Taomia et al. (2008). Annual Report July 1, 2006 thru June 30, 2007: Cultural Resources Management Projects Performed Under the Ecosystems Management Program at the Pōhakuloa Training Area, Island of Hawai'i, Hawai'i.* USAG-PTA, Environmental Office, Cultural Resources Section.

Maly & Maly, 2005: Maly, K. and Maly, O. (2005). *Mauna Kea – Ka Piko Kaulana o Ka 'Āina (Mauna Kea – the Famous Summit of the Land): A Collection of Native Traditions, Historical Accounts, and Oral History Interviews for: Mauna Kea, the Lands of Ka'ohe, Humu'ulu and the 'Āina Mauna on the Island of Hawai'i*. Kumu Pono Associates, LLC. Retrieved on September 17, 2024 from: https://www.kumupono.com/wp-content/uploads/2021/03/Mauna_Kea_Ka_Piko_Kaulana_o_ka_Aina.pdf

McClure et al., 2013: McClure, C. J. W., Ware, H. E., Carlisle, J., Kaltenecker, G., & Barber, J. R. (2013). An experimental investigation into the effects of traffic noise on distributions of birds: Avoiding the phantom road. *Proceedings of the Royal Society B: Biological Sciences*, *280*. Retrieved on November 4, 2024 from: https://pubmed.ncbi.nlm.nih.gov/24197411/

McCoy, 1986: McCoy, P. C. (1986). *Archaeological Investigations in the Hopukani and Liloe Springs Area of the Mauna Kea Adze Quarry Industry, Hawai'i*. Bernice P. Bishop Museum, Department of Anthropology.

Mink & Lau, 1993: Mink, J. F. and Lau, L. S. (1993). *Technical Report No. 191: Aquifer Identification and Classification for the Island of Hawaii: Groundwater Protection Strategy for Hawaii.* University of Hawaii, Water Resources Research Center. Retrieved on September 17, 2024 from: https://scholarspace.manoa.hawaii.edu/bitstreams/90fee9e6-325b-49f5-a441-a3304e28a2bb/download

Monahan et al., 2013: Monahan, C. M., Ph.D., Wilkinson S. and Wheeler M. (2013). *Final Archaeological Phase II Crater Investigation, U.S. Army Pōhakuloa Training Area, Island of Hawai'i, Hawai'i: A Functional and Temporal Interpretation of Excavated Pits in the Mauna 'Āina and Their Significance in Hawaiian Prehistory – Volume 1.* Cultural Surveys Hawai'i, Inc.

Moniz, 1997: Moniz, J. J. (1997). The Role of Seabirds in Hawaiian Subsistence: Implications for Interpreting Avian Extinction and Extirpation in Polynesia. *Asian Perspectives, 36*(1), 27–50. Retrieved on May 7, 2021 from: https://core.ac.uk/download/pdf/5105357.pdf

Moniz-Nakamura, 1999: Moniz-Nakamura, J. J., Ph.D. (1999). *Annual Report: Cultural Resources Management Projects Performed Under the Ecosystems Management Program at the Pōhakuloa Training Area, Island of Hawai'i, Hawai'i.* USAG-PTA, Environmental Office, Cultural Resources Section.

Mullineaux et al., 1987: Mullineaux, D.R., Peterson, D.W., and Crandell, D.R. (1987). Volcanism in Hawaii – Chapter 22, Volcanic Hazards in the Hawaiian Islands – U.S. Geological Survey Professional Paper 1350. Retrieved on September 17, 2024 from: https://pubs.usgs.gov/pp/1987/1350/pdf/chapters/pp1350_ch22.pdf

NDCEE, 2008: National Defense Center for Environmental Excellence. (2008). *Depleted Uranium, Natural Uranium and Other Naturally Occurring Radioactive Elements in Hawaiian Environments.* Retrieved on September 17, 2024 from: https://home.army.mil/hawaii/application/files/9115/5961/1800/Dr._Rubin_DU_UH_Paper_final.pdf

NPS, N.D: National Park Service (NPS). N.D. Annotated Bibliography: Impacts of Noise on Wildlife. No date.

NPS, 2010: National Park Service. (2010). *Geologic Monitoring & Parameters: Slope Failure (Landslides)* in U.S. Army Garrison-Hawaii and U.S. Army Pacific. (2013). *Final Environmental Impact Statement for the Construction and Operation of an Infantry Platoon Battle Course at Pōhakuloa Training Area, Hawai'i – Volume 1.*

NRC, 2012: National Research Council of the National Academies. (2012). Potential Health Risks to DOD Firing-Range Personnel from Recurrent Lead Exposure. Retrieved on October 18, 2024 from: https://legacy-assets.eenews.net/open_files/assets/2012/12/04/document_daily_01.pdf

NS, 2021: NatureServe. (2021). *NatureServe: Conservation Status Assessment – Identifying Threatened Species and Ecosystems.* Retrieved on April 22, 2021 from: https://www.natureserve.org/conservation-status-assessment ~~https://www.natureserve.org/conservation-tools/conservation-status-assessment~~

NSF, 2022: National Science Foundation. (2022). *Notice of Intent to Prepare an Environmental Impact Statement and Initiate Section 106 Consultation for a Potential National Science Foundation Investment in the Construction and Operation of an Extremely Large Telescope Located in the Northern Hemisphere and Notice of Public Scoping Meetings and Comment Period.* Federal Register, Vol. 87, No. 137, 43062. Retrieved on September 17, 2024 from: https://www.federalregister.gov/documents/2022/07/19/2022-15349/notice-of-intent-to-prepare-an-environmental-impact-statement-and-initiate-section-106-consultation

Oboyski et al., 2001: Oboyski, P., Gregor, J., Passerello, L., Weber, J., Hines, J., and Banko, P. (2001). *Kipuka Alala Terrestrial Arthropod Survey, Pohakuloa Training Area, Hawaii*. Biological Resources Division of the US Geological Survey, Pacific Island Ecosystems Research Center Hawaii.

OEQC, 2012: State of Hawaiʻi, Office of Environmental Quality Control. (2012). *Guide to the Implementation and Practice of the Hawaii Environmental Policy Act.* Retrieved on August 1, 2023 from: https://files.hawaii.gov/dbedt/erp/OEQC_Guidance/2012-GUIDE-to-the-Implementation-and-Practice-of-the-HEPA.pdf ~~2012-GUIDE-to-the-Implementation-and-Practice-of-the-HEPA.pdf (hawaii.gov)~~

Okuhata, 2022: Okuhata, B.K. (2022). *Assessment of Groundwater Age and Transport in West Hawaiʻi Aquifers.* PhD Dissertation. University of Hawaiʻi at Mānoa. Retrieved on January 17, 2025 from: https://www.soest.hawaii.edu/GG///academics/theses/Okuhata_B_2022_Dissertation.pdf

OLDCC, 2019: U.S. Department of Defense, Office of Local Defense Community Cooperation. (2019). *Defense Spending by State: Fiscal Year 2019*. Retrieved on February 19, 2021 from: https://oldcc.gov/defense-spending-state-fiscal-year-2019

Olive, 2006: Olive, I. X. (2006). *Mobility of Lead and Antimony in Shooting Range Soils*. Doctoral Thesis ETH No. 16689. Retrieved on October 19, 2024 from: https://www.research-collection.ethz.ch/handle/20.500.11850/2124

Pain et al., 2019: Pain, D.,J., Mateo, R., and Green, R. E. (2019). Effects of lead from ammunition on birds and other wildlife: A review and updates. *Ambio, 48,* 935- 953. Retrieved on October 14, 2024 from: https://pubmed.ncbi.nlm.nih.gov/30879267/

Phillips et al., 2021: Phillips, J. N., Termondt, S. E., and Francis, C. D. (2021). Long-term noise pollution affects seedling recruitment and community composition, with negative effects persisting after removal. *Proceedings B, 288*. Retrieved on September 17, 2024 from: https://doi.org/10.1098/rspb.2020.2906

Pierce & Thomas, 2009: Pierce, H. A., and Thomas, D. M. (2009). *Magnetotelluric and Audiomagnetotelluric Groundwater Survey Along the Humuʻula Portion of Saddle Road Near and Around the Pōhakuloa Training Area, Hawaii: U.S. Geological Survey Open-File Report 2009-1135.* Retrieved on March 22, 2021 from: https://pubs.er.usgs.gov/publication/ofr20091135

PTWC, 2018: Pacific Tsunami Warning Center. (2018). *Tsunami Information Statement Number 3: Local Tsunami Information Statement.* Retrieved on March 18, 2021 from: https://www.metoc.navy.mil/jtwc/tsunami/warnings/WEHW42_PHEB_042327_tsunami.wmo.txt ~~https://web.archive.org/web/~~

Pourrut et al., 2011: Pourrut, B., Shahid, M., Dumat, C., Winterton, P., and Pinelli, E. (2011). Lead Uptake, Toxicity, and Detoxification in Plants. *Reviews of Environmental Contamination and Toxicology, 213,* 113-136. Retrieved on October 14, 2024 from: https://link.springer.com/chapter/10.1007/978-1-4419-9860-6_4

Raboin & Elias, 2019: Raboin, M., and Elias, D. O. (2019). Anthropogenic noise and the bioacoustics of terrestrial invertebrates. *Journal of Experimental Biology, 222,* 1-11. Retrieved on September 18, 2024 from: https://doi.org/10.1242/jeb.178749

Reinman & Schilz, 1992: Reinman, F., Ph.D. and Schilz, A. J. (1992). *Draft Archeological Data Recovery at the Multi-Purpose Range Complex, Pohakuloa Training Area, Island of Hawaii*. Ogden Environmental and Energy Services Co., Inc.

REPI, 2022: Readiness and Environmental Protection Integration Program. (2022). *Readiness and Environmental Protection Integration (REPI) Program Overview*.

Roberts et al., 2004a: Roberts, A. K. S., Robins, J. and Buffum, A. (2004). *Final Report: Archaeological Surveys of Proposed Training Areas for the Stryker Brigade Combat Team, U.S. Army Pohakuloa Training Area, Island of Hawaii, Hawaii*. Garcia and Associates.

Roberts et al., 2004b: Roberts, A. K. S., Brown, K. and Buffum, A. (2004). *Final Report: Archaeological Survey of Training Areas 5 and 21 and Eligibility Evaluations of Volcanic Glass Quarry Sites in the Vicinity of Redleg Trail (Range 10), U.S. Army Pohakuloa Training Area, Island of Hawaii, Hawaii*. Garcia and Associates.

Roberts et al., 2004c: Roberts, A. K. S., Roberts S. and Desilets, M. (2004). *Final Report: Archaeological Reconnaissance of Training Areas 1, 3, and 4, U.S. Army Pohakuloa Training Area, Island of Hawaii, Hawaii*. Garcia and Associates.

Robins et al., 2006: Robins, J. J., Gonzalez, A. L. and Peterson, J. A., Ph.D. (2006). *Final Phase II Archaeological Research of Proposed Battle Area Complex (BAX) & Anti-Armor Live Fire and Training Range (AALFTR) Training Areas for Stryker Brigade Combat Team (SBCT), U.S. Army Pohakuloa Training Area, Island of Hawai'i, Hawai'i.* Garcia and Associates.

Rodríguez-Seijo et al., 2017: Rodríguez-Seijo, A., Cachada, A., Gavina, A., Duarte, A. C., Vega, G. A., Andrade, M. L., and Pereira, R. (2017). Lead and PAHs contamination of an old shooting range: A case study with a holistic approach. *Science of the Total Environment, 575,* 367-377. Retrieved on October 8, 2024 from: https://doi.org/10.1016/j.scitotenv.2016.10.018

Rosendahl, 1977: Rosendahl, P. H. Ph.D. (1977). *Part I: Archaeological Inventory and Evaluation Report for Installation Environmental Impact Statement for U.S. Army Support Command, Hawaii (USASCH).* Bernice P. Bishop Museum, Department of Anthropology.

Ryus et al., 2011: Ryus, P., Vandehey, M., Elefteriadou, L., Dowling, R. G., and Ostrom, B. K. (2011). *Highway Capacity Manual 2010.* TR News 273, March-April 2011.

Sanderson et al., 2018: Sanderson, P., Fangjie, Q., Seshadri, B., Wijayawardena, A., Naidu, R. (2018). *Contamination, Fate and Management of Metals in Shooting Range Soils – A Review*. Land Pollution. Retrieved on October 19, 2024 from: https://link.springer.com/article/10.1007/s40726-018-0089-5

Santicola, 2006: Santicola, Ryan. (2006). Encroachment: Where National Security, Land Use and the Environment Collide. *The Army Lawyer, DA PAM 27-50-398,* 1-12. Retrieved on September 17, 2024 from: https://tile.loc.gov/storage-services/service/ll/llmlp/75615419_07-2006/75615419_07-2006.pdf

SCHER, 2010: Scientific Committee on Health and Environmental Risks. (2010). *Opinion on the Environmental and Health Risks Posed by Depleted Uranium.* Retrieved on September 17, 2024 from: https://ec.europa.eu/health/scientific_committees/environmental_risks/docs/scher_o_123.pdf

Sehube et al., 2017: Sehube, N., Kelebemang, R., Totolo, O., Laetsang, M., Kamwi, O., and Dinake, P. (2017). Lead Pollution of Shooting Range Soils. *South African Journal of Chemistry, 70,* 21-18. Retrieved on October 14, 2024 from: https://repository.biust.ac.bw/handle/123456789/59~~http://dx.doi.org/10.17159/0379-4350/2017/v70a4.~~

Shahid et al., 2017a: Shahid, M., Dumat, C., Khalid, S., Schreck, E., Xiong, T., and Niazi, N. K. (2017). Foliar heavy metal uptake, toxicity and detoxification in plants: A comparison offoliar and root metal uptake. *Journal of Hazardous Materials, 325,* 36-58. Retrieved on October 16, 2024 from: https://doi.org/10.1016/j.jhazmat.2016.11.063

Shahid et al., 2017b: Shahid, M., Shamshad, S., Rafiq, M., Khalid, S., Bibi, I., Niazi, N. K., Dumat, C., and Rashid M. I. (2017). Chromium speciation, bioavailability, uptake, toxicity and detoxification in soil-plant system: A review. *Chemosphere, 178,* 513-533. Retrieved on October 16, 2024 from: https://doi.org/10.1016/j.chemosphere.2017.03.074

Shannon et al., 2016: Shannon, G., McKenna, M., Angeloni, L., Crooks, K., Fristrup, K., Brown, E., Warner, K., Nelson, M., White, C., Briggs, J., McFarland, S. and Wittemyer, G. (2016). A Synthesis of Two Decades of Research Documenting the Effects of Noise on Wildlife. *Biological Reviews*; 982-1005. Retrieved on July 19, 2023 from: https://sites.warnercnr.colostate.edu/wp-content/uploads/sites/146/2020/11/biologicalreviews2015.pdf

Shapiro & Cleghorn, 1998: Shapiro, L. and Cleghorn, P. L., Ph.D. (1998). *Final Report: Archaeological Investigations of Two Work Areas for the Legacy Resource Management Program at Pohakuloa Training Area Island of Hawai'i, Hawai'i*. Pacific Legacy, Inc.; Final prepared by Reinman, F. M. and Pantaleo, J.J., Garcia and Associates.

Shapiro et al., 1998: Shapiro, L., Shapiro, W. A., and Cleghorn, P. L., Ph.D. (1998). *Final Report: Redleg Trail Archaeological Investigations for the Legacy Resource Management Program at Pohakuloa Training Area, Hawai'i Island, Hawai'i.* Pacific Legacy, Inc.; Final prepared by Reinman, F. M. and Pantaleo, J. J., Garcia and Associates.

~~Shaw, 1997: Shaw, R. (1997). *Rare Plants of Pohakuloa Training Area, Hawaii*. Colorado State University, Department of Forest Sciences, Center for Ecological Management of Military Lands.~~

Shaw & Castillo, 1997: Shaw, R. and Castillo, M. (1997). *Plant Communities of Pohakuloa Training Area, Hawaii.* Colorado State University, Department of Forest Sciences, Center for Ecological Management of Military Lands.

Spengler, 2020: Spengler, S. (2020). *Memorandum for Record: Personal Communication with Dr. Don Thomas (Director of the Center for the Study of Active Volcanoes, University of Hawai'i at Hilo) Regarding Exploratory Water Wells Drilled at PTA.* Element Environmental, LLC.

Stine, 2006a: Stine, C. (2006). *Memorandum for Record: Archaeological and Historical Survey of Proposed Cross Fence Line 1 at Pōhakuloa Training Area, Pu'u Anahulu Ahupua'a, North Kona District, Hawai'i Island, Hawai'i, pp. 53-56 in Taomia et al. (2008). Annual Report July 1, 2006 thru June 30, 2007: Cultural Resources Management Projects Performed Under the Ecosystems Management Program at the Pōhakuloa Training Area, Island of Hawai'i, Hawai'i.* USAG-PTA, Environmental Office, Cultural Resources Section. Retrieved on September 17, 2024 from: https://pcsuhawaii.org/projects/oacrp/2006-2007_edited.pdf

Stine, 2006b: Stine, C. (2006). *Memorandum for Record: Trip Report for Historic Properties Survey for Proposed Construction of Firebreak #4 located in Training Area 22, Pu'uanahulu Ahupua'a, North Kona District, Hawaii Island, p. 23 in Taomia et al. (2008). Annual Report July 1 2006 thru June 30, 2007: Cultural Resources Management Projects Performed Under the Ecosystems Management Program at the Pōhakuloa Training Area, Island of Hawai'i, Hawai'i.* USAG-PTA, Environmental Office, Cultural Resources Section. Retrieved on September 17, 2024 from: https://pcsuhawaii.org/projects/oacrp/2006-2007_edited.pdf

Stine, 2006c: Stine, C. (2006). *Memorandum for Record: Firebreak Road Bypass Survey, p. 25 in Taomia et al. (2008). Annual Report July 1, 2006 thru June 30, 2007: Cultural Resources Management Projects Performed Under the Ecosystems Management Program at the Pōhakuloa Training Area, Island of Hawai'i, Hawai'i.* USAG-PTA, Environmental Office, Cultural Resources Section. Retrieved on September 17, 2024 from: https://pcsuhawaii.org/projects/oacrp/2006-2007_edited.pdf

Stine, 2008: Stine, C. (2008). *Memorandum for Record: Archaeological and Historical Survey for the Proposed Ahi Road Widening Project at Pohakuloa Training Area, TMK (3) 4-4-016:005, Ka'ohe Ahupua'a, Hāmākua District, Hawai'i Island, Hawai'i, pp. 69-73 in Taomia et al. (2010). Annual Report July 1, 2008 – June 30, 2009: Cultural Resources Management Projects Performed at the Pōhakuloa Training Area, Island of Hawai'i, Hawai'i.* USAG-PTA, Environmental Office, Cultural Resources Section.

Stine, 2010: Stine, C. (2010). *Memorandum for Record: Firebreak Survey in Training Area 2, Pōhakuloa Training Area (PTA), Ka'ohe Mauka Ahupua'a, Hāmākua District, Hawai'i Island, Hawai'i, pp. 92-95 in Head et al. (2011). Cultural Resources Management Annual Report July 1, 2010 – June 30, 2011: Cultural Resources Management Projects Performed Under the Ecosystems Management Program at the Pōhakuloa Training Area, Island of Hawai'i, State of Hawai'i.* USAG-PTA, Environmental Office, Cultural Resources Section.

Streck, 1992: Streck Jr., C. F. (1992). Prehistoric Settlement in the Upland Portions of the Island of Hawai'i. *New Zealand Journal of Archaeology, 14*, 99-111. Retrieved on May 7, 2021 from: https://nzarchaeology.org/download/prehistoric-settlement-in-the-upland-portions-of-the-island-of-hawaii

Taomia, 2006a: Taomia, J. M. E., Ph.D. (2006). *Memorandum for Record: Trip Report for Historic Properties Survey for Proposed Construction of new Ammunition Holding Area (AHA) located in Training Area 21, pp. 123-124 in Taomia et al. (2008). Annual Report July 1, 2006 thru June 30, 2007: Cultural Resources Management Projects Performed Under the Ecosystems Management Program at Pōhakuloa Training Area, Island of Hawai'i, Hawai'i.* USAG-PTA, Environmental Office, Cultural Resources Section. Retrieved on September 17, 2024 from: https://pcsuhawaii.org/projects/oacrp/2006-2007_edited.pdf

Taomia, 2006b: Taomia, J. M. E., Ph.D. (2006). *Memorandum for Record: Trip Report for Historic Properties Survey for Proposed Construction of Firebreak #3 located in Training Area 22, pp. 21-22 in Taomia et al. (2008). Annual Report July 1, 2006 thru June 30, 2007: Cultural Resources Management Projects Performed Under the Ecosystems Management Program at the Pōhakuloa Training Area, Island of Hawaiʻi, Hawaiʻi.* USAG-PTA, Environmental Office, Cultural Resources Section. Retrieved on September 17, 2024 from: https://pcsuhawaii.org/projects/oacrp/2006-2007_edited.pdf

Taomia, 2007: Taomia, J. M. E., Ph.D. (2007). *Memorandum for Record: Trip Report for Historic Property Survey for Proposed Construction of Additional Firebreak Connection located in Training Area 22, pp. 26-27 in Taomia et al. (2008). Annual Report July 1, 2006 thru June 30, 2007: Cultural Resources Management Projects Performed Under the Ecosystems Management Program at the Pōhakuloa Training Area, Island of Hawaiʻi, Hawaiʻi.* USAG-PTA, Environmental Office, Cultural Resources Section. Retrieved on September 17, 2024 from: https://pcsuhawaii.org/projects/oacrp/2006-2007_edited.pdf

Taomia, 2009: Taomia, J. M. E., Ph.D. (2009). *Memorandum for Record: Archaeological Inventory Survey (TMK: (3) 4-4-016:005) in Kaʻohe Ahupuaʻa, Hāmākua District, Hawaiʻi Island, pp. 289-292 in Taomia et al. (2010). Annual Report July 1, 2008 – June 30, 2009: Cultural Resources Management Projects Performed at the Pōhakuloa Training Area, Island of Hawaiʻi, Hawaiʻi.* USAG-PTA, Environmental Office, Cultural Resources Section.

Taomia & Stine, 2007: Taomia, J. M. E., Ph.D. and Stine, C. (2007). *Memorandum for Record: Archaeological Survey for Northern Fence Unit in Kaʻohe Ahupuaʻa, Hāmākua District (TMK: (3) 4-4-16:001), Waikōloa District in South Kohala District (TMK: (3) 6-7-01:003), and Puʻu Anahulu in North Kona District (TMK: (3) 7-1-04:007), Hawaiʻi Island, Hawaiʻi, pp. 236-244 in Taomia et al. (2008). Annual Report July 1, 2007 thru June 30, 2008: Cultural Resources Management Projects Performed at the Pōhakuloa Training Area, Island of Hawaiʻi, Hawaiʻi.* USAG-PTA, Environmental Office, Cultural Resources Section. Retrieved on September 17, 2024 from: https://pcsuhawaii.org/projects/oacrp/2007-2008_edited.pdf

Tejeda, 2013: Tejeda, A. (2013). *Memorandum for Record: Archaeological Testing and Plan Mapping of Sites 24326, 24327, 23457, and 23462, Battle Area Complex (BAX), Training Area 7, Pōhakuloa Training Area (PTA), Kaʻohe Mauka Ahupuaʻa, Hāmākua District, Hawaiʻi Island, in Tejeda et al. (2014). Cultural Resource Management Annual Report 2012-2013 Pohakuloa Training Area, Island of Hawaiʻi, U.S. Army Garrison Hawaii*. USAG-PTA, Environmental Office, Cultural Resources Section.

The Joint Staff, ~~2018~~2022: The Joint Staff. (~~2018~~2022). *Description of the National Military Strategy ~~2018~~2022*. Retrieved on ~~June 09, 2021~~October 16, 2024 from: https://www.jcs.mil/Portals/36/Documents/Publications/UNCLASS_2018_National_Military_Strategy_Description.pdf

Thomas, 2019: Thomas, D., Ph.D. (2019). *Summary of Findings from PTA Drilling and Testing*. University of Hawai‘i.

~~REPI, 2023a: Readiness and Environmental Protection Integration Program. (2023). *State Fact Sheets: Hawai‘i.*~~

~~REPI, 2023b: Readiness and Environmental Protection Integration Program. (2023). *2023 REPI Challenge Hawai‘i.*~~

~~REPI, 2023c: Readiness and Environmental Protection Integration Program. (2023). *DOD’s REPI Program FY 2023 Investments in the Pacific Region*.~~

UH, 2009: University of Hawai‘i. (2009). *Mauna Kea Comprehensive Management Plan: UH Management Areas.* Retrieved on September 17, 2024 from: https://hilo.hawaii.edu/maunakea/stewardship/documents/about/CMP_2009.PDF

UH, 2010: University of Hawai‘i at Hilo. (2010). *Final Environmental Impact Statement: Thirty Meter Telescope Project, Island of Hawai‘i – Volume 1.* Retrieved on April 10, 2021 from: https://hilo.hawaii.edu/maunakea/stewardship/documents/TMT_FEIS_vol1.pdf

UH, 2018: University of Hawai‘i. (2018). *Environmental Impact Statement Preparation Notice: Land Authorizations for Long-term Continuation of Astronomy on Maunakea.* Retrieved on April 10, 2021 from: https://files.hawaii.gov/dbedt/erp/EA_EIS_Library/2018-02-23-HA-EISPN-UH-Land-Authorizations-for-Astronomy-on-Maunakea.pdf

USACE-POH, 2012: U.S. Army Corps of Engineers-Honolulu District. (2012). *Final Bradshaw Army Airfield Alternatives Analysis: Preliminary Joint Planning Document: Pōhakuloa Training Area, Hawai‘i Island.*

USACE-POH, 2016: U.S. Army Corps of Engineers-Honolulu District. (2016). *Information Paper: Pohakuloa Training Area Title Issues*.

USACE-POH, 2017: U.S. Army Corps of Engineers-Honolulu District. (2017). *Analysis of Alternatives Study: Pōhakuloa Training Area State-Owned Lands.*

USACE-POH, 2019: U.S. Army Corps of Engineers-Honolulu District. (2019). *Draft Pohakuloa Training Area Real Property Master Plan Environmental Assessment: Socio-Economic Impact Assessment.*

USACE-STL, 2007: U.S. Army Corps of Engineers-St. Louis District. (2007). *Final Archive Search Report on the Use of Cartridge, 20mm Spotting M101 for Davy Crockett Light Weapon M28, Schofield Barracks and Associated Training Areas, Islands of Oahu and Hawaii.*

USACE-POH & USAESCH, 2016: U.S. Army Corps of Engineers-Honolulu District and U.S. Army Engineering and Support Center. (2016). *Final Site Specific Final Report, Removal Action, Pohakuloa Training Area Former Bazooka Range, Island of Hawaii.*

USACE-POH & USAG-HI, 2007: U.S. Army Corps of Engineers-Honolulu District and U.S. Army Garrison Hawaii. (2007). *Final U.S. Army Pohakuloa Training Area Air Monitoring Program: January 2006 to January 2007 – Volume 1.*

USACE-POH & USAG-HI, 2010: U.S. Army Corps of Engineers-Honolulu District and U.S. Army Garrison Hawaii. (2010). *Airborne Uranium Monitoring U.S. Army Pohakuloa Training Area (PTA), Island of Hawaii:* February 2009 to March 2010. Retrieved on September 5, 2024 from: https://home.army.mil/hawaii/application/files/5815/5961/1869/mar10.pdf#:~:text=An%20airborne%20uranium%20monitoring%20project,on%20PTA%20(Figure%201)

USACE-POH & USAG-HI, 2015: U.S. Army Corps of Engineers-Honolulu District and U.S. Army Garrison-Hawaii. (2015). *Utilities Baseline Assessment Pre-Final: Pohakuloa Training Area, Hawaiʻi Island.*

USACE-POH & USAG-HI, 2017a: U.S. Army Corps of Engineers-Honolulu District and U.S. Army Garrison-Hawaii. (2017). *Final Environmental Condition of Property Report Phase I: State-Owned Parcels, Pohakuloa Training Area, Hawaii, HI.*

USACE-POH & USAG-HI, 2017b: U.S. Army Corps of Engineers-Honolulu District and U.S. Army Garrison-Hawaii. (2017). *Final State-Owned Parcels: Environmental Condition of Property Report Phase II Environmental Site Assessment – Pohakuloa Training Area, Hawaiʻi Island.*

USACE-POH & USAG-HI, 2019a: U.S. Army Corps of Engineers-Honolulu District and U.S. Army Garrison-Hawaii. (2019). *Draft Real Property Master Plan: Pōhakuloa Training Area, Hawaiʻi Island – Component 5: Short Range Component*.

USACE-POH & USAG-HI, 2019b: U.S. Army Corps of Engineers-Honolulu District and U.S. Army Garrison-Hawaii. (2019). *Draft Real Property Master Plan: Pōhakuloa Training Area, Hawaiʻi Island – Component 1: Real Property Master Plan Digest.*

USACE-POH & USAG-HI, 2019c: U.S. Army Corps of Engineers-Honolulu District and U.S. Army Garrison-Hawaii. (2019). *Draft Real Property Master Plan: Pōhakuloa Training Area, Hawaiʻi Island – Component 2: Long Range Component.*

USACE-POH & USAG-HI, 2020a: U.S. Army Corps of Engineers-Honolulu District and U.S. Army Garrison-Hawaii. (2020). *Programmatic Environmental Assessment: Pōhakuloa Training Area Real Property Master Plan Adoption, Hawai'i Island, Hawai'i.* Retrieved on September 17, 2024 from: https://home.army.mil/hawaii/application/files/3115/9355/6617/FNSI_PTA_RPMP_PEA_Jun2020.pdf

USACE-POH & USAG-HI, 2020b: U.S. Army Corps of Engineers-Honolulu District and U.S. Army Garrison-Hawaii. (2020). *Draft Final Real Property Master Plan: Pōhakuloa Training Area, Hawai'i Island – Real Property Master Plan Digest.* Retrieved on April 10, 2021 from: https://home.army.mil/hawaii/application/files/1415/8683/0223/PTA_RPMP_Digest_Draft_Final_Public_Review_FEB_2020.pdf

USAEC, 2013: U.S. Army Environmental Command. (2013). *Programmatic Environmental Assessment for Army 2020 Force Structure Realignment.* Retrieved on September 17, 2024 from: https://aec.army.mil/index.php/download_file/view/311

USAEC & USAG-HI, 2010: U.S. Army Environmental Command and U.S. Army Garrison-Hawaii. (2010). *Final Decision Document: Pohakuloa Training Area, Landfills 1 and 2, Island of Hawaii.*

USAEC & USAG-HI, 2014: U.S. Army Environmental Command and U.S. Army Garrison-Hawaii. (2014). *Final First Five-Year Review: Pohakuloa Training Area, Landfills 1 and 2 (POTA-03 & 06), Island of Hawaii.*

USACE, 2023: U.S. Army Corps of Engineers. (2023). Final Preliminary Assessment and Site Inspection of Per- and Polyfluoroalkyl Substances, Pohakuloa Training Area and Kilauea Military Reservation, Hawaii. Retrieved on September 18, 2024 from: https://aec.army.mil/download_file/view/867415c2-2f42-43fa-88a9-0e3aff8885a1/1195

USAG-HI, 1998: U.S. Army Garrison-Hawaii. (1998). *Arthropod Survey at Pōhakuloa Training Area, Island of Hawai'i, Hawai'i*. Prepared by The Nature Conservancy of Hawaii, Hawaii Natural Heritage Program and Oboyski, P.

USAG-HI, 2001: U.S. Army Garrison-Hawaii. (2001). Final Report: U.S. Army Garrison-Hawaii Oahu Training Areas Natural Resource Management. Retrieved on July 20, 2023 from: https://pcsuhawaii.org/projects/oanrp/reports/2001/v2001b.pdf~~https://manoa.hawaii.edu/hpicesu/DPW/2001_YER/v2001a.pdf~~

~~USAG-HI, 2006a: U.S. Army Garrison-Hawaii. (2006). *Dust and Soils Management and Monitoring Plan (DuSMMoP).*~~

USAG-HI, 2006a~~b~~: U.S. Army Garrison-Hawaii. (2006). *Programmatic Environmental Assessment for Construction of Large-Scale Fence Units at Pohakuloa Training Area, Island of Hawaii.*

USAG-HI, 2006b~~c~~: U.S. Army Garrison-Hawaii. (2006). *Programmatic Environmental Assessment for the Implementation of the Integrated Wildland Fire Management Plan.*

USAG-HI, 2008: U.S. Army Garrison-Hawaii. (2008). *Environmental Assessment for the Use of M1117 Armored Security Vehicles at Army Installations in Hawaiʻi.*

USAG-HI, 2009: U.S. Army Garrison-Hawaii. (2009). *Final Environmental Assessment and Finding of No Significant Impact: Development and Use of Military Training Facilities on Pōhakuloa Training Area, Hawaiʻi.*

~~USAG-HI, 2010: U.S. Army Garrison-Hawaii. (2010). *U.S. Army Hawaii Covenant with Native Hawaiians*. Retrieved on February 20, 2023 from: https://home.army.mil/hawaii/application/files/2215/8379/7701/Appendix_H_NativeHawaiianCovenant.pdf~~

USAG-HI, 2011: U.S. Army Garrison-Hawaii. (2011). *Air Pollution Emission Assessment No. 43-EL-0ELL-11, Appendix K: Pohakuloa Training Area.*

USAG-HI, 2012: U.S. Army Garrison-Hawaii. (2012). *Spill Prevention, Control, and Countermeasures Plan (SPCCP)*.

USAG-HI, 2014: U.S. Army Garrison-Hawaii. (2014). *Integrated Pest Management Plan:* 2015-2020.

USAG-HI, 2017a: U.S. Army Garrison-Hawaii, Directorate of Public Works, Environmental Division. (2017). *Policy Memorandum, Avoidance of Little Fire Ant Introduction.* Retrieved on September 20, 2024 from: https://home.army.mil/hawaii/application/files/7915/4992/9927/Avoidance_of_Little_Fire_Ant_Introduction20_Jan_17.pdf

USAG-HI, 2017b: U.S. Army Garrison-Hawaii. (2017). *Installation Compatible Use Zone Study.*

USAG-HI, 2017c: U.S. Army Garrison-Hawaii. (2017). *Environmental Assessment: Implementation of the U.S. Army Garrison, Hawaii and U.S. Army Garrison, Pohakuloa Integrated Cultural Resources Management Plans.* Retrieved on September 20, 2024 from: https://home.army.mil/hawaii/application/files/2315/6262/2718/ICRMP_EA_and_FNSI.PDF

USAG-HI, 2018a: U.S. Army Garrison-Hawaii. (2018). *Environmental Assessment and Finding of No Significant Impact: Cantonment Facilities Improvement Program at Pohakuloa Training Area, Hawai'i Island, Hawai'i.* Retrieved on September 20, 2024 from: https://home.army.mil/hawaii/application/files/8215/6262/2739/PTA_FIP_EA_FNSI.pdf

USAG-HI, 2018b: U.S. Army Garrison-Hawaii. (2018). *USAG-HI Regulation 200-4: Installation Hazardous Waste Management Plan*.

USAG-HI, 2019: U.S. Army Garrison-Hawaii. (2019). *Record of Environmental Consideration: PTA – The High Mobility Artillery Rocket System Recurring Training*.

USAG-HI, 2020a: U.S. Army Garrison-Hawaii. (2020). *Pohakuloa Training Area: History.* Retrieved on January 08, 2021 from: https://home.army.mil/pohakuloa/index.php/about/history

USAG-HI, 2020b: U.S. Army Garrison-Hawaii. (2020). *Army Training Lands Overarching Themes.*

USAG-HI, 2021a: U.S. Army Garrison-Hawaii. (2021). *Personal Communication with Hilary Kapua Kawelo (USAG-HI, Natural Resource Manager) Regarding Biological Species List.*

~~USAG-HI, 2021b: U.S. Army Garrison-Hawaii. (2021). *Personal Communication with David Brixius (USAG-HI, DPW, Environmental Division Chief) Regarding Exploratory Water Wells Drilled at PTA.*~~

USAG-HI, 2021b~~c~~: U.S. Army Garrison-Hawaii. (2021). *Personal Communication with Robert H. Chenard (USAG-HI Garrison Safety Office, Safety Specialist) Regarding EMS Compliance and Safety Procedures*.

~~USAG-HI, 2022a: U.S. Army Garrison-Hawaii, Directorate of Public Works, Environmental Division. (2022). *Policy Memorandum USAG-HI-63, Landscaping with Native Plants.*~~

USAG-HI, 2022~~b~~: U.S. Army Garrison-Hawaii, Directorate of Public Works, Environmental Division. (2022). *Policy Memorandum USAG-HI 50, Green Waste Policy.* Retrieved on September 20, 2024 from: https://home.army.mil/hawaii/application/files/2316/7579/9038/USAG-HI-50_GREEN_WASTE_POL.2022.pdf

USAG-HI, 2023: U.S. Army Garrison-Hawaii, Directorate of Public Works, Environmental Division. (2023). *Memorandum for All Military Personnel and Department of Defense Civilian Employees within United States Army Garrison, Hawaii (USAG-HI) Installations: Policy Memorandum USAG-HI-35, Wildlife Friendly Lighting and Dark Skies*. Retrieved on September 20, 2024 from: https://home.army.mil/hawaii/application/files/5116/8021/4122/USAG-HI-35_WILDLIFE_FRIENDLY_LIGHTING_AND_DARK_SKIES.2022.pdf

USAG-HI, ND: U.S. Army Garrison-Hawaii. (No Date). U.S. Army Hawaii Integrated Training Area Management (ITAM) 5-Year Plan FY 2008-2012.

USAG-HI PAO, 2022: U.S. Army Garrison-Hawaii, Public Affairs Office (2022). *Personal Communication with Michael O. Donnelly (External Communications Chief) Regarding USAG-HI Noise Notifications*.

USAG-HI & USARPAC, 2013: U.S. Army Garrison-Hawaii and U.S. Army Pacific. (2013). *Final Environmental Impact Statement for the Construction and Operation of an Infantry Platoon Battle Course at Pōhakuloa Training Area, Hawaiʻi – Volume 1.*

USAG-PTA, 2010: U.S. Army Garrison-Pohakuloa Training Area. (2010). *Implementation Plan, Pōhakuloa Training Area, Island of Hawaiʻi.*

USAG-PTA, 2014a: U.S. Army Garrison-Pohakuloa Training Area. (2014). *Pohakuloa Training Area (PTA) Wildlife Nest Report Form: Hawaiian Goose.*

USAG-PTA, 2014b: U.S. Army Garrison-Pohakuloa Training Area. (2014). *Pohakuloa Training Area (PTA) Wildlife Nest Report Form: Hawaiian Goose.*

USAG-PTA, 2015a: U.S. Army Garrison-Pohakuloa Training Area. (2015). *Installation Pest Management Plan: 2015-2020.*

USAG-PTA, 2015b: U.S. Army Garrison-Pohakuloa Training Area. (2015). *Memorandum for Record: Best Management Practices to Prevent Negative Impacts to Natural Resources from Construction Activities*.

USAG-PTA, 2018a: U.S. Army Garrison-Pohakuloa Training Area. (2018). *U.S. Army Garrison, Pōhakuloa (USAG-PTA) External Standard Operating Procedures*.

USAG-PTA, 2018b: U.S. Army Garrison-Pohakuloa Training Area. (2018). *Pōhakuloa Training Area Invasive Pest Prevention Standard Operating Procedures (SOPs).*

USAG-PTA, 2018c: U.S. Army Garrison-Pohakuloa Training Area. (2018). *An Integrated Cultural Resources Management Plan for the U.S. Army Garrison – Pōhakuloa, Hawaiʻi Island*. Retrieved on September 20, 2024 from: https://home.army.mil/hawaii/application/files/4815/8379/7699/1_USAG-P_ICRMP_Hawaii_Final_Signed.pdf

USAG-PTA, 2018d: U.S. Army Garrison-Pohakuloa Training Area. (2018). *Public Hunting Policy Requirements and Procedures: Version 2.0.* Retrieved on September 20, 2024 from: https://pta.isportsman.net/files/PTA%20Hunting%20Policy_as_of_20180831_BL.pdf (VERSION 2.0) & https://pta.isportsman.net/regulations.aspx (STAMPED 2022)

~~USAG-PTA, 2019: U.S. Army Garrison-Pohakuloa Training Area. (2019). *Restricted Area and Military Operations Area Annual Utilization Report (RCS: 1412-DOT-AN).*~~

USAG-PTA, 2020a: U.S. Army Garrison-Pohakuloa Training Area. (2020). *2019 PTA Training Statistics: Joint, Interagency and Combined*.

USAG-PTA, 2020b: U.S. Army Garrison-Pohakuloa Training Area. (2020). *Personal Communication with Forrest Blake Doll (USAG-PTA, Bradshaw Army Airfield Air Traffic and Airspace Chief) Regarding Use of Cooper Air Strip.*

USAG-PTA, 2020c: U.S. Army Garrison-Pohakuloa Training Area. (2020). *Integrated Natural Resources Management Plan 2019-2023.* Retrieved on September 20, 2024 from: https://home.army.mil/hawaii/application/files/1016/0383/6646/PTA_INRMP_2019-2023_FINAL_signed_2020_10_23.pdf

USAG-PTA, 2020d: U.S. Army Garrison-Pohakuloa Training Area. (2020). *Army Natural Resources Program at Pōhakuloa Training Area, Biennial Report, 01 Oct 2017 - 30 Sep 2019.*

USAG-PTA, 2020e: U.S. Army Garrison-Pohakuloa Training Area. (2020). *Bradshaw Army Airfield Airspace Briefing*.

~~USAG-PTA, 2020f: U.S. Army Garrison-Pohakuloa Training Area. (2020). *Restricted Area and Military Operations Area Annual Utilization Report (RCS: 1412-DOT-AN).*~~

USAG-PTA, 2021a: U.S. Army Garrison-Pohakuloa Training Area. (2021). *Pōhakuloa Training Area: The Pacific's Premier Training Center*. Retrieved on October 5, 2021 from: https://home.army.mil/pohakuloa/index.php/about/history

~~USAG-PTA, 2021b: U.S. Army Garrison-Pohakuloa Training Area. (2021). *FY 2020 Annual Report Army Natural Resources Program at Pōhakuloa Training Area, 01 Oct 2019 – 30 Sep 2020.*~~

~~USAG-PTA, 2021c: U.S. Army Garrison-Pohakuloa Training Area. (2021). *2020 Annual Report for Pōhakuloa Training Area, Hawai'i Island, Hawai'i: US Fish and Wildlife Service Recovery Permit TE40123A-2/TE40123A-3 and State of Hawai'i Natural Area Reserve, Rare Plant and Native Invertebrate Research Permit I1347.*~~

USAG-PTA, 2021b~~d~~: U.S. Army Garrison-Pohakuloa Training Area. (2021). *Pōhakuloa Training Area: Public Affairs Office.* Retrieved on February 22, 2021 from: https://home.army.mil/pohakuloa/index.php/contact/pao

USAG-PTA, 2021c~~e~~: U.S. Army Garrison-Pohakuloa Training Area. (2021). *Personal Communication with Forrest Blake Doll (USAG-PTA, Bradshaw Army Airfield Air Traffic and Airspace Chief) Regarding Airspace Information.*

USAG-PTA, 2021d~~f~~: U.S. Army Garrison-Pohakuloa Training Area. (2021). *Personal Communication with Eric H. Moller (USAG-PTA, Fire and Emergency Services Chief) Regarding Human Health and Safety.*

USAG-PTA, 2021e~~g~~: U.S. Army Garrison-Pohakuloa Training Area. (2021). *Integrated Wildland Fire Management Plan*. Prepared by Fire and Emergency Services USAG-PTA, and Directorate of Public Works, Environmental Division USAG-PTA, and Center for Environmental Management of Military Lands, Colorado State University.

USAG-PTA, 2022a: U.S. Army Garrison-Pohakuloa Training Area. (2022). *Army Natural Resources Program at Pōhakuloa Training Area: Biennial Report, 01 Oct 2019 - 30 Sep 2021.*

USAG-PTA, 2022b: U.S. Army Garrison-Hawaii. (2022). *Personal Communication with Tiana Lackey (USAG-PTA, Natural Resource Biologist) Regarding Biological Species List.*

~~USAG-PTA, 2022c: U.S. Army Garrison-Pohakuloa Training Area. (2022). *Pōhakuloa Training Area GIS Data List for Native Species on State-Owned Land.*~~

~~USAG-PTA, 2022d: U.S. Army Garrison-Pohakuloa Training Area. (2022). *U.S. Army Garrison, Pōhakuloa (USAG-PTA) Range Operations Standing Operating Procedures.*~~

~~USAG-PTA, 2023a: U.S. Army Garrison-Pohakuloa Training Area. (2023). *Pōhakuloa Training Area GIS Data List Supporting 2022 Biennial Report Findings on State-owned Land.*~~

USAG-PTA, 2023~~b~~: U.S. Army Garrison-Pohakuloa Training Area. (2023). *Personal Communication with Lena Schnell (USAG-PTA, Senior Program Manager, Natural Resources) Regarding Tier 1 and Tier 2 Species Population Counts.*

USAG-PTA, 2024a: U.S. Army Garrison-Pohakuloa Training Area. (2024). *Army Natural Resources Program at Pōhakuloa Training Area: Biennial Report, 01 Oct 2021 - 30 Sep 2023.*

USAG-PTA, 2024b: U.S. Army Garrison-Pohakuloa Training Area. (2024). Leilani Fire Supplemental Information, *Pōhakuloa Training Area, Island of Hawaii, hawaii. April 2024.*

USAG-PTA, 2024c: U.S. Army Garrison-Pohakuloa Training Area. (2024). *Pōhakuloa Training Area GIS Data List for Leilani Fire Impacts.*

USAG-PTA, 2024d: U.S. Army Garrison-Pohakuloa Training Area. (2024). *Personal Communication with Lena Schnell (USAG-PTA, Senior Program Manager, Natural Resources) Regarding Tier 1 and Tier 2 Species Population Counts*~~.~~.

USAG-PTA, 2024e: U.S. Army Garrison-Pohakuloa Training Area. (2024). *Personal Communication with Nikhil Narahari (USAG-PTA, Ecological Dta Program Manager, Natural Resources) Regarding Post Leilani Fire Tier 2 Species Population Counts.*

USAG-PTA, 2024f: U.S. Army Garrison-Pohakuloa Training Area. (2024). *2023 Annual Report for Pōhakuloa Training Area: US Fish and Wildlife Service Recovery Permit TE40123A-3 and State of Hawai'i Natural Area Reserve, Rare Plant and Native Invertebrate Research Permit I5287 and State of Hawai'i Protected Wildlife Permit for the Purpose of Scientific Collecting WL21-15*. January 2024.

USAG-PTA, 2024g: U.S. Army Garrison-Pohakuloa Training Area. (2024). *Restricted Area and Military Operations Area Annual Utilization Report (RCS: 1412-DOT-AN).*

USAG-PTA, 2024h: U.S. Army Garrison-Pohakuloa Training Area. (2024). *Pohakuloa Training Area National Fire Incident Reporting System (NFIRS) data, 1975-2024.*

USAG-PTA PAO, 2008: U.S. Army Garrison-Pohakuloa Training Area, Public Affairs Office. (2008). *PTA Training Ranges Benefit from Solar Energy*. ~~Retrieved on February 28, 2023 from: https://www.army.mil/article/13354/pta_training_ranges_benefit_from_solar_energy.~~ Retrieved on September 16, ~~-~~2024 ~~-~~from: https://www.army.mil/article/13354/pta_training_ranges_benefit_from_solar_energy

USAPHC, 2010: U.S. Army Public Health Command. (2010). *U.S. Army Hawai'i Statewide Operational Noise Management Plan.*

USAPHC, 2020: U.S. Army Public Health Center. (2020).). *Environmental Health Sciences, Environmental Noise Consultation No. S.0054859c-20, Noise Assessment for Proposed Reactivation of Artillery Firing Points, Pohakuloa Training Area, Hawaii.*

USARHAW, 1965: U.S. Army Hawaii. (1965). *Summary of Drilling Logs for Pohakuloa Test Hole T-20.* Retrieved on September 17, 2024 from: https://www.higp.hawaii.edu/csav/WaterWells/Hawaii/8-4532-001/8-4532-001.pdf

USARHAW, 2015: U.S. Army Hawaii. (2015). *Memorandum: U.S. Army Hawai'i Comprehensive Approach to Training in Hawai'i: A Strategy for Pōhakuloa.*

USARHAW, 2017a: U.S. Army Hawaii. (2017). *Memorandum: U.S. Army Hawaii Major Land Acquisition Proposal*.

USARHAW, 2017b: U.S. Army Hawaii. (2017). *PTA Lease AOA* .

~~USARHAW, 2019a: U.S. Army Hawaii. (2019). *Range Facility Management Support System, Personnel Trained Report by Facility, PTA BAX. Fiscal Year 2019.*~~

~~USARHAW, 2019b: U.S. Army Hawaii. (2019). *Range Facility Management Support System, All Facilities Utilization Report, PTA BAX. Fiscal Year 2019.*~~

USARHAW, 2020: U.S. Army Hawaii. (2020). *Personal Communication with Howard J. Killian (USARHAW Training Support System Program Manager) Regarding Outreach Talking Points for Depleted Uranium at PTA.*

USARHAW, 2021: U.S. Army Hawaii. (2021). *Personal Communication with Howard J. Killian (USARHAW Training Support System Program Manager) Regarding Firing Points on PTA and State-Owned land.*

USARHAW, 2022: U.S. Army Hawaii, Range Division, Pohakuloa Training Area. (2022). *Pōhakuloa Training Area Range Operations Standing Operating Procedures*.

USARHAW, 2024: U.S. Army Hawaii. (2024). Range Facility Management Support System, PTA BAX. October 1, 2023 through September 8, 2024. Dated September 9, 2024.

USARHAW, NDa: U.S. Army Hawaii. (No Date). *Training on State Leased Lands at Pohakuloa Training Area.*

USARHAW, NDb: U.S. Army Hawaii. (No Date). *USARHAW Regulation No. 350-19, Installations Ranges and Training Areas.*

USARPAC, 2022: U.S. Army Pacific. (2022). *Community Engagement Efforts: Army Engagements and Ongoing Public Outreach Programs.*

USARPAC, 2023: U.S. Army Pacific. (2023). *Personal Communication with Alice Roberts (USARPAC, ATLR Project Manager) Regarding Updates to Wildland Fire Test for Biological Resources and Human Health and Safety.*

USBLS, 2021: U.S. Bureau of Labor Statistics. (2021). *Labor Force Statistics from the Current Population Survey: Unemployment Rate*. Retrieved on February 19, 2021 from: https://www.bls.gov/data

USCB, 2010: U.S. Census Bureau. (2010). *DP-1 Profile of General Population and Housing Characteristics: 2010 Demographic Profile Data – Hawaii County, Hawaii*. Retrieved on March 9, 2020 from: https://data.census.gov/cedsci/

USCB, 2011: U.S. Census Bureau. (2011). *Overview of Race and Hispanic Origin: 2010.* Retrieved on April 12, 2021: https://www.census.gov/library/publications/2011/dec/c2010br-02.html

USCB, 2015: U.S. Census Bureau. (2015). *2015 American Community Survey, 5-year estimates.* Retrieved on April 12, 2021: https://data.census.gov/cedsci/

USCB, 2019a: U.S. Census Bureau. (2019). *DP05 ACS Demographic and Housing Estimates: 2015–2019 American Community Survey 5-Year Estimates*. Retrieved on February 18, 2021 from: https://data.census.gov

USCB, 2019b: U.S. Census Bureau. (2019). *DP03 Selected Economic Characteristics: 2015–2019 American Community Survey 5-Year Estimates*. Retrieved on February 18, 2021 from: https://data.census.gov

USCB, 2019c: U.S. Census Bureau. (2019). *DP04 Selected Housing Characteristics: 2015–2019 American Community Survey 5-Year Estimates*. Retrieved on February 25, 2021 from: https://data.census.gov

USCB, 2019d: U.S. Census Bureau. (2019). *2019 American Community Survey, 5-year estimates.* Retrieved on April 12, 2021 from: https://www.census.gov/data/developers/data-sets/acs-5year.html ~~https://data.census.gov/cedsci/~~

USDA, 2003: U.S. Department of Agriculture. (2003). *Introduced, Invasive, and Noxious Plants: Hawaii State-listed Noxious Weeds*. Retrieved on April 22, 2021 from: https://downloads.regulations.gov/EPA-HQ-OAR-2011-0542-0634/content.pdf~~https://plants.usda.gov/java/noxious?rptType=State&statefips=15~~

USDA, 2008: U.S. Department of Agriculture, Natural Resources Conservation Service, Pacific Islands Area. (2008). *Field Office Technical Guide, Section II. Natural Resource Information.* Retrieved on May 26, 2023 from: https://efotg.sc.egov.usda.gov/references/public/HI/ALISH_for_eFOTG.pdf

USDA, 2012: U.S. Department of Agriculture. (2012). *Introduced, Invasive, and Noxious Plants: Federal Noxious Weeds.* Retrieved on April 22, 2021 from: https://downloads.regulations.gov/EPA-HQ-OAR-2011-0542-0634/content.pdf~~https://plants.usda.gov/java/noxious~~

USDA & UH, 1973: U.S. Department of Agriculture, Soil Conservation Service and University of Hawai‘i, Agricultural Experiment Station. (1973*). Soil Survey of Island of Hawai‘i, State of Hawai‘i*. Retrieved on September 19, 2024 from: https://archive.org/details/usda-hawaii_state1973

USDHHS, 2008: U.S. Department of Health and Human Services. (2008). *Health Consultation, Depleted Uranium at Hawaiian Military Sites, Schofield Barracks Impact Area, Makua Military Reservation, Pohakuloa Training Area on Islands of Oahu and Hawaii.*

USDOT-FAA, 2004: U.S. Department of Transportation, Federal Aviation Administration. (2004). *FAA Advisory Circular No. 91-36D, Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas*. Retrieved on February 21, 2023 from: https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_91-36D.pdf

USDOT-FAA, 2023a~~1~~: U.S. Department of Transportation, Federal Aviation Administration. (2023~~1~~). *FAA Order JO 7400.2P~~N~~, Procedures for Handling Airspace Matters.* Retrieved on August 27~~5~~, 2024~~1~~ from: https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/1041653~~https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/1035208~~

~~USDOT-FAA, 2023a: U.S. Department of Transportation, Federal Aviation Administration. (2023). *Aeronautical Information Manual.* Retrieved on July 17, 2023 from: https://www.faa.gov/air_traffic/publications/atpubs/aim_html/index.html~~

USDOT-FAA, 2023b: U.S. Department of Transportation, Federal Aviation Administration. (2023). *FAA Order JO 7110.65AA, Air Traffic Control.* Retrieved on July 17, 2023 from: https://www.faa.gov/documentLibrary/media/Order/7110.65AA_ATC_Basic_dtd_4-20-23_FINAL.pdf

USDOT-FAA, 2023c: U.S. Department of Transportation, Federal Aviation Administration. (2023). *Pilot's Handbook of Aeronautical Knowledge.* Retrieved on July 17, 2023 from: https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak

~~USDOT-FAA, 2023d: U.S. Department of Transportation, Federal Aviation Administration. (2023). *FAA Order JO 7400.10E, Air Traffic Organization Policy: Special Use Airspace.* Retrieved on February 21, 2023 from: https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/1039057~~

USDOT-FAA, 2023d~~e~~: U.S. Department of Transportation, Federal Aviation Administration. (2023). *United States Government Flight Information Publication: Chart Supplement – Pacific*. Retrieved on July 17, 2023 from: https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/1039057~~https://aeronav.faa.gov/Upload_313-d/supplements/CS_PAC_20230615.pdf~~

USDOT-FAA, 2023e~~f~~: U.S. Department of Transportation, Federal Aviation Administration. (2023). *FAA Order JO 7400.11H~~G~~, Airspace Designations and Reporting Points.* Retrieved on July 17, 2023 from: https://www.faa.gov/documentLibrary/media/Order/2022-08-19_FAA_Order_JO_7400.11G.pdf

USDOT-FAA, 2024a: U.S. Department of Transportation, Federal Aviation Administration. (2024). *Aeronautical Information Manual.* Retrieved on August 27, 2024 from: https://www.faa.gov/air_traffic/publications/atpubs/aim_html/

USDOT-FAA, 2024b: U.S. Department of Transportation, Federal Aviation Administration. (2024). *FAA Order JO 7400.10F, Air Traffic Organization Policy: Special Use Airspace.* Retrieved on August 27, 2024 from: https://www.faa.gov/documentLibrary/media/Order/Order_7400.10F_2024_-_final_-signed.pdf

USDOT-FHWA, 2021: U.S. Department of Transportation, Federal Highway Administration. (2021). *Saddle Road Extension Project Overview.* Retrieved on April 10, 2021 from: https://highways.dot.gov/sites/fhwa.dot.gov/files/DEIS-SADDLE-ROAD-EXTENSION-Vol1-1.pdf~~https://highways.dot.gov/federal-lands/projects/hi/saddle-ext~~

USEPA, 1996: U.S. Environmental Protection Agency. (1996). *Interim OFA Program Guidance on Implementing the EPA Policy on Evaluating Health Risks to Children.* Retrieved on April 12, 2021 from: https://19january2017snapshot.epa.gov/sites/production/files/2014-08/documents/children-health-risks-pg.pdf~~https://www.epa.gov/sites/production/files/2014-08/documents/children-health-risks-pg.pdf~~

USEPA, 2016: U.S. Environmental Protection Agency. (2016). *Promising Practices for EJ Methodologies in NEPA Reviews: Report of the Federal Interagency Working Group on Environmental Justice & NEPA Committee*. Retrieved on February 20, 2023 from: https://www.epa.gov/sites/default/files/2016-08/documents/nepa_promising_practices_document_2016.pdf

USEPA, 2020a: U.S. Environmental Protection Agency. (2020). *Regional Screening Levels: Risk Assessment – Pacific Southwest, Region 9.* Retrieved on March 18, 2021 from: https://archive.epa.gov/region9/superfund/web/html/index-15.html

USEPA, 2020b: U.S. Environmental Protection Agency. (2020). *Green Book National Area and County-Level: Multi-Pollutant Information – Nonattainment/Maintenance Area Status for Each County by Year for All Criteria Pollutants*. Retrieved on January 25, 2021 from: https://www3.epa.gov/airquality/greenbook/anayo_ak.html

USEPA, 2021a: U.S. Environmental Protection Agency. (2021). *Current Site Details for HIR000000703*. Retrieved on February 2, 2021 from: https://frs-public.epa.gov/ords/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110009349142~~https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110009349142~~

USEPA, 2021b: U.S. Environmental Protection Agency. (2021*). Radon in Homes, Schools and Buildings.* Retrieved on April 4, 2021 from: https://www.epa.gov/radtown/radon-homes-schools-and-buildings

USEPA, 2021c: U.S. Environmental Protection Agency. (2021). *EPA Map of Radon Zones.* Retrieved on April 4, 2021 from: https://www.epa.gov/radon/epa-map-radon-zones

USFWS, 2019: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office. (2019). *5-Year Review Short Form Summary for Blackburn's Sphinx Moth (Manduca blackburni).* Retrieved on March 16, 2023 from: https://ecos.fws.gov/docs/tess/species_nonpublish/2758.pdf

USFWS, 2003: U.S. Fish and Wildlife Service. (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) at U.S. Army Installations, Island of Hawaii.* Retrieved on September 19, 2024 from: https://home.army.mil/hawaii/5915/9416/0994/2003PTAFinalBO.pdf

~~USFWS, 2005: U.S. Fish and Wildlife Service. (2005). *Recovery Plan for Blackburn's Sphinx Moth (Manduca blackburni).*~~

USFWS, 2008: U.S. Fish and Wildlife Service. (2008). *Biological Opinion of the US Fish and Wildlife Service regarding consultation for additional species and new training actions at Pōhakuloa Training Area, Hawai'i.* Retrieved on September 19, 2024 from: https://homeadmin.army.mil/hawaii/application/files/9715/9416/1023/2008PTAFinalBO.pdf

USFWS, 2013: U.S. Fish and Wildlife Service. (2013). *Informal Consultation and Formal Consultation with a Biological Opinion for the Construction, Maintenance, and Operation of an Infantry Platoon Battle Area and Installation-Wide Impacts of Military Training on Hawaiian Geese (Branta sandvicensis) at Pohakuloa Training Area Hawaii.* Retrieved on September 19, 2024: https://homeadmin.army.mil/hawaii/application/files/2315/9416/1024/2013BOIPBAandB.pdf

USFWS, 2020a: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office. (2020). *5-Year Review Short Form Summary for Haplostachys haplostachya (honohono).* Retrieved on March 16, 2023 from: https://ecos.fws.gov/docs/tess/species_nonpublish/3165.pdf

~~USFWS, 2020b: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office. (2020). *5-Year Review Short Form Summary for Kadua coriacea (kio'ele).* Retrieved on March 16, 2023 from: https://ecos.fws.gov/docs /tess/species_nonpublish/3112.pdf~~

~~USFWS, 2020c: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office. (2020). *5-Year Review Short Form Summary for Portulaca sclerocarpa (po'e).* Retrieved on March 16, 2023 from: https://ecos.fws.gov/docs/tess/species_nonpublish/3174.pdf~~

~~USFWS, 2020d: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office. (2020). *5-Year Review Short Form Summary for Silene hawaiiensis (no common name).* Retrieved on March 16, 2023 from: https://ecos.fws.gov/docs/tess/species_nonpublish/3179.pdf~~

USFWS, 2020b~~e~~: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office. (2020). *5-Year Review Short Form Summary for Solanum incompletum (pōpolo kū mai).* Retrieved on March 16, 2023 from: https://ecos.fws.gov/docs/tess/species_nonpublish/3121.pdf

~~USFWS, 2020f: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office. (2020). *5-Year Review Short Form Summary for Stenogyne angustifolia* var. *angustifolia (no common name).* Retrieved on March 16, 2023 from: https://ecos.fws.gov/docs/tess/species_nonpublish/3122.pdf~~

USFWS, 2020c~~g~~: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office. (2020). *5-Year Review Short Form Summary for Tetramolopium arenarium (no common name).* Retrieved on March 16, 2023 from: https://ecos.fws.gov/docs/tess/species_nonpublish/3123.pdf

~~USFWS, 2021a: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office. (2021). *5-Year Review Summary and Evaluation for Exocarpos menziesii (heau).* Retrieved on August 2, 2023 from: https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/ species_nonpublish/3331.pdf~~

~~USFWS, 2021b: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office. (2021). *5-Year Review Summary and Evaluation for Festuca hawaiiensis (no common name).* Retrieved on March 16, 2023 from: https://ecos.fws.gov/docs/tess/species_nonpublish/3401.pdf~~

USFWS, 2021a~~c~~: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office. (2021). *5-Year Review Short Form Summary for Silene lanceolata (no common name).* Retrieved on March 16, 2023 from: https://ecos.fws.gov/docs/tess/species_nonpublish/3548.pdf

USFWS, 2021b~~d~~: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office. (2021). *5-Year Review Short Form Summary for Zanthoxylum hawaiiense (aʻe).* Retrieved on March 16, 2023 from: https://ecos.fws.gov/docs/tess/species_nonpublish/3551.pdf

USFWS, 2021c~~e~~: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office. (2021). *5-Year Review Summary and Evaluation* for A*nthracinan yellow-faced bee (Hylaeus anhracinus).* Retrieved on March 6, 2023 from: https://ecos.fws.gov/docs/tess/species_nonpublish/3293.pdf

~~USFWS, 2021f: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office. (2021). *5-Year Status Review for ʻŌpeʻapeʻa or Hawaiian hoary bat (Lasiurus cinereus semotus).* Retrieved on March 16, 2023 from: https://ecos.fws.gov/docs/tess/species_nonpublish/3306.pdf~~

~~USFWS, 2022a: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office. (2022). *EIS for Retention of State Lands (PTA): 2022-0083216.*~~

~~USFWS, 2022b: U.S. Fish and Wildlife Service. (2022). Scientific Collection with Import Export Permit MB95880B.~~

~~USFWS, 2023a: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office (2023). *EIS for Retention of State Lands (PTA): 2022-0083216.*~~

USFWS, 2023~~b~~: U.S. Fish and Wildlife Service. (2023). Native Endangered & Threatened Species Recovery Endangered Wildlife; E&T Plants TE40123A-3.

USFWS, 2024a: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office (2024). *EIS for Retention of State Lands (PTA): 2022-0083216*.

~~USFWS, 2024b: U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office (2024). *Endangered and Threatened Wildlife and Plants: Designation of Critical Habitat for 12 Species on Hawaiʻi Island. Federal Register* 89:17902. March 12, 2024.~~

USGS, 1992: U.S. Geological Survey. (1992). *Map Showing Lava-flow Hazard Zones, Island of Hawaii.* Retrieved on September 19, 2024 from: https://pubs.usgs.gov/mf/1992/2193/mf2193.pdf

USGS, 1996: U.S. Geological Survey. (1996). *Geologic Map of the Island of Hawaiʻi.* Retrieved on September 19, 2024 from: https://pubs.usgs.gov/imap/2524a/report.pdf

USGS, 1997: U.S. Geological Survey. (1997). *The Geology and Petrology of Mauna Kea Volcano, Hawaiʻi: A Study of Postshield Volcanism: U.S. Geological Survey Professional Paper 1557*. Retrieved on September 19, 2024 from: https://pubs.usgs.gov/pp/1557/report.pdf

USGS, 1998: U.S. Geological Survey. (1998). *1998 Hawaii Seismic Hazard Model.* Retrieved on April 14, 2021 from: https://www.usgs.gov/data/data-release-1998-hawaii-seismic-hazard-model ~~https://www.usgs.gov/natural-hazards/earthquake-hazards/science/us-seismic-hazard-maps-hawaii?qt-science_center_objects=0#qt-science_center_object~~

USGS, 2007: U.S. Geological Survey. (2007). *Geologic Map of the State of Hawai`i: Open-File Report 2007-1089*. Retrieved on September 19, 2024 from: https://pubs.usgs.gov/of/2007/1089/

USGS, 2017: U.S. Geological Survey. (2017). *Lava Inundation Zone Maps for Mauna Loa, Island of Hawai'i, Hawai'i: Scientific Investigations Map 3387*. Retrieved on March 17, 2021 from: https://doi.org/10.3133/sim3387

USGS, 2021a: U.S. Geological Survey. (2021). *Mauna Kea, Geology and History: Mauna Kea – A Postshield-Stage Volcano that Once Hosted Glaciers*. Retrieved on March 18, 2021 from: https://www.usgs.gov/volcanoes/mauna-kea/science/geology-and-history-mauna-kea

USGS, 2021b: U.S. Geological Survey. (2021). *Hawaiian Volcano Observatory: About Earthquakes in Hawaii.* Retrieved on March 18, 2021 from: https://www.usgs.gov/observatories/hvo/science/about-earthquakes-hawaii~~https://www.usgs.gov/observatories/hawaiian-volcano-observatory/about-earthquakes-hawaii~~

USGS, 2021c: U.S. Geological Survey. (2021b). *Frequently Asked Questions: Can Earthquakes Trigger Volcanic Eruptions?* Retrieved on November 9, 2021 from: https://www.usgs.gov/faqs/can-8 earthquakes-trigger-volcanic-eruptions?qt-news_science_products=0#qt-9 news_science_products

USINDOPACOM, 2021: U.S. Indo-Pacific Command. (2021). *About USINDOPACOM.* Retrieved on January 14, 2021 from: https://www.pacom.mil/About-USINDOPACOM

USMC, 2013: U.S. Marine Corps. (2013). *Environmental Assessment: Construction of an Urban Close Air Support Range and an Aviation Bulls-Eye Range at Pohakuloa Training Area, Hawaii.* Retrieved on September 20, 2024 from: https://www.mcbhawaii.marines.mil/portals/114/webdocuments/ucas/ucas_ea%202013_dec.pdf

USNVC, 2021: U.S. National Vegetation Classification. (2021). *The U.S. National Vegetation Classification.* Retrieved on April 22, 2021 from: https:/usnvc.org

Velilla et al., 2021: Velilla, E., Bellato, L., Collinson, E., and Halfwerk, W. (2021). Effect of anthropogenic vibratory noise on plant development and herbivory. *BioRxiv*. Retrieved on September 17, 2024 from: https://doi.org/10.1101/2021.04.28.441746

~~Waiki'i Ranch Homeowners' Association 2008:~~ ~~Waiki'i Ranch Homeowners' Association. (2008). *Depleted Uranium Report*.~~

Ware et al., 2015: Ware, H. E., Mcclure, C. J. W., Carlisle, J. D., & Barber, J. R. (2015). A phantom road experiment reveals traffic noise is an invisible source of habitat degradation. *Proceedings of the National Academy of Sciences, 112*(39), 12105–12109. Retrieved on November 4, 2024 from: https://www.pnas.org/doi/10.1073/pnas.1504710112

Welch, 1993: Welch, D. J. (1993). *Archaeological Survey and Testing for the Saddle Road Improvement Project, Pohakuloa Area, Island of Hawai'i, Hawaii.* International Archaeological Research Institute, Inc.

Wentworth & Powers, 1943: Wentworth, C. K., and Powers, W. E. (1943). Glacial Springs on the Island of Hawaii. *The Journal of Geology, 51*(8), 542-547.

WFD, 2019: Work Force Developers, LLC. (2019). *Draft Environmental Assessment Anticipated Finding of No Significant Impact: Nakahili – A Workforce Family Agricultural Community.* Retrieved on April 10, 2021 from: http://oeqc2.doh.hawaii.gov/EA_EIS_Library/2019-02-23-HA-DEA-Nakahili.pdf

White House, ~~2017~~2022: The White House. (2022~~17~~). *National Security Strategy of the United States of America*. Retrieved on June 09, 2021 from: https://www.whitehouse.gov/wp-content/uploads/2022/11/8-November-Combined-PDF-for-Upload.pdf~~https://trumpwhitehouse.archives.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf~~

Williams, 2002: Williams, S. S. (2002). *Final Report: Ecosystems Management Program, Cultural Resources Inventory Survey of Previously Unsurveyed Areas, Redleg Trail Vicinity, U.S. Army Pohakuloa Training Area (PTA), Hawai'i Island, Hawai'i*. Ogden Environmental and Energy Services, Inc.

WSSA, 2016: Weed Science Society of America. (2016*). Do you have a weed, noxious weed, invasive weed or "superweed"?* Retrieved on August 9, 2021 from: https://wssa.net/wp-content/uploads/WSSA-Weed-Science-Definitions.pdf

West Hawai'i Today, 2020: West Hawai'i Today Staff. (2020). PTA announces training, convoys*. West Hawai'i Today*. Retrieved on February 22, 2020 from: https://www.westhawaiitoday.com/2020/07/04/hawaii-news/pta-announces-training-convoys/

Work et al., 2015 — Work, T. M., Dagenais, J., Rameyer, R., and Breeden, R. (2015). Mortality_patterns_in_endangered_hawaiian_geese_(Nene;_*branta_sandvicensis*. Journal of Wildlife Diseases, *51 (3),* 688-695. Retrieved on October 14, 2024 from: https://www.researchgate.net/publication/279988469

Ziegler, 1994: — Ziegler, A. C., Ph.D. (1994). Appendix *B: Memorandum – Identification of Faunal Material from the Pōhakuloa Training Area, Hawai'i (6 sites in series T-2 through T-32) in L. Shapiro and P. Cleghorn. (1998). Archaeological Investigations of Two Work Areas for the Legacy Resource Management Program at Pōhakuloa Training Area, Hawai'i Island, Hawai'i.* Biosystems Analysis, Inc.

Ziegler, 2003: — Ziegler, A. (2003). *Appendix A: Memorandum – Identification of Faunal Material from GANDA PTA Project 2049 in Robins et al. (2006). Final Report: Phase II Archaeological Research of Proposed Battle Area Complex (BAX) & Anti-Armor Live Fire And Training Range (AALFTR) Training Areas for Stryker Brigade Combat Team (SBCT) U.S. Army Pōhakuloa Training Area, Island of Hawai'i, Hawai'i.*

Zschokke, 1931: — Zschokke, Theodore C. (1931). The Problem of Soil Saving in the Hawaiian Islands. *Extension Bulletin, (11), 25.* Agricultural Extension Service University of Hawai'i.

GIS Layers and Databases

County of Hawai'i. (2018). *Special Management Areas*. Retrieved on January 20, 2020 from: https://geoportal.hawaii.gov/datasets/special-management-areas-sma

County of Hawai'i. (2018). *Zoning*. Retrieved on January 20, 2020 from: https://geoportal.hawaii.gov/datasets/zoning-hawaii-county

County of Hawai'i. (2019). *Land Use Pattern Allocation Guide*. Retrieved on January 20, 2020 from: https://geoportal.hawaii.gov/datasets/hawaii-county-lupag

County of Hawai'i. (2020). *Roads*. Retrieved on January 20, 2020 from: https://geoportal.hawaii.gov/datasets/hawaii-county-lupag

County of Hawai'i. (2020). *Tax Map Key Parcels*. Retrieved on January 20, 2020 from: https://geoportal.hawaii.gov/datasets/parcels-hawaii-county

Garcia and Associates. (2021). *Previous Archaeological Study Areas*. Non-public source.

State of Hawai'i, Department of Land and Natural Resources. (2014). *Aquifers*. Retrieved on March 29, 2021 from: https://geoportal.hawaii.gov/datasets/3bcbe7b290df40b3abf0450f52d9aebb_3/explore~~https://geoportal.hawaii.gov/datasets/dlnr-aquifers-poly~~

State of Hawaiʻi, Department of Land and Natural Resources. (2017). *Public Hunting Areas Forest*. Retrieved on March 29, 2021 from: https://geoportal.hawaii.gov/datasets/public-hunting-areas

State of Hawaiʻi, Department of Land and Natural Resources. (2020). *Forest Reserves*. Retrieved on March 29, 2021 from: https://geoportal.hawaii.gov/datasets/reserves

State Land Use Commission. (2020). *Important Agricultural Lands*. Retrieved on August 11, 2021 from: https://geoportal.hawaii.gov/datasets/important-agricultural-lands-ial/explore~~https://geoportal.hawaii.gov/datasets/important-agricultural-lands-ial/explore https://geoportal.hawaii.gov/datasets/state-land-use-districts~~

State Land Use Commission. (2020). State Land Use Districts. Retrieved on January 20, 2020 from: https://geoportal.hawaii.gov/datasets/state-land-use-districts

U.S. Army Corps of Engineers-Honolulu District. (2020). *GIS Geodatabase*. Non-public source.

U.S. Army Garrison-Hawaii. (2019). *GIS Geodatabase*. Non-public source.

U.S. Census Bureau. (2016). *2015 Census Block Groups*. Retrieved on January 20, 2020 from: https://geoportal.hawaii.gov/datasets/2015-census-block-groups

U.S. Geological Survey. (1991). *Lava Flow Hazard Zones*. Retrieved on January 20, 2020 from: https://geoportal.hawaii.gov/datasets/volcano-lava-flow-hazard-zones

U.S. Geological Survey. (2020). *The National Map – 100-FT Topography Contours*. Retrieved on July 22, 2021 from: https://www.usgs.gov/core-science-systems/ngp/tnm-delivery/gis-data-download

U.S. Geological Survey, Hawaii Volcano Observatory. (1991). *Volcano Hazards*. Retrieved on January 20, 2020 from: https://geoportal.hawaii.gov/datasets/volcano-lava-flow-hazard-zones

U.S. Geological Survey, Hawaii Volcano Observatory. (2007). *Geological Units*. Retrieved on January 20, 2020 from: https://geoportal.hawaii.gov/datasets/geological-units

U.S. Geological Survey, Natural Resources Conservation Service. (2016). *Soils*. Retrieved on January 20, 2020 from: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

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Chapter 7

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Chapter 8

PUBLIC NOTIFICATION AND COMMENT

8.1 EIS Scoping Consultation

Sections 1.6.1 and ~~**Section**~~ **1.6.2** describe the public notification process of the NOI and EISPN and the scoping process to obtain public input. Public notification began with publication of the NOI in the FR on September 23, 2020 (85 FR 59753) and publication of the EISPN in *The Environmental* ~~*Bulletin*~~ *Notice* on September 8, 2020. Scoping notices were published in local newspapers on three separate dates. Scoping notices are reproduced in **Appendix B**. Postcards providing scoping dates and processes were mailed directly to approximately 100 agencies and organizations with jurisdiction or expertise, elected officials, and organizations. Those that were notified of the scoping period through direct mail postcard and those that provided comments during the scoping period are listed in **Table 8-1**. In some instances, commenters provided a partial name or no name with their scoping comment.

In accordance with HAR Section 11-200.1-24, responses to substantive, written scoping comments were published in the Draft EIS. Reproduction of the complete written comments received during scoping, and responses to those comments, are provided in **Appendix D and N** of this document. **Section 1.6.2** provides a summary of oral comments received during a 5-hour SVOH event; the comments received were transcribed and are provided in **Appendix** ~~**D**~~**N**.

8.2 Notice of Availability for Draft Environmental Impact Statement

Section 1.6.3 describes the public notification process of the Draft EIS to obtain public input. Public notification began on April 8, 2022, with the NOA in the FR and publication of the Draft EIS in *The Environmental* ~~*Bulletin*~~*Notice*. Public notices were also published in local newspapers on three separate dates, and are reproduced in **Appendix B**. Postcards providing notification of the Draft EIS and an invitation to attend the Draft EIS public meetings were mailed directly to approximately 100 agencies and organizations with jurisdiction or expertise, elected officials, and organizations; names of elected officials were updated between the scoping and Draft EIS notification to reflect the outcome of the November 2020 election. Those that were notified of the scoping period through direct mail postcard and those that provided comments during the Draft EIS public review period are listed in **Table 8-1**. In some instances, commenters provided a partial name or no name with their comment.

In accordance with HAR Section 11-200.1-27, reproduction of all written comments submitted during the Draft EIS public review period and responses to substantive, written comments are published in the EIS. Reproduction of the complete written comments received during the Draft EIS public review period, and responses to substantive written and oral comments are provided in **Appendix D and N** of this document. **Section 1.6.3** provides a summary of the oral and telephone line comments received at the Draft EIS public meetings; oral comments received were transcribed and are provided in **Appendix** ~~**D**~~**N**.

8.3 Notice of Availability for Second Draft Environmental Impact Statement

The public notification process for the~~is~~ Second Draft EIS is summarized in **Section 1.6.4**. Postcards providing notification of the Second Draft EIS and an invitation to attend the Second Draft EIS public meetings were mailed directly to approximately 128 agencies and organizations with jurisdiction or expertise, elected officials, and organizations. Public notices were also published in local newspapers on three separate dates, and are reproduced in **Appendix B**. Entities that were notified of the Second Draft EIS availability through direct mail postcard are listed in **Table 8-1**. ERP informed the public of the Second Draft EIS availability through publication in its bulletin, *The Environmental Notice* [HRS Chapter 343-3(c)]. Notification of the Second Draft EIS availability was ~~is~~ also included in the FR and local newspapers.

The Second Draft EIS addressed~~s~~ substantive comments received on the Draft EIS and clarified~~s~~ information where relevant. Reproduction of the complete written comments received during the Second Draft EIS public review period are included in **Appendix N**. **Appendix D** includes responses corresponding to all agency and public comments on the Second Draft EIS.

Printed versions of the Second Draft EIS were ~~have been~~ provided to the following relevant public libraries to facilitate public review, in fulfillment of HEPA requirements: Hawai‘i State Library Documents Center, Hilo Public Library, Kailua-Kona Public Library, and Thelma Parker Memorial Public and School Library. The Second Draft EIS is also available online through the State ERP website at https://planning.hawaii.gov/erp/ea-and-eis-new-rules/ and on the project EIS website at https://home.army.mil/hawaii/index.php/PTAEIS.

8.4 Notice of Availability for Final Environmental Impact Statement

Section 1.6.5 describes the public notification process of this Final EIS. The Final EIS has taken into consideration comments received on the Second Draft EIS, identified substantive comments, and provided responses commensurate to the comments. The Final EIS has been refined to address substantive comments and to clarify information. Like the Draft and Second Draft EISs, availability of the Final EIS will be published in the FR and in *The Environmental Notice*. A public notice that the Final EIS has been published will also be placed in local newspapers. Comments that are received during the 30-day NEPA waiting period following release of the Final EIS will be considered in the Army’s decision-making process and documented as such in the ROD. Entities that will be notified of the Final EIS availability through direct mail postcard are listed in **Table 8-1**.

Table 8-1: EIS Distribution and Respondents	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Second Draft EIS Notice of Availability	Second Draft EIS Comment Received	Provided Final EIS Notice of Availability
Federal Agencies							
Civilian Aide to the Secretary of the Army	X		X		X		X
Hawaii Consolidated Exchange Army & Air Force Exchange Services	X		X		X		X
U.S. Army Corps of Engineers, Honolulu District	X		X		X		X
U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station			X		X		X
U.S. Department of Commerce, National Oceanographic and Atmospheric Administration	X		X		X		X
U.S. Department of the Interior, Office of Environmental Policy and Compliance						X	
U.S. Department of the Interior, U.S. Fish and Wildlife Service Pacific Islands Fish and Wildlife Office	X		X	X	X		X
U.S. Department of the Interior, U.S. Fish and Wildlife Service Hakalau Forest National Wildlife Refuge	X		X		X		X
U.S. Department of the Interior, U.S. National Park Service Hawai'i Volcanoes National Park	X		X		X		X
U.S. Department of the Interior, U.S. National Park Service National Natural Landmarks Program		X					

Table 8-1: EIS Distribution and Respondents	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Second Draft EIS Notice of Availability	Second Draft EIS Comment Received	Provided Final EIS Notice of Availability
U.S. Department of Transportation Federal Aviation Administration	X		X		X		X
U.S. Department of Transportation Federal Highway Administration	X						
U.S. Environmental Protection Agency Pacific Islands Office Region 9	X	X	X	X	X	X	X
U.S. Geological Survey, Hawaiian Volcano Observatory			X		X		X
U.S. Geological Survey, Pacific Islands Region 12	X		X		X		X
U.S. Marine Corps, Marine Corps Base Hawaii			X		X		X
U.S. Navy, Navy Commander Region Hawaii, Pacific Missile Range Facility Barking Sands	X		X		X		X
State of Hawai'i Agencies							
Department of Agriculture	X		X		X		X
Department of the Attorney General	X						
Department of Business, Economic Development & Tourism (DBEDT)	X		X		X		X
DBEDT Office of Planning	X		X	X	X		X
Department of Defense	X		X	X	X		X
Department of Hawaiian Home Lands	X	X	X	X	X	X	X

Table 8-1: EIS Distribution and Respondents	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Second Draft EIS Notice of Availability	Second Draft EIS Comment Received	Provided Final EIS Notice of Availability
Department of Health, Environmental Health Administration	X	X	X	X	X		X
Clean Air Branch	X		X	X	X		X
Clean Water Branch	X		X		X		X
Hazard Evaluation and Emergency Response Office	X	X	X	X	X	X	X
Indoor and Radiological Health Branch	X		X		X		X
Safe Drinking Water Branch	X		X		X		X
Solid and Hazardous Waste Branch	X		X		X		X
Department of Land and Natural Resources	X	X	X	X	X	X	X
Commission on Water Resource Management	X	X	X		X		X
Division of Forestry and Wildlife	X		X	X	X	X	X
Engineering Division	X	X	X	X	X	X	X
Land Division	X	X	X	X	X	X	X
Land Division – Hawaii District				X		X	
Office of Conservation and Coastal Lands	X		X	X	X	X	X
State Historic Preservation Division	X		X		X	X	X
Department of Transportation	X	X	X		X		X
Office of Hawaiian Affairs	X		X	X	X	X	X
Office of Planning and Sustainable Development						X	

Table 8-1: EIS Distribution and Respondents	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Second Draft EIS Notice of Availability	Second Draft EIS Comment Received	Provided Final EIS Notice of Availability
University of Hawaii – Canada France-Hawaii Telescope	X						
University of Hawaii – Hilo	X		X		X		X
Department of Geography and Environmental Studies			X		X		X
University of Hawaii – Hilo Center for Maunakea Stewardship			X		X		X
University of Hawaii – KECK Observatory	X						
University of Hawaii – Manoa College of Tropical Agriculture and Human Resources			X		X		X
County of Hawai‘i Agencies							
Hawai‘i Civil Defense Agency	X		X		X		X
Hawai‘i Department of Environmental Management	X		X		X		X
Hawai‘i Department of Finance	X		X		X		X
Hawai‘i Department of Parks and Recreation	X		X		X		X
Hawai‘i Department of Public Works	X		X		X		X
Hawai‘i Department of Water Supply	X	X	X	X	X		X
Engineering Division			X		X		X
Hawai‘i Fire Department	X		X	X	X		X
Hawai‘i Planning Department	X	X	X	X	X		X

Table 8-1: EIS Distribution and Respondents	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Second Draft EIS Notice of Availability	Second Draft EIS Comment Received	Provided Final EIS Notice of Availability
Hawaiʻi Police Department	X		X		X	X	X
Elected Officials							
The Honorable David Ige, Governor of the State of Hawaiʻi (former); The Honorable Josh Green, Governor of the State of Hawaiʻi (as of 12/5/2022)	X		X		X		X
Lieutenant Governor Josh Green (former); Lieutenant Governor Sylvia Luke			X				
U.S. Senator Brian Schatz	X		X		X		X
U.S. Senator Mazie Hirono	X		X		X		X
U.S. Representative Ed Case	X		X		X		X
U.S. Representative Tulsi Gabbard (former); U.S. Representative Kaialiʻi Kahele (former); U.S. Representative Jill N. Tokuda (as of 1/3/2023)	X		X		X		X
State House Rep. Mark M. Nakashima, District 1 (former); State House Rep. Matthias Kusch (as of 11/5/2024)	X		X		X		X
State House Rep. Chris Todd, District 2 (former); State House Rep. Richard H.K. Onishi (as of 11/8/2022), District 2	X		X		X		X
State House Rep. Richard H.K. Onishi, District 3 (former); State House Rep. Chris Todd (as of 11/8/2022), District 3	X		X		X		X

Table 8-1: EIS Distribution and Respondents	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Second Draft EIS Notice of Availability	Second Draft EIS Comment Received	Provided Final EIS Notice of Availability
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State House Rep. Richard P. Creagan (former), District 5; State House Rep. Jeanne Kapela (as of 12/7/2020), District 5	X		X		X		X
State House Rep. Nicole E. Lowen, District 6 (former); State House Rep. Kirstin Kahaloa (as of 11/8/2022), District 6	X		X		X		X
State House Rep. David A. Tarnas, District 7 (former); State House Rep. Nicole E. Lowen (as of 11/8/2022), District 7	X		X		X		X
State Senator Kaialiʻi Kahele (former), District 1; State Senator Laura Acasio (former), District 1; State Senator Lorraine R. Inouye (as of 11/8/2022), District 1	X		X		X		X
State Senator Russell E. Ruderman (former), District 2; State Senator Joy A. San Buenaventura (as of 12/7/2020), District 2	X		X		X		X
State Senator Dru Mamo Kanuha, District 3	X		X		X		X
State Senator Lorraine Inouye (former), District 4; State Senator Herbert M. "Tim" Richards III, (as of 11/8/2022), District 4	X		X		X		X

Table 8-1: EIS Distribution and Respondents	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Second Draft EIS Notice of Availability	Second Draft EIS Comment Received	Provided Final EIS Notice of Availability
State Senator Kurt Favella, District 19 (former); District 20 (as of 11/8/2022)				X		X	
Mayor Harry Kim (former); Mayor Mitch Roth (former); Mayor Kimo Alameda, Ph.D. (as of 11/5/2024)	X		X		X		X
Prosecuting Attorney Mitch Roth (former); Prosecuting Attorney Lee Lord PhD. (former); Prosecuting Attorney Kelden B. A. Waltjen (as of 11/5/2024)	X						
Deputy Managing Director, Roy Takemoto (former); Deputy Managing Director Bobby Command (former); Merrick Nishimoto (as of 11/5/2024)	X		X				
Council Member Valerie T. Poindexter (former), District 1; Council Member Heather L. Kimball (as of 12/7/2020), District 1	X		X		X		X
Council Member Aaron Chung, District 2 (former); Council Member Jennifer Kagiwada (as of 2/14/2023), District 2	X		X		X		X
Council Member Susan "Sue" L. K. Lee Loy, District 3 (former); Council Member Dennis Onishi (as of 11/5/2024)	X		X		X		X
Council Member Ashley Lehualani Kierkiewicz, District 4	X		X		X		X
Council Member Matt Kanealiʻi-Kleinfelder, District 5	X		X		X		X

Table 8-1: EIS Distribution and Respondents	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Second Draft EIS Notice of Availability	Second Draft EIS Comment Received	Provided Final EIS Notice of Availability
Council Member Maile Medeiros David, District 6 (former); Council Member Michelle Galimba (as of 2/14/2023), District 6	X		X		X		X
Council Member Rebecca Villegas, District 7	X		X		X		X
Council Member Karen Eoff (former), District 8; Council Member Holeka Goro Inaba (as of 12/7/2020), District 8	X		X		X		X
Council Member Herbert M. "Tim" Richards III, District 9 (former); Council Member Cynthia Evans District 9 (former); Council Member James Hustace, District 9 (as of 11/5/2024).	X	X	X		X		X
Organizations							
AF3IRM Hawai'i						X	
Association of Hawaiian Civic Clubs						X	
Associated Universities Inc.		X					
Boy Scouts of Hawaii	X		X		X		X
Center for Biological Diversity, Sierra Club Hawai'i Island Group						X	
Chamber of Commerce Hawaii	X		X		X	X	X
Chamber of Commerce Hawaii's Military Affairs Council (MAC)				X			
County Game Management Advisory Commission				X			
Earthjustice						X	

Table 8-1: EIS Distribution and Respondents	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Second Draft EIS Notice of Availability	Second Draft EIS Comment Received	Provided Final EIS Notice of Availability
Environmental Caucus of The Democratic Party of Hawaiʻi		X		X		X	
Et Al. Native Tenants Hawaiʻi Kingdom		X					
Flores-Case ʻOhana						X	
Friends for Fitness						X	
Girl Scouts of Hawaiʻi	X	X	X		X		X
Hawaiʻi Island Chamber of Commerce	X	X	X	X	X	X	X
Hawaiʻi Island Economic Development Board	X		X		X		X
HPM Building Supply	X		X		X		X
Hawaiʻi Alliance for Progressive Action						X	
Hawaiʻi Cigar						X	
Hawaiʻi Peace and Justice		X					X
HULI PAC						X	
Jewish Voice For Peace - Hawaiʻi						X	
KAHEA: The Hawaiian Environmental Alliance						X	X
Ka Ohana O Na Pua				X		X	
Kamehameha Schools	X		X		X		X
Kupuna for the Moopuna				X		X	
Kona-Kohala Chamber of Commerce	X	X	X	X	X		X
Makaʻala O Ka Hana Wai		X				X	
Malu ʻAina						X	

Table 8-1: EIS Distribution and Respondents	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Second Draft EIS Notice of Availability	Second Draft EIS Comment Received	Provided Final EIS Notice of Availability
Malu ʻAina Center for Non-violent Education in Action				X		X	
Mauna Kea Moku Nui ʻAelike/Consensus Building ʻOhana		X					
Maunakea Observatories		X					
Mālama Mākua		X					
Mauna Kea Protectors at UCSB						X	
Maunakea Watershed Alliance			X		X		X
Military Affairs Committee Hawaiʻi Island Chamber of Commerce	X		X		X		X
Na Kupuna Moku O. Keawe		X		X			
Native Hawaiian Chamber of Commerce	X		X		X		X
Native Hawaiian Legal Corporation		X					
Nā Kuleana o Lele		X					
Office of Mauna Kea Management	X						
Olaʻa First Hawaiian Church		X					
'O Maku'u ke Kahua Community Center						X	
Pacific Resource Partnership		X					
Parker Ranch	X		X		X		X
Recycle Hawaiʻi, Clean The Pacific						X	
Retail Merchants of Hawaii			X		X		X
Royal Order of Kamehameha	X		X		X		X

Table 8-1: EIS Distribution and Respondents	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Second Draft EIS Notice of Availability	Second Draft EIS Comment Received	Provided Final EIS Notice of Availability
Royal Order of Kamehameha Moku o Kohala	X		X		X		X
Royal Order of Kamehameha Moku o Mamalahoa	X		X		X		X
Sierra Club, Hawai'i Island Group		X		X			
Temple of Lono		X				X	
University of Hawai'i, Institute for Astronomy		X					
United Services Organization	X		X		X		X
Waiki'i Ranch Homeowners Association	X		X		X		X
Waikoloa Village Association	X		X		X		X
Waimea Community Association			X		X		X

Table 8-1: EIS Distribution and Respondents	Provided EIS Preparation Notice	Provided Draft EIS	Provided Second Draft EIS
Public Repositories			
Hawai'i State Library, Hawai'i Documents Center	X	X	X
Hilo Public Library	X	X	X
Kailua-Kona Public Library	X	X	X
Thelma Parker Memorial Public and School Library	X	X	X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Individuals			
Kimi Abbott-Jackson	X	X	
Ayah Abdo			X
Chelsy Abe		X	
Justin Abe		X	
Kalei Acia		X	
Douglass Adams	X		
Meleanaonālani Adams			X
Candace Addleman			X
Joie Agard			X
Wai'ala Ahn			X
Shelly Aina	X		
Kamuela Akeo			X
Rabayah Akhter			X
Partner Akiona			X
Kara Akiyama			X
Stacey Alapai			X
Jim Albertini	X	X	X
Nancy Aleck		X	
Jason Alexander			X
Carol Ann Alina	X		
Katherine Allison			X
Loke Aloua			X
Imani Altemus-Williams			X
Karen Altergott		X	
Kelsey Amos	X		
Deb Anderson	X		
Shani Anderson			X
Sven Andes			X
Shakeisha Angay Pihi			X
JL Angell			X
Luna Animisha			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
James Anthony	X		
Anela Applewhite			X
Tracey Aquino			X
Bretton Archer			X
Kelsea Armstrong	X		
Carl Arnold			X
Theresa Arriola		X	
Gina Aruanno			X
Corey Asano			X
Andrew Ashburn	X		
Cameron Atsumi		X	
Francesca Au			X
Lyle Auld		X	
Kyhl Austin			X
Kalia Avery		X	X
Nalu Awai	X		
Ronald Awaya		X	
Hector Ayala		X	
Tanya Aynessazian			X
Bronson Azama		X	
Camille B		X	
Cristina Bacchilega			X
Leilani Badamo			X
Heather Bailey			X
Brenda Bailey-White	X		
Carla Baker	X		
Christopher Baker	X		
Kelsey Baker			X
Christine Bandsma			X
Bruce Banick	X		
Christoph Baranec		X	X
Akalaini Baravilala			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Leilani Barga		X	
Natalie Baribeault		X	
Rebecca Barker			X
Kallie Barnes		X	
Kristin Barrett			X
Julie Barreto			X
River Barros			X
Darcy Bartoletti		X	
Beau Bassett		X	
Ashley Baxter			X
Rosemary Bearden			X
John Begg		X	
Lorrie Beggs	X		
Betsy Behnke			X
Thomas Belfield		X	
Miriam Bellwood			X
Susan Bender			X
Anna Bennett			X
Jana Bennett	X		
Sam Bergstrom		X	
Jared Bernard	X		
Alexandra Bernstein	X		
Lana Bilbo			X
Zero Binkerhoff			X
AziaLynne Bird	X		
Daniel Bishop			X
Emily Black		X	
Patricia Blair	X		X
Lawretta Blanch			X
Marissa Blake			X
Kaysie Blersch			X
Yvonne Block			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
P Noel Bobilin			X
Jessica Bodin			X
Alyssa Bolante		X	
Jeff Bond	X		
Duke Bourgoin		X	
Dennis Boyd	X		
Eduardo Bradley		X	
Kaili Brande			X
Zero Brinkerhoff			X
Jody Brissette	X		
Jocelyn Brody			X
Mark Brouwer	X		
Maryann Broyles	X		
Clementine Brown			X
Skyler Brown		X	X
Shantee Brown		X	X
Elena L. Bryant			X
Meredith Buck		X	
Bonniebrooke Bullock			X
Kelsey Bunting		X	
Joel Burgess			X
Cheryl Burghardt	X		
Gauge Burnett			X
Linda Burnham Larish			X
Martha Burwell			X
Abilene Bushong		X	
Jeffrey Cabanting-Rafael		X	
Alana Cabello			X
Shawn Cahill		X	
Phill Cain		X	
Lindsey Caldwell		X	X
Joseph Camara			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Louise Canon			X
Kesslyn Carlos	X		
Violet Carne			X
Will Caron			X
Kinion Wahinealiʻi Carroll	X		
Alana Carvalho	X		
Lena Carver			X
Jeffre Cary			X
Pua Case			X
Aria Castillo			X
Ben Catriz		X	
Laura Caverly			X
Ashley Cazemiro		X	
Katherine Chang			X
Jacquelyn Chappel			X
Jared Char	X		
AJ Cho			X
Seb Choe			X
Autumn Chong		X	
Carl Christensen	X		
Roger Christie			X
Barryn Chun			X
Andrew Chun			X
Brenda Chung			X
Ed Clapp			X
Kristin Clark			X
Gail Clement			X
Evelyn Clouse			X
Rachel Clyde		X	
Caitlin Cogdill			X
Aurora Cole	X		
Jackson Coley			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Emily Collins		X	
Joe Collins		X	
Olivia Collis		X	
Kim Compoc			X
Barbara Cooney	X		
Andrew Cooper	X		
Amber Coppings			X
Shannon Corbeil		X	
Cory		X	
Shalom Costa			X
Alexa Coules			X
Raleigh Coulter		X	
Alexis Cox	X		
Molly Crane		X	
John Cravalho			X
Patricia Cravalho			X
Dizia Crisostomo	X		
Nikki Cristobal			X
Alexander Cryan	X		
Rebekah Cryderman			X
Alysa Cua			X
Liam Dadzie			X
Monisha Das Gupta			X
Mike Davis		X	
Sasha Davis	X		
Rosella DeAlva-Guerrero			X
Kainoa de Angelis			X
Natalie DeBiasi			X
Mu Decedents			X
Stella Dee	X		
Lehuanani DeFranco			X
Cory DeGregorio			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Earl DeLeon			X
Kahu: Richard Maele DeLeon	X		
Robert DeMaria			X
Sarah Martins de Souza			X
Sarai Devi Dasi			X
Dexter	X		
Beth Roney deYoung			X
Christopher Diaz			X
Amanda Dillon	X	X	
Stephany Dinnan-Kaolulo	X		
Alyce Dodge	X		
Vincent Dodge			X
Sky Doherty		X	
Pete Doktor		X	
Syliva Dolena			X
Sylvia Dolena			X
Blake Doll	X		
Candy Doogle	X		
Ann Dorsey			X
David Dougherty			X
Bob Douglas		X	
Susan Douglas	X		
Melanie Dudley			X
Robert Duerr	X		
Margaret Duka			X
Kiana Dulan			X
Ipolani Duvauchelle		X	
Jennifer Dwight			X
Mclean Eames		X	
Patrick Easterling			X
Kerry Eastwood		X	
Harald Ebeling			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Lila Edwards			X
Mina Elison		X	
Gerard Elmorw			X
Rose Elovitz			X
Mahina Embers	X		
Lucy Emerson		X	
Sheridan Noelani Enomoto			X
Lauren Esaki-Kua			X
Lenni Espinoza			X
Lennie Espinoza			X
Mychel Estavillo			X
Sofronio Estores	X		
Jhernie Evangelista	X		
Mia Evans	X		
Piikea Everett	X		
Louise Fa		X	
Hanalei Fergerstrom	X		
Shiloh Ferguson			X
Rico Ferrari	X		
Joe Ferraro	X		
Kristen Ferrer	X		
Cori Farrow			X
John Ferry	X		
Jade Figueroa		X	
Leina Fisher			X
Lilly Fisher			X
Sara Fitzgibbons			X
Greg Fleming		X	
E. Kalani Flores		X	X
Flores-Case ‘Ohana		X	X
Kapulei Flores			X
Melanie Folino			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Breanne Fong			X
Kevin Fray	X		
Kathrin Francke			X
Leialoha Frazier			X
Makahanaloa Frazier			X
Nicholas Frazier			X
Piimauna Frazier			X
Antoinette Freitas	X		
Cindy Freitas		X	
Ella Friedman		X	
Shelley Fritz			X
Mina Fsrdeen			X
David Fuertes	X		
Mackenzie Fugett		X	
Don Fujimoto	X		
Ronald Fujiyoshi			X
Keala Fung		X	
Sherrill Futrell			X
Jhonele Gambill	X		
Len Gambla		X	
Brittney Ganzelli			X
Mary Garcia		X	
Kamamalu Garmon			X
Keao Garmon			X
JackLyn Garnick			X
Antonio Gaspar	X		
Michael Gast	X		
Kiaka Gaughen			X
Carl Geise	X		
Nicole Gehlbach-Wilson			X
Robert Gerard	X		
Makana Gerona			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Sonja Giardina			X
Cassandra Giarrusso		X	
Golden Gibson			X
Ezekiel Giddens	X		
Scott Gifford			X
Vi Girbino			X
Caleb Glass			X
Michelle Glowa		X	
Renee Godoy			X
Bridget Goerke		X	
Randy Goff		X	
Lou Gold		X	
Marcia Goldman-Manker	X		
Mike Golojuch			X
David B. Gomes	X		
Maria Gomez		X	
D.A. Haliimaile Goo	X		
Brian Goodyear	X		
Mark Gordon	X	X	X
Dr. Holeka Goro Inaba			X
Donna Grabow	X		
Sherilyn Grace			X
Jocelyn Grandinetti			X
Tina Grandinetti	X		
Tiffany Graumann			X
Jody Green		X	
Linda Green	X		
Momi Greene			X
Patricia Greene	X	X	
William Greentree	X		
Lisa Greenwell Hummel			X
Ava Greer			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Regina Gregory			X
Robert Gregory		X	
Renate Gregory	X		
Douglas Grion Filho			X
Jowell Guerreiro			X
Clarisa Guerrero			X
Kaiki Gunderson-Cook	X		
Michael Guritz		X	
Jennifer Hadlock			X
Diane Hahn			X
Geoffrey Hajim			X
Ryler Hall			X
Mark Hamamoto			X
Richard Hamasaki	X		
Joseph Han			X
Kaipo Hanakahi			X
Kalai Hanohano			X
Corey Harden	X	X	
Cory Harden			X
Meagan Harden			X
Kye Harford		X	
Pualei Harold			X
Isaac "Paka" Harp			X
Gary Harrold	X		
Suzanne Hart		X	
Christina Hartman			X
Hannah Hartmann			X
Chloe Hartwell			X
Jazerick Hata		X	
Tamra Hayden			X
James Head	X		
David Heaukulani			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Deborah Hecht			X
Brittney Hedlund	X		
Kevin Hedlund		X	
Pua Heimuli		X	
Malia Heimuli		X	
Tuupua Helekahi			X
Joan Heller	X		
Kat Helms			X
Devin Helton		X	
Neal Herbert		X	
Jackie Hester		X	
Linnea Heu	X	X	
Stephan Hewitt			X
Zahz HewLen		X	
DJ High		X	
Kaliko High			X
Rebecca Hightower	X		
Rebecca Hill		X	
Brittany Ho			X
Jennifer Ho	X		X
Selina Ho		X	
Leināʻala Hoʻāeae			X
Hanna Hodak			X
Craig Hodges		X	
Jaime Hoe			X
Fred Hofer			X
Piper Hollingsworth			X
Emily Holmberg		X	
Satsu Holmes			X
Candi Hololio Johnson			X
Gabrielle Holt		X	
Janet Holton			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
William Hoohuli		X	
Paleka Hookano			X
Misty Houchens		X	
Bailee Houle		X	X
Annelise Houston		X	
James Howe Jr.			X
Chloe Huelsemann			X
Tamlyn Hunt	X		
Bella Hutchinson			X
Ly Huynh			X
Allan Hyatt		X	X
Charley Ice	X		
Sam Ikehara			X
Kilihea Inaba		X	
Clare Ioprinzi			X
Bianca Isaki	X		
Kelly Iverson			X
Marco Jablonowitz	X		
Helen Jaccard	X		
Mariko Jackson			X
Sam Jacobs	X		
Alan Jacobsen		X	
Noelani Jai			X
Robert James IV			X
Jerard Jardin	X		
Jonathan Jay			X
Laurie Jenkins	X		
Henrietta Jeremiah	X		
Hana-Lei Ji			X
Sydney Ji	X		
Rick John		X	
Austin Johnasen			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Cora Johnson		X	
Jeannine Johnson			X
Jessica Johnson		X	
Lanie Johnson	X		
Roger Johnson		X	
Martha Johnston		X	
Andrew Jones		X	
Michael Jones	X	X	
Ryan Jones			X
Janice Jong			X
Juju			X
Izzy Ka		X	
Kelina Kaaihue			X
Iokeda Kaeo		X	
Iokepa Kaeo		X	
Sherlyn Kahanuloaeomakana Akiona			X
Maxine Kahaulelio		X	
Nawahine Kahoopii		X	X
Dexter Kaʻiama	X		
Naʻe Kaiama	X		
Pearl Kaiama	X		
Trevor Kaiama	X		
Kyle Kajihiro	X		X
Kupaianaha O Kākā'Ōlelo Thurman			X
Awapuhi S. Kalauli Robinson			X
Kapeliela Kalawaia			X
Heather Kalei			X
Caryn Kali			X
Kepa Kali			X
Lianna Kali			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Momi Kalili			X
Noelani Kalipi			X
Karen Kaloi			X
Kaleka Kam			X
Sherri-Anne Kamaka		X	
Kaualilinoe Kama			X
Donovan Kamakanimaikalani Albano			X
Leah Kanae			X
Kiane Kanaha			X
James Kanani Kaulukukui			X
Julia Kang			X
Guy Kaniho			X
Makaiwa Kanui			X
Cyn Kauanuialeimaka Doyle			X
Paige Ka‘ohu Kawakami			X
Alakai Kapanui		X	X
No Kapaole		X	X
Marina Karides			X
Mariah Karson		X	
Hannah Kasulka			X
Kawaipio Kauahi		X	
Lehua Kaulukukui			X
Lindsey Kawela Kim			X
Kamahana Kealoha		X	
Dana Keawe	X		
Louisa Keawe		X	
Matilda Keith	X		
Keala Kekaualua			X
Merania Kekaula			X
Thomas Kevin Kekoa Dolan-Ma			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Kiana Kelai			X
Roxane Keli'ikipikaneokolohaka			X
Kahilo Keller			X
James Kelley		X	
Spencer Kelly			X
Jamen Kennedy-Natividad			X
Nikki Kepano	X		
Sharon Kershner		X	
Cindy Kester	X		
Gwendolyn Kim	X		
Kimo	X		
Hawaiian Kingdom		X	
Ann M Klaft			X
Mary Klauder	X		
Anya Klepacki			X
Jennifer Kline			X
Ronald Kodani			X
Tatsuki Kohatsu			X
Debra Koonohiokala Norenberg			X
Kris Kosa-Correia			X
Shauna Kosoris			X
Zachary Kubo			X
Charles Kuahine III	X		
Shana Kukila			X
Caroline Kunitake			X
Micah Kupahu		X	
Sunnie Kupahu		X	
Nicole Kuwala Anakalea			X
Jessica Kuzmier		X	
Kealani Laamaikahiki			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Kehau Laamaikahiki			X
Alexa Labaun			X
Elizabeth Laliberte		X	
Francesca Lam			X
Nani Lanai		X	
Kyle Lanclos	X		
Hunter Lange		X	
Melissa Lanto			X
Kalena Lanuza			X
Leilehua Lanzilotti			X
Ellen LaPenna			X
Malielani Larish			X
Arlene Larrua	X		
Autumn Larsen			X
Shari Larsen			X
Ernesto Lau			X
Lelaine Lau		X	
Geoffrey Lauer			X
Kawena Lauriano		X	
Ludovic Laus			X
Mary Beth Laychak	X		
Bill Lazar			X
William Lazar			X
Eleni Lazarou			X
Eunice Lazarus			X
Erika Leaf	X		
Marissa Leatherman			X
April Lee			X
Camellia Lee			X
Christina Lee			X
Jennifer Lee			X
Jonathan Lee		X	

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Michael Lee			X
Brian Legendre			X
J Lemus	X		
Thomas Lenchanko	X		
Luwella Leonardi	X		
Eri Leong			X
Debora Letelier	X		
Selah Levine	X	X	
Ezra Levinson			X
Ralph LeVitt		X	
Rae Lewark			X
Danny Li		X	X
Danny.H. C. Li			X
Pamela Lichty			X
Danny H. C. Like	X		
Raelene Like			X
Ama Lilly			X
Amaya Lim			X
Brenda Lima			X
Troy Lincoln			X
Noelle Lindenmann			X
Patty Linder			X
John Lindstrom			X
Howard Ling		X	
Michael Linnolt	X		
Sandra Linskey	X		
Ka'īnani Littlejohn			X
MeleLani Llanes		X	
Nanea Lo			X
Leslie Lockhart			X
Maddie Loeffler			X
Connor Logsdon			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Madeleine Longoria Garcia			X
Paul Lonokapu		X	
Joy Loo		X	X
Stephen Loo			X
Sheena Lopes	X		
Ruth Love			X
Olivia Louis-Charles		X	
Kaila Lu			X
Brenda Lucas	X		
Richard Lucas			X
Alix Lunsford			X
Tracy Luu			X
Heather Lyman			X
Bella Lynch		X	
Sara Maaria Saastamoinen			X
Ashleigh MacKinnon			X
Hafiya M			X
Mary Macmillan	X		
Julia Macri		X	
Alfred Madeiros			X
Mana Maglinti	X		
Mahealani		X	
Tabol Michael			X
Kahelelani Mahone			X
Scott Mahoney	X		
Amy Marsh			X
Elisabeth Mehana Makainai	X		
Mailani Makainai	X		
Sylvia Makainai	X		
John Makoff	X		
Gordon Malakaua Mann	X		
Scott Malis	X		

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Linda Manabe	X		
Prana Mandoe			X
Keke Manera			X
Hannah Manshel			X
Nana-Honua Manuel			X
Snow Marks	X		
Keith Marrack	X		X
Sally Marrack			X
Martha Martin		X	
Nancy Martin	X	X	
Nate Martin			X
Paul Martin			X
Krystal Martinez			X
Cynthia Massa	X		
Peter Mathews		X	
Shannon Matson			X
Hannah Matsunaga			X
Titus Matthews	X		
Rebecca Mattos			X
Tasman Mattox			X
Indie Mauai			X
Kuuleinani Maunupau			X
Leilani Maxera			X
Alexis Mayhew		X	
Michelle Mazzetti		X	
Megan Mccaffrey		X	
B. A. McClintock			X
Kathy McDuff			X
Julia Rose McGann		X	
Deborah McGrath			X
Dangelo Mcintyre	X		
Ashlie McGuire			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Carol McMillan	X	X	
Adrienne McNeill		X	
Denise Medeiros	X		
Kapua Medeiros		X	
Jaerick Medeiros Garcia		X	
Randall Medeiros	X		
Trinity Medler		X	
Noelani Mengel			X
Glenn Metzler		X	
Lillian Merle	X		
Jeffrey Mermel	X		X
Zach Mermel	X		
Kainani Merrill			X
Meleanna Meyer	X		
Jennifer Mickelson			X
William W. Milks	X		
Ash Miller		X	
Dana Miller			X
George Miller			X
Leah Miller			X
Koh Ming Wei			X
Debbie Misajon			X
Alex Mitchell			X
Laila Moire Selvage			X
Marina Monarrez			X
Mariana Monasi			X
Caitlin Moon		X	
B Moore		X	
Kimo Moore		X	
Sandra Morey			X
Daniel Morimoto			X
Michelle Morin		X	

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Maki Morinoue		X	
Dailee Morrone		X	
Maimoa Moses	X		
Bret Mossman		X	
Shelley Muneoka			X
Zack Murphy		X	
Karen Murray			X
Isaac Nahuewai		X	
Joel Nakamoto	X		
Kalena Nakasone			X
Kauikeolani Naniole			X
Skye Narvaez			X
Janelle Naone		X	
Nicole Navarro		X	
Basara Nekki		X	
Kelsie Neves			X
Michael R. Newman			X
Sharon Newman			X
Melissa Newton			X
Faith Ngirmidol-Kelley			X
Zara Nicholson			X
Suzanne Nicoll	X		
Joseph Nobriga	X		
Sheridan Noelani			X
Danielle Noelani Marchitti			X
Debra Norenberg			X
Brent Norris			X
Leslie North			X
Ariel Nurphy			X
Momi Nuuhiwa			X
Moriel O'Connor			X
Moriel Oconnor			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Charles Ogle		X	
Anela Oh			X
Curen Ohama		X	
Ohana		X	
Kane Ohe		X	
A‘ohe ‘Oihana	X		
Gina Ok		X	
Keith Okamoto	X		
Raiatea Oliver		X	
Liam O’Malley		X	
J. Omokawa			X
Nahalelaau Onaalii Kapaole			X
Cat Orlans	X		
Alexis Orrick		X	
Kayla Oshiro			X
Dr. Jamaica Osorio			X
Jonathan & Jamaica Osorio	X		
Charles Ota	X		
Mialisa Otis		X	
Chromium-Crysoberyl Overley			X
Graham Oxman			X
Brandie Oye	X		
Hurao Pablo-Cook			X
Carol Pacheco		X	
Danielle Pacific			X
Kristen Pahukoa-Sardinha			X
Miriam Paisner			X
Taylor Pajunen			X
Merle Pak			X
Meilani Pang			X
Avalon Paradea		X	X
Travis Paradea		X	

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Dustin Paradis		X	
Laura Parker			X
Manuokalewa Parker			X
Ariel Patterson			X
Eric Paul		X	
Stephen Paulmier		X	X
Sam Peck			X
Tom Penny		X	
Alexandra Perez Urbina			X
Cameo Perrells	X		
Amy Perruso	X		
Alfred Pestrello			X
Seanna Pieper-Jordan	X		
Rebecca M Pierotti			X
Dylan Pilger			X
Julia Pillard			X
Crystal Pitts		X	
Tara Plachowski		X	
Marisa Plemer			X
Megan Ploski	X		
Valerie Poag	X		
Kahakuhailoa Poepoe			X
Sharla Pohaikealoha Au			X
Sherry Pollack		X	X
Jason Pond			X
Steven Pommier	X		
Jim Popper	X		
Ethan Porter		X	
Kalai S. Posiulai	X		
Sofia Potenciano			X
Holly Potter			X
Amber Powell			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
John Powell		X	
Tanya Power	X		
Sarah Pritchett			X
Alisha Puchalski			X
Noelani Puniwai			X
Sage Quiamno			X
Stephanie Quinto			X
Venice R			X
Isabela Ramirez			X
Dylan Ramos			X
Kahumu Rasi	X		
Levona Rdechor			X
Nancy Redfeather	X		
Makana Reeves			X
Brenda Reichel			X
Michael Reimer	X	X	X
Elilai Rengiil			X
Bryan Revell			X
Alina Reyes		X	
JJ Reyes			X
Mia Reynolds			X
Juliana Rhee			X
Sarah Rice		X	
Richard			X
Kahu Ricky	X		
Rose Riedesel	X		
Renee Riley	X		
Christie Ritter		X	
Luana Rivera Palacio			X
Milagros Rivera			X
Elene Rizzo-Kuhn	X		
Susan RobertsEmery			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Juaquin Robinett			X
Juaquin W. Robinett			X
Rob Robinson			X
Andrea Rocha			X
Gabrielle Rochon			X
K Rodgers			X
James Rodrigues			X
Christopher Roehrig		X	
Judy Rohrer			X
Tara Rojas	X		X
Susana Roman			X
Deirdre Roney			X
Dale Ross	X		
Peter Rucci		X	
Shannon Rudolph			X
Heidi Rusina			X
Anela Ryan			X
Lynn Ryan			X
Jon Sabati	X		
Alexandra Saffery			X
Laura Safranski		X	
Mary Sakamoto			X
Emily Salmieri			X
Ashley Sanders			X
Dave Sansone		X	
Emily Sarasa			X
Dominic Sardinha			X
Jared Saxbury			X
Miranda Scarola			X
Ellen Schomer	X		
Richard Schulherr	X		
Robert Scott			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
James Secritario			X
Doris Segal Matsunaga		X	
Gregg Shankle		X	
Geoff Shaw		X	
Geoffrey Shaw			X
Noel Shaw		X	
Ricia Shema			X
Robbie Ann Shimose			X
Carl Sholin		X	
Clara Sigmon			X
Lisa Sims			X
Lanny Sinkin			X
Kathleen Slaughter	X		
Amy Smith	X		
Jake Smith			X
Malia Smith			X
Tyler Sonnemaker			X
Jeannette Soon-Ludes, PhD		X	
Chanel Souza			X
Kapono Souza		X	
Katrina Souza	X		
Matthew Souza		X	
M. Kalani Souza	X		
Matthew Kalani Souza	X		
Mele Spencer		X	
Aaron Spielman			X
Richard Spotts			X
Laurel Stacy			X
Michael Stacy			X
Anna Staudenmaier			X
Aaron Stene	X		
Lance Stevens		X	

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Melissa Stibbard			X
Robert H Stiver	X		
Megan Stokes		X	
Mary Stone			X
Kaleiheana Stormcrow		X	
Lauren Stovall			X
Julie Stowell	X		X
Nathan Strain		X	
Ann Stratten			X
Yvonne Sudlow			X
Anna Sumida	X		
Stefanie Suzuki			X
Philippa Swannell			X
Mitchell Swasen			X
Claire Sweeney		X	
Kestrel Swift			X
John Swindle			X
Manu T		X	
Naomi Tachera			X
Kari Tamblyn			X
Jojo Tanimoto	X		
Frances Tannen	X		
James Tatar	X		
Jane Taylor	X	X	X
Megan Taylor		X	
Sally Taylor		X	
Laulani Teale			X
Chariya Terlep-Cabatbat			X
Logan Terkelsen			X
Sherri Thal		X	
Jodie Thayer			X
Megan Thayne		X	

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Crystal Theriault			X
Asher Theys			X
Brandi Tia			X
David Thielk		X	
Anjani Thomas			X
Dillon Thomas			X
Steven Thomas		X	
Ariana Thompson-Lastad	X		
Kupaianaha Thurman		X	
Judy Tiktinsky	X		
Tlaloc Tokuda			X
M Tomlinson			X
Melissa Tomlinson	X	X	
Sharon Torbert	X		
Ellen Tourlousse			X
Cherie Townsend		X	
James Trasport			X
Mary True			X
Wailea Tupou			X
Waileia Tupou			X
Leomana Turalde			X
Madeleine Turner			X
Mālie Turner			X
Lauren Tyler			X
Hannah Ulm		X	
Kaila Undisclosed		X	
Isis Usborne			X
Isis Usborne Usborne			X
Marie Valencia		X	
Meghan van Bergeijk			X
Susan Vickery			X
Johnny Angel Victorino		X	

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Wendy Volkmann	X		
Brian Vollert	X		
Brand W.	X		
Kalyn Wadsworth	X		
Jolie Wagner			X
Kaukaohu Wahilani		X	
Mike Waimea			X
Keke Walker			X
Maria Walker			X
Lyn Wandell			X
Jolie Wanger			X
Deborah Ward			X
Diane Ware		X	
Julie Warech			X
Sam Warren	X		
Hedwig Warrington			X
Rick Warshauer			X
Braeden Watanabe		X	
Kano Watanabe			X
J. Watanabe		X	
Harold Watson			X
Debbie Watson-Correa			X
Joyce Weaver	X		
Hoku Webb		X	
Simone Weber			X
Ming Wei Koh			X
Justine Weingartner		X	
Kaʻōpuʻuokahā Weir			X
Kim Weisenborn			X
Kerry Wells		X	
Danielle West	X		
Al Whitaker			X

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Ethan White			X
Wendi White	X		
Tracy Whyte	X		
Tristyn Wiehl		X	
Ellen Wilhite	X		
Pete Wilson	X		
Linda Williams			X
Renee Winchester		X	
Brittney Wirth-Petrik			X
John Witeck		X	
Dorothea Wolf-Eichbaum			X
Ashley Wolstein			X
Katriel Wong			X
Robin Worley			X
Dr. Noe Noe Wong-Wilson	X		
Joe Woo Jr.			X
Adriana Woods		X	
Amy Woods		X	
Aree Worawongwasu			X
Janice Workman		X	
Colonel Ann Wright	X	X	
Ann Wurden	X		
Lelaine X			X
Peter Yanan	X		
Rocio Yao		X	
Savory Yarrow	X		
Jonah Yee			X
S Yee		X	
Sandy Yee	X		X
Bean Yogi			X
Kristen Young			X
Tatiana Young	X		

Table 8-2: EIS Distribution and Respondents	Scoping Comment Received	Draft EIS Comment Received	Second Draft EIS Comment Received
Mia Yuen			X
Celia Z			X
Keri Zacher			X
Katrina Zavalney			X
David Zierott			X
Jacinto Zulueta			X
Tiffany Zygutis			X
Unidentified Caller #1	X		
Unidentified Caller #2	X		
Unidentified Caller #3	X		
Unidentified Caller #4	X		
Unidentified Caller #5	X		
Unidentified Caller #6	X		
Unidentified Caller #7	X		
Unidentified Caller #8	X		
Unidentified Caller #9	X		
Unidentified Caller #10	X		
Unidentified Caller #11	X		
Unidentified Caller #12	X		
Unidentified Caller #13	X		
Unidentified Caller #14	X		
Unidentified Caller #15	X		
Unidentified Caller #16		X	
Unidentified Caller #17		X	
Unidentified Speaker		X	
Pōhakuloa Training Area EIS Testimony Form		X	

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Chapter 9

GLOSSARY

A-weighted scale – The human ear cannot perceive all pitches or frequencies of sounds equally. To mimic the human ear's sensitivity and perception of different frequencies, sound is measured by applying an A-weighted scale. Sound measurement uses decibels, and the A-weighted scale filters out very low and very high-pitched sounds. The A-weighted scale is used to evaluate noise generated by vehicles, aircraft, and small arms firing (up to .50-caliber).

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).

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.

Attainment area – An area considered to have air quality as good as or better than the NAAQS. 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.

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.

Brigade Combat Team – A unit composed of multiple battalions, usually between 3,000 and 5,000 soldiers.

C-weighted scale – The human ear cannot perceive all pitches or frequencies of sounds equally. To mimic the human ear's sensitivity and perception of different frequencies, sound is adjusted or weighted. Noise measurements use decibels and the C-weighted scale to filter out low pitched, impulsive sounds. The C-weighted scale is used to measure percussive noise and vibrations generated by explosive charges and large-caliber weapons (over .50-caliber).

Cantonment – Permanent military station, usually containing administration buildings, barracks, and support facilities.

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 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 the NEPA and consists of three members appointed by the President. 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 O_3, particulate matter, CO, lead, SO_2, 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, other ethnic groups, and/or cultural practitioners 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 – DU is 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, DU is an excellent material for making armor and armor-piercing weapons.

Deployment – The movement of forces within operational areas.

Direct impact – An effect caused by an action that occurs at the same time and place.

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 – Restricted or peculiar to a locality or region.

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).

Forward Arming and Refueling Point – Cleared area with concrete pads for providing fuel and ordnance to helicopters and tilt-rotor aircraft.

Forward Operating Base – Entry-controlled position used to support a strategic goal or objective (e.g., medical facilities, airfields, and maintenance support facilities).

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.

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.

Hazardous Substances – Substances defined as hazardous by the CERCLA. Hazardous substances regulated under CERCLA are listed under 40 CFR Section 302.4 and include any substance designated pursuant to CWA Section 307(a) and Section 311(b)(2)(A), CERCLA Section 102, Clean Air Act Section 112, and TSCA Section 7.

Hazardous Wastes – Substances defined as hazardous that are regulated under the RCRA. Hazardous wastes regulated under RCRA are listed under 40 CFR Section 261.4 and exhibit certain characteristics (i.e., ignitability, corrosivity, reactivity, and toxicity).

Helicopter Dip Tank – Surface water feature where helicopters can fill buckets with water during firefighting operations.

Indigenous – Refers to species that are native to a particular region or environment.

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.”

Impacts – Positive or negative effects on the natural or social environment resulting from an action.

Impact Area – An area having designated boundaries, within the limits of which all ordnance will detonate on impact.

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.

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.

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.

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.

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.

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.

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.

Military Operations on Urban Terrain – Range with several buildings to simulate a village for practicing military operations in an urban setting.

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.

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.

No Action Alternative – The alternative describing the situation if a proposed action was not implemented.

Noise-sensitive receptors – consist of, but not limited to, schools, hospitals, daycares, assisted living facilities, residential housing areas, unhabituated wildlife.

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.

Notice of Intent – Announcement in the *Federal Register* advising interested parties that an EIS will be prepared and circulated for a given project.

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.

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.

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.

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.

Revisionist power – A ruling government or systems of power whose objective is to change or put an end to the current system.

Rocket – Self-propelled unguided projectile; fired from a vehicle-mounted or shoulder-fired rocket launcher.

Rogue regime – A ruling government or systems of power that violate principles of sovereignty and deliberately blurs lines between civil and military goals to destabilize global stability.

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. Typically, a criterion is used to identify a threshold that, if exceeded, would constitute a significant impact.

Small Arms – Small caliber, portable firearms designed for individual use; examples include handguns, shotguns, light machine guns, rifles, and carbines.

Sound pressure level – A decibel level calculation based on the measurement of instantaneous pressure fluctuations over and under the prevailing barometric pressure.

Special status species – Those plants or animals that have a protective status designated by a state or federal agency because of general or localized population decline.

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. PTA SOPs include information, policy, and guidance for users of PTA to plan and conduct training activities at the installation.

State-owned land – Refers to land owned by the State of Hawaiʻi that is currently leased by the U.S. Army at PTA. Retention of State-owned land is the general topic of this EIS.

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 Hawaiʻi Real Property Tax Division.

Taxa – 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; the Marine Corps V-22 Osprey is the primary example.

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.

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 Vehicle – An aircraft flown without a pilot aboard; commonly known as a drone.

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.

Washrack – Used to wash and inspect all vehicles to ensure invasive species seeds and plant material are removed from equipment.

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.