EXECUTIVE SUMMARY

ES.1 INTRODUCTION

In October 1999, the Secretary of the Army and the Chief of Staff of the Army articulated a vision for the Army to meet the challenges of the 21st century. The Army must become more strategically responsive and dominant at every point on the spectrum of military operations, ranging from intensive combat to peacekeeping duties and humanitarian missions.

Hawai'i has been selected as the location for an interim force based on the Stryker vehicle, or a Stryker Brigade Combat Team (SBCT)[1]. As the Army transforms, the interim force will use available technology and weapons, select new equipment, such as the Stryker, and adopt a modified training doctrine to train Soldiers to be able to meet the goals of a fast reacting light force. This will allow the Army to deploy more quickly, be more lethal, highly mobile, and survivable than the current force. The interim force will also serve as a "working model" to refine equipment, weapons, and training of the future force.

The future force would come out of the development and refinement of weapons, equipment, communications, and training that will occur during the interim phase over the next 30 years when the entire Army would be transformed. The current force, those forces that have not undergone transformation, would continue to provide the strategic assurance for the Army's responsibility to fight and win decisively against any threat while the Army transforms to the future force.

The ROD for the Programmatic EIS directed the 2nd Brigade, 25th Infantry Division (Light) (25th ID[L]) at Schofield Barracks, Hawai'i to transform to an SBCT. The Commanding General of the 25th ID(L) is charged with deciding how best to achieve that directive and provide for military training, readiness, and facility requirements to meet SBCT transformation needs, while enabling the current forces to continue to carry out their missions and giving due consideration to environmental factors. This decision will be based

[1] SBCT is the new name for Interim Brigade Combat Team (IBCT), which was used during the public scoping process. This is a name change only: SBCT and IBCT are synonymous.

on the results of this EIS, and on consideration of all relevant factors including mission, cost, technical factors, and environmental considerations. This EIS considers a reasonable range of alternatives including several alternatives that involve transforming and/or training on the U.S. mainland. The mainland alternatives were not analyzed in detail because they did not meet the purpose and need of the proposed action. (Complete details on the proposed action are presented in Chapter 2 and Appendix D.)

SBCT is a new concept that uses technology and information to improve the abilities of Army units. This change will give the Army greater flexibility and will improve the variety of missions to which the Army can respond. The SBCT will use the lighter more efficient Stryker vehicle to transport Soldiers more quickly to areas of conflict. Because of its speed and maneuverability, the Stryker can deliver Soldiers more quickly and closer to the areas where they are needed. Using improved weapons with greater accuracy, the Stryker can provide the force with protective cover as Soldiers dismount and move by foot to desired target areas. Once their task has been accomplished, the Soldiers would again board the Stryker for transport back to their headquarters or another area for further operations. In the Stryker, Soldiers are able to obtain time-sensitive, critical information or intelligence from their commanders, and they can remain in constant communication with each other, their commanders, or other field units via refined satellite links and Internet connections that are filtered into the Stryker vehicle. This is a radical departure from the way Soldiers fight today and, as such, requires new ranges, training facilities, high-tech communication facilities, and new training protocol. In addition, this technology gives the SBCT the ability to conduct combat operations faster and over far greater areas of land than can be achieved presently. Taken together, these requirements create a need for new training and maintenance facilities and expansion of maneuver lands to provide more realistic training conditions.

Pursuant to the National Environmental Policy Act of 1969 (NEPA), the Department of the Army prepared a programmatic environmental impact statement (PEIS) to evaluate the potential environmental and socioeconomic effects associated with transformation of the entire Army. The Army issued *The Final Programmatic Environmental Impact Statement for Army Transformation* in February 2002, published the notice of availability on March 8, 2002, and signed the record of decision (ROD) on April 11, 2002, indicating its decision to proceed with transformation. The PEIS designated the 2nd Brigade, 25th Infantry Division (Light) (ID[L]) in Hawai'i (referred to throughout this document as the 2nd Brigade) and five other units across the US as part of the initial phase of transformation. These units would be converted to an SBCT.

Transformation will result in not just a modernized version of the current Army but will combine the best characteristics of current forces. The transformed Army will possess the lethality and speed of the heavy force, the rapid-deployment mentality and toughness of the light forces, and the unmatched precision and close combat capabilities of the special operations forces. A key measure of transformed forces will be their strategic mobility.

ES.2 PURPOSE OF THE PROPOSED ACTION

On April 11, 2002, the Army signed a ROD indicating its decision to proceed with transformation and designating Hawai'i as one of five locations for the initial transformation

including enhancing training capabilities to support the nationwide transformed forces. This EIS analyzes alternatives on how to implement transformation in Hawai'i. The purpose of the Proposed Action is to assist in bringing the Army's Interim Force to operational capability and to provide realistic training in Hawai'i. Twenty-eight projects are proposed for the US Army Hawai'i (USARHAW) that would improve on the existing support structure and facilities to provide the necessary field training required for an SBCT. Reconfiguring maneuver areas, establishing combat training facilities more appropriate to the types of threats the Army expects to encounter, and strengthening infrastructure would ensure that SBCT's leaders and Soldiers would be prepared for the full spectrum of military operations (see Section 1.1 for a description of the transformation process and what constitutes an SBCT).

ES.3 NEED FOR THE PROPOSED ACTION

The need for transformation of the 2nd Brigade is to provide the nation with capabilities that meet current and evolving national defense requirements. As Army doctrine evolves, training and facilities must also change. The SBCT goal is to be able to deploy anywhere in the world and be prepared to carry out the Army's military mission within 96 hours of deployment from Hawai'i. While SBCT units will retain the mobility and flexibility of traditional Army light forces, they will incorporate the lethality and survivability of traditional Army heavy forces. They will be equipped with new vehicles, equipment, and communications technology to achieve their missions. Training must include a greater emphasis on military operations in urban terrain (MOUT) to prepare Soldiers for a variety of situations, such as resolving general urban unrest, infiltrating and clearing buildings, and fighting at close range. Training for these kinds of activities requires constructing new ranges and support facilities on O'ahu and the island of Hawai'i.

The 2nd Brigade in Hawai'i was selected to transform to an SBCT in the PEIS based on the following three factors:

- Location of the 2nd Brigade within the Pacific Rim, a critical area of interest for the United States. Stationing an SBCT in Hawai'i allows the President to rapidly respond to events in an area of increasing importance to national security. The goal of the Hawai'i SBCT would be to deploy a brigade anywhere within the Pacific Rim within 96 hours or to combine with other SBCT brigades or future forces to place a division anywhere in the Pacific Rim within five days, or five divisions within thirty days. There are two other SBCTs on the Pacific coast of the continental United States (Alaska and Washington) to support deployment to the critically important Pacific Rim, while others will be in the eastern United States to support deployment to other geographic regions.
- Composition and mission of the 2nd Brigade and the benefits of transforming to an SBCT. The 2nd Brigade is already a light infantry unit, which executes full spectrum military missions in complex terrain. Hawai'i provides the terrain and conditions most likely to be encountered in the Pacific Rim. The enhancement of this unit to an SBCT would allow this already light unit to be more mobile, lethal, and survivable under a greater variety of conditions.

- Ease of deployment. The SBCT would be within close proximity of multiple airbases and seaports of suitable size.

If the 2nd Brigade does not transform in Hawai'i the Army might not be able to respond rapidly enough in all areas of the world for operations requiring military action. The strategic significance of land forces continues to lie in their ability not only to fight and win the Nation's wars but also to provide options that shape the global environment to benefit the United States and its allies.

ES.4 PUBLIC INVOLVEMENT

By providing a means for open communication between the Army and the public, the procedural aspects of NEPA promote better decision_making. Those having a potential interest in the Proposed Action, including minority, low-income, disadvantaged, Native Hawaiian groups, and others, were notified and invited to participate in the scoping and environmental impact analysis process.

The Council on Environmental Quality (CEQ) regulations, Army regulations , and 32 Code of Federal Regulations (CFR) 651 guide public participation opportunities. These include issuing in the *Federal Register* a notice of intent (NOI) to prepare an EIS[2], initiating a public scoping process and a 45-day public review period for the Draft EIS (DEIS), and publishing the Final EIS (FEIS), accompanied by a 30-day mandatory waiting period before a final decision is made and a ROD is issued. Following publication of the NOI, public notices were published in the major newspapers on the island of Hawai'i and on O'ahu announcing the time and location of seven public scoping meetings to solicit input and to obtain comments on the range of the EIS. In addition, the scoping meetings were announced in the April 8, 2002, issue of *The Environmental Notice,* published by the State of Hawai'i, Department of Health, Office of Environmental Quality Control (OEQC). The 45 day scoping period began on April 8, 2002. Based on public comment, the scoping period was extended by 30 days and ended on June 15, 2002. During the scoping period, the public, organizations, and agencies were encouraged to provide comments.

Seven scoping meetings were held between April 16 and 30, 2002. For residents and groups interested in the Proposed Action at Pōhakuloa Training Area (PTA) on the island of Hawai'i, public scoping meetings were held in Hilo and Waikoloa. For residents and groups interested in the Proposed Action at Schofield Barracks Military Reservation (SBMR) training areas and other training facilities on O'ahu, public scoping meetings were held in Wahiawā, Honolulu, Hale'iwa, Kahuku, and Wai'anae. The Army published early notices of the meeting times and locations. A total of 283 people attended the seven meetings. By letter dated May 28, 2002, the Garrison Commander sent each person who attended a scoping meeting a letter thanking them for their participation in the scoping process, and enclosing a 16-page information paper describing the proposed transformation and mission related projects. Also enclosed with the letter was a copy of the briefing presented at the scoping

[2]The notice of intent for this EIS was published in the *Federal Register,* March 4, 2002 (76 FR 9717), and is found in Appendix B.

meetings, for the attendees' reference. These documents were also posted on the SBCT website and placed at various public and university libraries on Oahu and the Big Island.

In addition to oral comments received at the public scoping meetings, the Army also received written comments in the form of e-mails, faxes, letters, and form letters, comments via telephone, and comments at separate information meetings requested by groups and organizations. A summary of the comments received during the scoping process is included in Appendix B, organized by location, meeting date, and subject.

The Commanding General, 25th ID(L) & US Army Hawai'i approved the DEIS for public review and it was distributed to elected officials, regulatory agencies, and members of the public on October 3, 2003. The availability of this document was announced in the *Federal Register*[3], and a 45-day public comment period followed to provide the public with the opportunity to comment on the findings of the EIS.

Notification of publication of the DEIS and the opening of the public comment period was announced with both legal and display advertisements in the *Hawaii Tribune-Herald, West Hawaii Today*, *The Honolulu Advertiser*, *Honolulu Star-Bulletin, Midweek*, and OEQC's *The Environmental Notice*. Six public meetings to receive comments on the DEIS were held in Honolulu, Wahiawa, Waianae, Kahuku, Waikoloa, and Hilo. On October 31, 2003, the Army made a decision to extend the public comment period on the DEIS until January 3, 2004.

During the scoping meetings, the administrators of the public facilities would not allow the meetings to extend beyond 10:00 PM. This time restriction required that members of the public keep their oral comments short. After many public comments about the length of the meetings, and in an attempt to allow for full participation of all people present, the Army decided to hold the DEIS public meetings at private facilities that were open as long as the Army needed. The majority of the DEIS public meetings did not conclude until after 12:00 AM.

Through public meetings, the opportunity to provide written comments, and the extension of the public comment period, we believe we allowed meaningful opportunity for public participation in the process. A summary of the public meetings and the types of comments received is provided in Appendix B of this FEIS.

Comments received during the public comment period included those from federal, state, and local agencies, non-governmental organizations, businesses, and individuals. Over 600 unique commenters participated in the public review of the DEIS, and their comments and the Army's responses are provided in Appendix P of this FEIS.

[3] The NOA for the Draft EIS was published in the Federal Register by EPA on September 29, 2003.

ES.5 SCOPE OF ANALYSIS

This EIS has been developed in accordance with NEPA and the Army's implementing regulations issued by the CEQ and the Army.[4] The purpose of the EIS is to inform Army decision makers and the public of the likely environmental consequences of the Proposed Action and reasonable alternatives on how to transform the 2nd Brigade in Hawai'i. It focuses on site-specific issues of transforming the 2nd Brigade to an SBCT and the impacts on O'ahu and the island of Hawai'i.

This EIS analyzes the conversion of the 2nd Brigade to an SBCT and enhancement of training capabilities to meet the training requirements of the transformed force. The conversion of the 2nd Brigade to SBCT status would primarily involve changes in force structure (the number of personnel assigned to the unit), equipment and vehicles, and doctrine under which the unit would train for carrying out its assigned missions, as well as improvements to existing ranges and construction of new training facilities. Under transformation, the SBCT would have more personnel than the present 2nd Brigade. A principal change would involve putting the Stryker interim armored vehicle (IAV) into action, which would provide the SBCT with greater firepower and increased tactical mobility. Infrastructure projects would be needed to support this effort, including new vehicle washes and motor pools in which to park these vehicles. Construction of training facilities at various installations and land acquisitions would also be analyzed. See Table ES-1 for an overview of the proposed action. Table ES-2 provides a summary of SBCT training activities by installation.

If a substantial change to any specific project described in this EIS is made, as it moves forward, that may have a bearing on the Proposed Action or its impacts, additional appropriate NEPA documentation will be prepared, as required by NEPA.

SBCT training requirements are not dependent on the use of Makua Military Reservation (MMR). While the MMR is an integral part of USARHAW training capabilities and historically used by other services, SBCT units could perform dismounted Combined Arms Live-Fire Exercise (CALFEX) training at other ranges. SBCT may use MMR if the range were available and only after completion of the Makua EIS and ROD. The Makua EIS will analyze the potential environmental impacts associated with dismounted CALFEXs for both current force and SBCT; therefore, this SBCT EIS does not analyze training impacts of SBCT at MMR.

[4]Council on Environmental Quality: Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, 40 CFR Parts 1500-1508 and Army implementing regulations contained in 32 CFR Part 651.

Table ES-1
Proposed Action (Preferred Alternative), Reduced Land Acquisition, and No Action Alternatives Overview

	Proposed Action (Preferred Alternative)				Reduced Land Acquisition Alternative	No Action Alternative
	SBMR and Wheeler Army Airfield	**DMR**	**KTA/KLOA**	**PTA**		
Training						
Live-fire exercises	Live-fire exercises would continue.	None.	Live-fire SRTA[1] training introduced at the MOUT sites at KTA.	Live-fire exercises would continue on existing lands, no live-fire on WPAA.	Same as Proposed Action.	Live-fire exercises at SBMR and PTA as part of current training would continue at current levels.
Vehicles used	Increase of 346 emission-producing vehicles to 1,005 vehicles (including 291 Strykers), which would be based at SBMR[2]. Maneuvers at SRAA and SBER may involve from one to 96 vehicles (includes 1 to 96 Strykers).	One to 74 vehicles (includes 1 to 27 Strykers).	One to 200 vehicles (includes one to 96 Strykers).	Twenty-seven to 400 vehicles (includes 32 to 192 Strykers).	Same as Proposed Action.	659 emission-producing vehicles.
Off-road maneuver training (Stryker maneuvers)	On existing 1,917-acre off-road maneuver area on SBER and 1,300 new acres on SRAA.	On 364 acres currently used for off road maneuvers.	On 3,384 new acres at KTA. None on KLOA.	On 1,800 acres currently used for off-road maneuvers at PTA and 23,000 new acres at WPAA.	Same as Proposed Action except no off-road maneuvers on SRAA.	No Strykers would be used. Continued use of wheeled vehicles at SBMR, DMR, KTA, and PTA.
Weapons used	Current force weapons plus 105mm cannon on Stryker mobile gun system and the 120mm mortar and an increase of from 12 105mm to 18 155mm howitzers.	No change in weapons fired.	No change in weapons fired.	Current force weapons plus 105mm cannon on Stryker mobile gun system and the 120mm mortar and an increase of from 12 105mm to 18 155mm howitzers.	Same as Proposed Action.	Existing weapons would continue to be used.
Aircraft and UAVs	Normal current force operations of the aviation brigade would continue, plus USAF C-130 and C-17 operations in support of SBCT deployment. UAV flights.	No new aircraft activity. UAV flights .	No new aircraft activity. UAV flights.	No new aircraft activity except UAV flights, UAV and USAF C-130 and C-17s to move units to PTA. However, aircraft activity use will be redistributed. There will be an increase of helicopter use over WPAA and a corresponding decrease over PTA.	Same as Proposed Action.	Continued flight support for current force training.
Troop transport	Trucks are used to move troops from SBMR cantonment to ranges; Strykers in a group of approximately 30 vehicles move troops on Battle Area Complex up to company level.	Troops transported from SBMR to DMR by Strykers or trucks, generally up to company level, plus support trucks.	Troops transported from SBMR to KTA/KLOA by Strykers or trucks; battalion to limited brigade level plus support trucks.	Troops would continue to be transported via aircraft or marine vessel from SBMR to PTA. LSV trips would increase to 66 from 60. Troops would be transported from Kawaihae Harbor to PTA by Strykers or trucks, up to brigade level, in groups of 30 vehicles.	Same as Proposed Action.	No change in troop transport except for marine transport. Current transport includes an average of 60 individual LSV and four barge round trips per year.
Weapons/Ordnance Transport	No change from current force.	None.	None.	No change from current force.	Same as Proposed Action.	No change from current force.
Construction/Demolition						
Range complexes	Four new ranges built: QTR1, QTR2, Urban Assault Course, and Battle Area Complex.	No new ranges.	One mock city built, called the Combined Arms Collective Training Facility (two buildings demolished, S150, S151).	Two new ranges built: battle area complex (12 targets and 1 tower demolished) and the anti-armor range (1 tower demolished).	QTR2 would be built at PTA, not at South Range Acquisition Area.	Existing ranges may be upgraded or new ranges added as future conditions warrant.[3] Separate NEPA documents will be prepared, as necessary.
Airfield upgrade	Upgrade parking apron at Wheeler Army Airfield for C-130 operations.	None.	None.	Upgrade, extend, and reorient runway 5 degrees to support C-17 aircraft.	Same as Proposed Action.	No airfield upgrades.
Tactical vehicle wash	One tactical vehicle wash would be constructed.	None.	One tactical vehicle wash would be constructed.	One tactical vehicle wash would be constructed.	Same as Proposed Action.	None.
Installation information infrastructure architecture (I3A)	None.	None.	None.	I3A would be constructed.	Same as Proposed Action.	Projects may be constructed on a case-by-case basis. [3]
Training classrooms	Virtual Fighting Training Facility.	None.	None.	None	Same as Proposed Action.	Projects may be constructed on a case-by-case basis. [3]
Range control facilities	Range Control Facility built (eight buildings would be demolished: 1124, 1125, 1150, 1181, 2108, 2056, 2276, 1192).	No new facilities.	No new facilities.	Range maintenance facility built (three buildings demolished: T17, T19, T20).	Same as Proposed Action.	Projects may be constructed on a case-by-case basis[3]
Support facilities	Motor pool maintenance shops and multiple deployment facility built.	None.	None.	Expand ammunition storage facility with three new ammunition storage facilities.	Same as Proposed Action.	Projects may be constructed on a case-by-case basis[3]
Antennas (fixed tactical internet)	Nine antennas built: seven at SBMR and two at SBER.	Three antennas built: two within DMR and one on Dillingham Ridge.	Two antennas built within KTA.	Ten antennas built within and surrounding PTA and one antenna at Kawaihae Harbor.	Same as Proposed Action.	No new antennas to be constructed. [3]
Road improvements	Construct a 15-foot- (5 meter-) wide one-lane gravel road with three-foot shoulders from SBMR to Helemanō (6 miles[9.6 kilometers]).	Construct a 15-foot- (4.6 meter)-wide (one-lane) gravel road, with three-foot shoulders from SBMR to DMR (124 miles[20 kilometers]). Telecommunication lines to be installed alongside the upgraded road.	None	Construct a 24-foot- (7–meter-) wide two-lane gravel road with a 40-foot (12-meter) right of way from Kawaihae Harbor to PTA (27 miles [43 kilometers]).	Same as Proposed Action.	None.
Land acquisition	Approximately 1,402 acres (567 hectares) (South Range Land Acquisition).	None.	None.	Approximately 23,000 acres (9,308 hectares) (WPAA).	Approximately 100 acres (40.5 hectares) at SBMR and approximately 23,000 acres (9,308 hectares) at WPAA.	Land acquisitions may be conducted on a case-by-case basis.[3]

Table ES-1
Proposed Action (Preferred Alternative), Reduced Land Acquisition, and No Action Alternatives Overview

	Proposed Action (Preferred Alternative)				Reduced Land Acquisition Alternative	No Action Alternative
	SBMR and Wheeler Army Airfield	DMR	KTA/KLOA	PTA		
Training						
Easements	Acquire a perpetual easement of 13 acres (5.3 hectares) for new road to HMR.	Acquire a perpetual easement of 36 acres (14.6 hectares)(11 acres [4.5 hectares] for new road).	None.	Acquire a perpetual easement of 132 acres (53.4 hectares) for new road from Kawaihae Harbor to PTA.	Same as Proposed Action.	Land acquisitions may be conducted on a case-by-case basis.[3]
Personnel	Increase of 810 Soldiers, with 502 spouses and 1,053 children[2].	No increase.	No increase.	No increase.	Same as Proposed Action.	3,438 Soldiers (existing) and 3,008 predicted for future.

[1]Short Range Training Ammunition
[2]Soldiers and vehicles would be assigned to SBMR and would use training areas as noted.
[3]Appropriate NEPA documentation will be prepared as necessary.
Source: US Army 2002a

Table ES-2
Summary of Training Activities by Installation

	Proposed Action											No Action										
	Maneuver Acreage		Training on Land (Includes night training)						Aviation Training				Maneuver Acreage		Training on Land (Includes night training)						Aviation Training			
				Live-fire		Maneuver										Live-fire		Maneuver						
	Mounted	Dismounted	Highest Level Training	Weapons Qualification	Live-fire	Mounted	Dismounted	Maneuver-impact Miles	Airborne (Parachute Drops)	Helicopters	UAV Operations (Daylight)	C17/C130 Aircraft Operation	Mounted	Dismounted	Highest level Training	Weapons Qualification	Live-fire	Mounted	Dismounted	Maneuver-impact Miles	Airborne (Parachute Drops)	Helicopters	UAV Operations (Daylight)	C17/C130 Aircraft Operation
Training Area																								
SBMR																								
Main Post	0	1,235	Bde	☒	☒		☒	0		☒	☒		0	1,235	Bde	☒	☒	☒	☒	0		☒	☒	
SBER	2,223	2,223	Co			☒	☒	19,125	☒	☒	☒		2,223	2,223	Co			☒	☒	16,740	☒	☒	☒	
WAAF	0	494[3]	n/a					0		☒	☒	☒	0	494[3]	n/a					0		☒	☒	☒
SRAA	1,300	1,300	Plt	☒		☒	☒	25,855					0	0	Plt									
DMR	354	354	Co			☒	☒	4,335		☒	☒		354	354	Co			☒	☒	1,710		☒	☒	
KTA	4,569	4,569	Bde		☒[1]	☒	☒	13,772	☒	☒	☒		4,569	4,569	Bde		☒[1]	☒	☒	7,211		☒	☒	
KLOA[2]	0	5,310	Co				☒	0	☒	☒	☒		0	5,310	Co			☒	☒	0		☒	☒	
PTA																								
PTA Main	18,000	56,661	Bde	☒	☒	☒	☒	25,855	☒	☒	☒	☒	18,000	71,880	Bde	☒	☒	☒	☒	13,659	☒	☒	☒	
WPAA	23,000	23,000	Bde			☒	☒	61,894	☒	☒	☒		0	0				☒[5]	☒[5]		☒			

Notes:
[1]SRTA only
[2]Mounted maneuver training would take place along Drum Road in transit to KTA.
[3]Although dismounted maneuver acreage is available, this training is not currently conducted at WAAF.
[4] Current mounted and dismounted maneuver training at WPAA is done on a training event basis by individual lease agreement.
Co = Company Bde = Brigade
Plt = Platoon n/a = Not applicable
Bn = Battalion ☒ = Activity occurs or will occur.
Note: RLA Alternative has the same training activities as the Proposed Action, with the exception of no live-fire weapons qualification or off-road maneuvers at the SRAA.

ES.6 ALTERNATIVES ANALYZED

The alternatives analyzed must reasonably meet the purpose of and need for the action. Alternatives must also be practical and feasible; that is, they must be capable of being implemented by the Army or another agency, be technically feasible, and not require commitment of resources that cannot practically be obtained. In framing alternatives, the USARHAW has taken into consideration information and suggestions submitted by individuals, organizations, and public agencies. Also, each alternative, with the exception of the No Action Alternative, must meet the training needs required for an SBCT, as outlined in Table ES-3.

In selecting specific construction projects to meet the training shortfall for SBCT and to minimize costs and impacts to the environment and communities, planners attempted to first use existing USARHAW lands and ranges, where possible, to upgrade existing ranges and facilities, to build new ranges on existing training areas, and, if necessary, to acquire new training lands. Once project alternatives were developed, they were further evaluated and selected based on the following factors: the extent to which they provided mission support, the extent to which they minimized environmental impacts and contributed to environmental stewardship, their economic feasibility, and the extent to which they increased training productivity.

ES.6.1 No Action Alternative

CEQ regulations state that an EIS must evaluate a No Action Alternative to serve as a benchmark against which the potential effects of actions can be evaluated. The No Action Alternative represents what would occur if the Army were not to carry out the Proposed Action.

Under the No Action Alternative, the Army would not undertake the proposed conversion of the 2nd Brigade to an SBCT in Hawai'i. The 2nd Brigade would continue to train and operate as a conventional light infantry force.

Current Force Vehicle and Weapon Systems

Vehicles and weapons used under the No Action Alternative would be similar to those in use now.

Construction

Construction projects under No Action assume that projects proposed for maneuver training facilities and USARHAW's inventory of facilities for an SBCT would not proceed. However, other projects in support of current force training could be constructed on a case-by-case basis, as dictated to meet the continuing needs of the Army's conventional forces. These projects would be evaluated under separate NEPA documentation.

Land Acquisition/Easements

None of the land acquisitions that are part of the Proposed Action would be undertaken. Land could be acquired in support of current force training on a case-by-case basis, as might be dictated to meet the continuing needs of historically conventional forces. For example,

Table ES-3
Comparison of Alternatives Considered To Requirements

		Alternative						
		1	2	3	4	5	6	7
Function	**Requirements for SBCT**	**No Action (Current Force Training)**	**Proposed Action (Preferred Alternative): Transform with New Facilities on O'ahu and Hawai'i**	**Reduced Land Acquisition (Construct QTR2 at PTA)**	**Transform with Existing Facilities (No New Construction or Land Acquisition)**	**Transform with Maneuver Training on a Continental US Installation (Includes Maneuver Live-Fire Training)**	**Transform Using Other Existing Military Facilities in Hawai'i (e.g., Marine or Navy Bases)**	**Transform by Moving All Training to PTA**
Qualification training (fixed firing ranges)								
Sniper and machine gun training	355 days/year (RDP pp 7-25).	230 days/year does not meet requirements (RDP pp 7-25).	355 days/year does meet requirements (construct QTR1and QTR2 at SBMR).	355 days/year does meet requirements (construct QTR1 at SBMR.	230 days/year does not meet requirements (existing capacity per RDP pp 7-25).	Meets requirements 355 days/year (construct QTR 1 at SBMR).	Does not meet requirements.	Meets requirements. Would require replication of all SBMR ranges (including QTRs) at PTA.
M4/M16 qualification	281 days/year (RDP pp 7-10).	230 days/year does not meet requirements (RDP pp 7-10).	281 days/year does meet requirements (construct QTR1 and QTR2 at SBMR).	281 days/year does meet requirements (construct QTR1 at SBMR and QTR2 at PTA).	230 days/year does not meet requirements (RDP pp 7-25).	281 days/year does meet requirements (construct QTRs 1 and 2 at Schofield Barracks).	Does not meet requirements 0 days/year available; Marine Corps Base Hawai'i has one multipurpose small arms range, used by their forces (http://www.mcbh.usmc.mil/g3/g3rrkb.htm).	Meets requirements. Would require replication of all SBMR ranges (including QTRs) at PTA.
Virtual training	Virtual training is an essential element of Army Transformation.	Does not meet requirements VFTF[1] and FTI[2] not available; cannot conduct virtual training.	Meets requirements. Construct a VFTF and FTI.	Meets requirements. Construct a VFTF and FTI.	Does not meet requirements. VFTF and FTI not available; cannot conduct virtual training.	Meets requirements. Construct a VFTF and FTI.	Does not meet requirements Not available; no other service has comparable facility.	Meets requirements. Construct a VFTF and FTI at PTA.
Collective Training								
Urban combat training	230 days/year use of Combined Arms MOUT Training Facility (RDP pp 9-7).	Does not meet requirements. Existing MOUT assault course, grenade house, and 17-building MOUT does not meet standard (RDP pp. 7-65).	230 days/year does meet requirements. Split facility at KTA (live-fire CACTF) and SBMR (urban assault course).	230 days/year does meet requirements. Split facility at KTA (live-fire CACTF) and SBMR (urban assault course).	Does not meet requirements. Existing MOUT assault course, grenade house and 17-building MOUT do not meet standard (RDP pp 7-65).	230 days/year does meet requirements Split facility at KTA (live-fire CACTF) and Schofield Barracks (Urban Assault Course).	Does not meet requirements. Not available; no other service has comparable facilities.	230 days/year does meet requirements Would require construction of live-fire CACTF and UACTF facility at PTA.
Anti-tank Missile (Javelin and TOW) training	Anti-armor live-fire and tracking range (RDP pp 7-39).	Does not meet SBCT requirements. None.	Meets requirements. Anti-armor live-fire and tracking range constructed at PTA.	Meets requirements. Anti-armor live-fire and tracking range constructed at PTA.	Does not meet requirements. None.	Does not meet requirements. No capacity to train additional SBCT units.	Does not meet requirements. Not available; no other service has comparable facilities.	Meets requirements. Anti-armor live-fire and tracking range constructed at PTA.
Collective live-fire training	241 days/year use of Battle Area Complex, Multipurpose Range Complex, Multipurpose Training Range (RDP pp 7-69).	Does not meet requirements. All collective live-fire ranges are nonstandard.	Meets requirements. Construct BAXs at SBMR and PTA.	Meets requirements. Construct BAXs at SBMR and PTA.	Does not meet requirements. All collective live-fire ranges are nonstandard.	Does not meet requirements. No capacity to train additional SBCT units.	Does not meet requirements. Not available; no other service has comparable facilities.	Meets requirements. Construct BAXs at PTA only.

[1]Virtual Fighting Training Facility
[2]Fixed Tactical Internet

under No Action, some or all of the South Range Acquisition Area (SRAA) could be acquired for current force maneuver land requirements. While the acreage and precise locations are not now known, these projects would be evaluated in separate NEPA documents.

Description of Training

Under No Action, current force training is expected to continue and could include future changes in training. These changes could result in requirements for new weapons or new strategies as potential conflicts may dictate.

Institutional Programs

USARHAW has implemented the following institutional programs at all training areas: Integrated Training Area Management (ITAM), an integrated natural resource management plan, an Integrated Cultural Resources Management Plan (ICRMP), a range development plan, institutional controls, the Integrated Wildfire Management Plan (IWFMP), and a real property management plan. Chapter 2 describes these programs in more detail. The Army would continue to fund these programs under the No Action Alternative, as funding is available, with the complexity and scope of the program proportional to the proposed land use.

ES.6.2 Proposed Action (Preferred Alternative)

Under the Proposed Action, the 2nd Brigade would be converted to an SBCT and, as such, would operate as part of the Army's Interim Force. Implementing the Proposed Action would require taking several distinct but coordinated actions and activities directly associated with transforming the 2nd Brigade. These various actions that make up the Proposed Action would include fielding Stryker Systems, SBCT-specific weapons, building new facilities, acquiring new land and additional easements, and conducting SBCT-specific training. Chapter 1, Section 1.2, describes the overall transformation process in greater detail. This EIS analyzes only the conversion of the 2nd Brigade to an SBCT and not its ultimate conversion to the future force; a separate NEPA analysis will be done for that next phase as appropriate.

Implementing the Proposed Action would require taking several actions and activities directly associated with transforming the 2nd Brigade and enhancing training capabilities. Table ES-1 compares the proposed projects for each alternative, and figures ES-1, ES-2, ES-3, and ES-4 show project locations for the Proposed Action and Reduced Land Acquisition.

After the publication of the DEIS, the Army announced plans for an enhancement package for SBCTs. The enhancements include an aviation task force, an increase from twelve to eighteen 155mm howitzers in the direct support artillery battalion, and improvements to command, control, communications, computer, and intelligence (C4I) assets. The announcements indicated that the aviation task force would include Comanche helicopters when the aircraft were ready for fielding. In February 2004, the Army determined that no further testing or fielding of Comanches would occur and canceled the Comanche program. The SBCT aviation task force will come from existing 25th ID(L) aviation brigade assets and will result in minor changes to training, primarily some increased aviation training over the

Figure ES-1
Northern O'ahu Project Overview Map

Figure ES-2
Proposed Action at Schofield Barracks Military Reservation and Wheeler Army Airfield

Figure ES-3
Project Locations at Kahuku Training Area

Figure ES-4
Pōhakuloa Project Overview

west PTA Acquisition Area (WPAA) in support of units training in that area. The FEIS has analyzed the impacts of the increased aviation training over WPAA, and those impacts are minimal. The DEIS contained an analysis of the impacts of twelve 155mm howitzers, a change from the eighteen 105mm howitzers currently in the direct support artillery battalion for the 2nd Brigade. The addition of another six 155mm howitzers was analyzed in the FEIS and resulted in minimal changes to noise impacts and no change in the overall determination of effect. The C4I improvements are not expected to have any impacts on the environment.

Overall, the Army has determined that the enhancements are within the original scope of the Proposed Action, as described in the DEIS, are minor, and do not require a supplemental DEIS.

SBCT Systems Fielding

This element of the Proposed Action involves fielding new and modernized vehicles, weapons systems, and equipment for interim forces and, ultimately, the future force, although there will be some upgrades, changes and additions.

Foremost among the new systems is the Stryker, an eight-wheeled, 22.9-foot- (7-meter-) long, 8.9-foot- (3-meter-) wide, 20-ton (18-metric-ton) combat vehicle that can be transported on the C-130 aircraft. The Stryker vehicle has a 350 HP Caterpillar Model 3126 diesel engine. The vehicle can travel at a maximum speed of 60 miles per hour and can travel 330 miles on one full tank of fuel. Although there are ten variations of the Stryker, the primary design variants are the infantry carrier vehicle (ICV) and the mobile gun system (MGS). The ICV can carry nine Soldiers and their equipment and requires a driver and a vehicle commander. The MGS would be mounted on the Stryker and would be modified to incorporate a 105mm turreted cannon and autoloader system with a crew of three. The actual vehicle used by SBCT may vary from the current Stryker vehicles as the system is developed, but overall will have the same characteristics as the current Stryker. (There are eight other configurations of the Stryker that could be used as part of the SBCT; information on the ICV, MGS, and the eight other Stryker variants is provided in Appendix C.)

The SBCT would be equipped with a tactical unmanned aerial vehicle (UAV) similar to the RQ-7A "Shadow 200" to provide day or night reconnaissance, surveillance, and target-acquisition capability. The UAV would allow tactical commanders a view into heavily protected battle space that could not be penetrated by other intelligence assets or that presents a high risk to piloted aircraft. The aircraft weighs approximately 325 pounds, has a wingspan of 13 feet (4 meters), and measures 11 feet (3 meters) from nose to tail.

The number of barge trips per year from Pearl Harbor on O'ahu to Kawaihae Harbor on the Island of Hawai'i would not change, however the logistic support vessel (LSV) trips would increase from 60 to 66 per year. A new high-speed vessel called a theatre support vessel (TSV) might be used in the future, but it is in the early planning stages. Before a determination is made, NEPA documentation will be completed as well as any Endangered Species Act or National Historic Preservation Act consultation that would be required.

The weapons proposed for the SBCT would be the same as those currently used by current force units in the 25th Infantry Division or the Hawai'i Army National Guard, with the

exception of the MGS on the Stryker, the 120mm mortar, and an increase from 12 to 18 155mm howitzers.

Construction

Proposed construction includes building, modernizing, and remodeling buildings, training facilities (e.g., live-fire training facilities), and infrastructure and demolishing buildings and facilities. It also involves ground softening at the PTA Battle Area Complex (BAX) and Anti Armor Live-fire and Tracking Range (AALFTR) by using a D-10 bulldozer that would drive back and forth over areas on the ranges to crush lava, large rocks, and hard soil to provide a softer substrate for Soldiers to train. Both of these ranges are constructed over existing ranges, so ground-softening activities would occur as needed on already heavily disturbed areas. The precise location and extent of ground softening would depend on final orientation of firing points and targets but is expected to be a fraction of the 2,825-acre (1,143-hectare) area of the two ranges. Construction activities will also include construction of Dillingham Trail, Helemano Trail, and PTA Trail on land to be acquired, as described below. Locations of construction projects are provided in Table ES-1.

Land Acquisition/Easements

This part of the Proposed Action involves real property acquisition, which means negotiating temporary or permanent control of property for Army use, mainly through purchase, lease, or permit. Under the Proposed Action, two areas would be acquired and three easements would be obtained. The two acquisition areas would be the South Range Acquisition Area (SRAA) (approximately 1,402 acres [5,666 hectares]) at SBMR and the WPAA (approximately 23,000 acres [9,308 hectares]). The three easements for military vehicle trails would include the trails between SBMR and Dillingham Military Reservation (DMR) (known as Dillingham Trail, 36 acres [14.6 hectares]), between SBMR and Helemanō Military Reservation (HMR) (known as Helemanō Trail, 13 acres [5.3 hectares]), and between Kawaihae Harbor and PTA (known as PTA Trail, 132 acres [53.4 hectares]). While the Army would not own the underlying land, the easement is a property right to the land. See Appendix D for maps and more details on the land acquisition projects. These would be joint use trails. If the proposed trail alignment changes, the Army will negotiate with the property owners on a new alignment and will conduct appropriate analysis and documentation in accordance with NEPA, ESA and NHPA.

SBCT Training

The following subsections describe the SBCT training that would occur under the Proposed Action, with emphasis on the differences between SBCT training and the current force training. Most of the nonlive-fire and other training that does not involve maneuvers by SBCT forces would be similar to that currently being conducted by the 25th ID(L). As with current force training, exercises would continue to be at the squad through company level, with some opportunities for battalion and above training. Urban operations training is more highly emphasized in SBCT requirements than in current requirements. The SBCT would use new urban warfare facilities extensively and would use existing helicopter landing and pickup zones. Nonlive-fire training also is conducted in classrooms, on rappel towers and obstacle courses, and in a variety of specialized facilities. Table ES-2 summarizes training by installation.

Although the most notable physical difference between current forces and SBCT forces is the introduction of the Stryker vehicle, operations and capabilities would also radically change. The Stryker is primarily a troop transport vehicle that would traverse terrain and obstacles to ensure protected delivery of infantry squads to their dismount points. Because of the limitations of the Stryker, most mounted movement takes place on roads or unrestricted terrain. The Stryker can maneuver across a slope that is less than 30 percent, up a slope that is less than 60 percent, and over trees less than five inches (13 centimeters) in diameter. However, the Stryker would not be allowed in areas subject to other restrictions, such as those containing rare species, cultural features, or other significant resources. The number of Strykers involved in training exercises would depend on the capacity of the training area involved. All 1,005 vehicles (including Strykers, trucks, highly mobile multiple wheeled vehicles [HMMWV], and other support vehicles) would be based at SBMR and would deploy for training when required. Mounted maneuver training would involve from one to 96 Strykers at SRAA and SBMR, one to 27 at DMR, one to 96 at KTA, and 32 to 192 at PTA. There would be no mounted maneuvers in Kawailoa Training Area (KLOA), except along Drum Road.

Dismounted Maneuver Training

As described above, Strykers would rapidly transport troops to a predetermined action area. Once at that location the troops would conduct dismounted maneuvers to train for enemy engagement. At times, training could include only dismounted maneuvers without the Stryker. During dismounted maneuvers Soldiers would walk in dispersed groups overland toward a given objective. During simulated engagement, Soldiers would seek cover or concealment, and one section may provide a base of weapons fire, while another maneuvers toward the objective.

During extended maneuver training, Soldiers may sleep in the field. To allow for quick deployment, they would not set up tents. Training may involve live-fire and nonlive-fire exercises. Nonlive-fire exercises use blank ammunition, laser weapons, and simulated artillery and mortar fire with pyrotechnics. During nonlive-fire training there would be no smoking and no aerial pyrotechnics. Helicopters may be used and would use established landing zones.

Reconnaissance Training

Reconnaissance training would be carried out in a similar manner as current force reconnaissance training, except that UAVs would provide air reconnaissance that, in combination with ground reconnaissance, would provide situational awareness and knowledge throughout a larger area. The Stryker may be used in some situations as a support vehicle for reconnaissance training.

It is anticipated that the UAV's total flying hours would amount to 2,400 hours of flight per year (4 UAVs at 600 hours per year), or 600 takeoffs and landings per year. The UAVs would not need to take off from or land at ordinary airfields but could be launched from any location using their own hydraulic launchers. An arrested recovery system using nets and/or cables would also be used, minimizing the area required for launch and recovery.

Live-Fire Training

The transformed brigade would use new and existing live-fire ranges and firing points. SBCT units would perform individual weapon and combined arms live-fire training. Use of pyrotechnics, obscurants, short-range training ammunition (SRTA), and simulators is anticipated to be similar to current use. Unless or until amended, all SBCT training would be planned and conducted in accordance with established USARHAW range and training land regulations and standard operating procedures (SOPs). The SBCT would use the same weapons and explosives as the current force, with the addition of the 105mm mobile gun system on the Stryker and the 120mm mortar, and a change from 12 105mm howitzers to 18 155mm howitzers. No live-fire training would be conducted at Wheeler Army Airfield (WAAF), KLOA, DMR, or on the WPAA.

Deployment Training

Deployment training would principally involve moving troops and equipment from SBMR to the other training areas in Hawai'i or to the continental US. As with current force training, transportation would use a combination of vehicles, vessels, and C-17 and C-130 aircraft, depending on the type and location of training. Deployment training would be similar to the current force, except SBCT units would be deployed at least twice a year to PTA from Hickam Air Force Base (HAFB) or WAAF using C-17 or C-130 aircraft. Equipment would be deployed to PTA by 66 individual LSV and four barge round trips per year. There are no adequate facilities to support deployment activities from multiple airfields in Hawai'i. The proposed Multiple Deployment Facility would provide the facilities necessary for SBCT to prepare equipment and vehicles for deployment from either WAAF or HAFB.

Aviation Training

The number and types of aircraft used for aviation training are expected to be the same as under current force training, with the exception of UAVs. However, the SBCT will not rely on helicopters in the same way light infantry units do. SBCT aviation units will not be used to transport troops but will be used more for supply, convoy support, and close air support. There will not be as many air assault operations during SBCT training.

The aircraft that are used in support of current forces in Hawai'i are the armed reconnaissance OH58D Kiowa Warriors, utility lift UH60 Blackhawks, and the medium lift CH47 Chinook. The individual use and frequency of the UAVs has yet to be determined, as these would be dictated by each individual training scenario.

Combined Live-Fire/Maneuver Training

SBCT forces would conduct dismounted training, including CALFEX events. The only increase in CALFEXs would be from the introduction of the reconnaissance, surveillance, and target acquisition (RSTA) squadron, which could conduct up to three company CALFEXs per year. The SBCT dismounted CALFEXs would be similar to the CALFEXs conducted by the current force, using the same types of weapons and similar tactics. SBCT dismounted live fire CALFEX training would occur at the SBMR BAX, PTA BAX, and possibly MMR. However, priority will be given for mounted training at PTA BAX, offering limited opportunity for dismounted training.

SBCT training requirements are not dependent on the use of MMR. While the MMR is an integral part of USARHAW training capabilities and historically used by other services, SBCT units could perform dismounted CALFEX training at other ranges. SBCT may use MMR if the range were available only after completion of the Makua EIS and ROD. The Makua EIS will analyze the potential environmental impacts associated with dismounted CALFEXs for both current forces and SBCT; therefore, this SBCT EIS does not analyze training impacts of SBCT at MMR.

Force-on-Force Training

There would be no change in force-on-force training activities under the Proposed Action except for the nonlive-fire training at WPAA. However there would be additional organizations, such as the RSTA Squadron and CSS Company that would support the force-on-force units. Force-on-force training would still occur at SBMR, KTA, and existing PTA installations.

Service Support Operations and Training

There would be no change in service support operations and training under the Proposed Action. Training would be carried out in a manner similar to current training.

Institutional Programs

Total Army transformation also affects installation management. Installation programs that directly affect the environment include range management, environmental management, and real property management. The following programs will be implemented as part of the transformation process: Sustainable Range Program, Impact Area Management, Environmental Management System, Environmental Management Programs, and Alternative Procedures for Cultural Resources Management.

ES.6.3 Reduced Land Acquisition Alternative

This alternative is identical to the Proposed Action, with two exceptions, moving Qualification Training Range 2 (QTR2) to PTA and reducing land acquisition at the SRAA (Figure ES-5). This alternative would involve downsizing the proposed SRAA by approximately 93 percent, from approximately 1,402 acres (5,666 hectares) to approximately 100 acres (40.5 hectares), which would be necessary within the SRAA for construction of the proposed SBCT Motor Pool because the motor pool must be located close to SBMR where the Soldiers are based and there is no space is available for building this facility at SBMR or WAAF. This would require that an expanded version of QTR2 be constructed at PTA rather than at the home station, SBMR. This is contrary to current training of the 25th Infantry Division, which is based on troops completing qualification training at SBMR before deploying to PTA. The larger exercises conducted at PTA are more effective if each Soldier is fully qualified at SBMR before deploying to PTA. However, the length of deployment at PTA could be extended to allow training at QTR2 before other training is conducted at PTA. Soldiers not able to qualify during deployment would have to return to PTA to complete their qualifications. The best available site for the proposed QTR2 at PTA is on the site of the current Range 8. A controlled firing area over the QTR2 at PTA would not be necessary because the range would be overlain with the existing R-3103 restricted area. This location falls within the overall boundaries of the anti-armor and live-fire tracking range

Figure ES-5
South Range Acquisition Area at Schofield Barracks Main Post

(AALFTR) also proposed for this site, meaning that both ranges could not be used for live-fire at the same time. An expanded version of QTR2, to include sniper and machine gun training, as well as pistol and M16, would be constructed at PTA, overlying the proposed AALFTR, so no new area would need to be used or ordnance impact area created. Although the purpose and need for USARHAW transformation would still be fulfilled, it would not be as efficient, and in some circumstances not every Soldier would become qualified on individual weapons before arrival at PTA. This would detract from the effectiveness of the large-unit training conducted there and would require additional training.

ES.7 ALTERNATIVES CONSIDERED BUT NOT STUDIED IN DETAIL

Several factors contributed to the development of alternatives available to USARHAW. First, any alternative must meet the purpose of and need for the action by assisting to bring the Army's interim force to operational capability and by providing realistic field training in Hawai'i while providing the nation with capabilities that meet current and evolving national defense requirements. Alternatives must be practical and feasible; that is, they must be capable of being implemented by the Army or another agency, be technically feasible, and not require commitment of resources that cannot practically be obtained. In addition, in framing alternatives, USARHAW has taken into consideration information and suggestions submitted by individuals, organizations, and public agencies. Finally each alternative, with the exception of the No Action Alternative, must meet the training needs required for an SBCT. Table ES-3 compares each alternative to the training requirements for an SBCT.

ES.7.1 Transformation of a Different Brigade at Another Location

The Army has identified the first units to be converted to interim force status as the "bridge" to the future force. HQDA directed the action proposed for implementation by the 2nd Brigade, the effects of which have been evaluated by the Army's headquarters. Section 4.2.2 of the final *Programmatic Environmental Impact Statement for Army Transformation* states, "The Army's operating forces are stationed at those installations that can provide adequate facilities (maneuver areas and training facilities) and infrastructure support. For the foreseeable future, the Army would expect to conduct its transformation of existing operating forces 'in-place.' Relocation of units would not be expected." The long-term view is that the entire Army would transform. In the short term, as indicated by the ROD for the programmatic EIS, converting units to the future force would be sequenced as directed by HQDA. The initial sequencing includes the conversion of the 2nd Brigade.

The Pacific Rim is a critical area of interest for the United States. Stationing an SBCT in Hawai'i allows the President to rapidly respond to events in an area of increasing importance to national security. This alternative does not meet that purpose and need and is not included in Table ES-3.

ES.7.2 Transformation with Existing Facilities

Under this alternative the Army would attempt to transform but would rely on existing facilities. USARHAW would propose and undertake military construction projects one project at a time to maintain training resources in an acceptable useful condition for continued current force training as SBCT moves towards the future force. Projects not associated with transformation could continue to be funded and programmed (e.g., family housing improvements or in-kind replacement of deteriorated facilities). Those associated

with transformation would have to be funded on a piecemeal basis and separate NEPA documentation would have to be prepared as each project is identified. Training would continue using existing maneuver and training facilities, under constraints similar to those now managed by unit commanders and would use new facilities as they are constructed.

The principal differences between the current force and the SBCT would be an increase in the number of personnel, introduction of the Stryker, increase in live-fire training, and modification of the training requirements to guide the unit's readiness training. Current facilities would not accommodate the needs of an SBCT, such as sufficient maneuver training land for the Stryker and automated digitally capable ranges and training facilities.

The Army seeks to have the 2nd Brigade reach its initial operational capability (IOC), that is, to be capable of executing assigned combat missions, in 2007. This would occur after Strykers, MGSs, and UAVs have been fielded and the Soldiers in the 2nd Brigade have demonstrated their ability to execute their assigned tasks, individually and collectively. IOC cannot be attained without the appropriate types of modernized training facilities with adequate capacity to train individual Soldiers and units available. As shown on Table ES-3, the existing facilities do not have the ability to provide specific training, such as virtual training with a fixed tactical internet (FTI) and antitank missile training. Furthermore shortcomings in capacity and capability of live-fire and simulation training facilities would make it impossible to train the Soldiers of the SBCT to the Army standard. Reduced training time would mean that fewer Soldiers were qualified on their individual weapons systems and that elements of the brigade would not be trained in their collective tasks. This alternative would not meet the purpose and need of the project.

ES.7.3 Transformation in Hawai'i with Maneuver Live-Fire and Nonlive-Fire Training on the Continental US Instead of Hawai'i

Under this alternative, the Army would transform by conducting collective live-fire and maneuver training on a continental US installation. All proposed cantonment facilities required to support an SBCT would be built, but no new collective maneuver ranges (nonlive-fire and live-fire) would be constructed. The Army would not acquire the 23,000-acre (9,308 hectare) WPAA adjacent to PTA. In addition, the following projects would not be built in Hawai'i under this alternative because they are tied to the relocated maneuver training:

- Battle area complexes at SBMR and PTA;
- Combined Arms Collective Training Facility (CACTF) with SRTA live-fire training at KTA;
- Urban Assault Course Training Facility (UACTF) at SBMR; and
- Anti-Armor Live-Fire and Tracking Range at PTA.

QTR1 and QTR2 would still be constructed, and the SRAA would still be needed to provide space for QTR2 and the SBCT motor pool. Both QTRs would be needed to provide day-to-day training of Soldiers on their individual weapons. The Virtual Fighting Training Facility (VFTF) to be built at SBMR is a key element of the training requirements for an SBCT

because its suite of simulators and specialized training equipment are an integral part of the transformation process.

The Army considered ranges west of the Mississippi River, to minimize travel time, and those with large enough land areas. Continental US Army installations considered as potential sites for 2nd Brigade live-fire and maneuver training include Fort Richardson and Fort Wainwright and the Donnelly Training Area in Alaska (considered as one installation for this analysis and collectively called US Army, Alaska [USARAK]), Fort Lewis and Yakima Training Center in Washington State (considered a single installation and referred to as Fort Lewis), the National Training Center at Fort Irwin in California, Fort Carson and Piñon Canyon Training Area in Colorado (considered as one installation and referred to as Fort Carson), Fort Hood in Texas, Fort Riley in Kansas, and Fort Polk in Louisiana. These are the major Army installations in the western US devoted to training US Army Forces Command units. Table ES-4 provides an overview of the installations.

In Table ES-4, "total area" is the land area in acres occupied by each military reservation. Ranges, environmental constraints, cantonment areas, and other factors, such as regulatory requirements and access, reduce actual lands available for training at each installation. "Current mission" describes the major functions of each installation. As indicated in the last column of the table, USARAK, Fort Lewis, and Fort Polk are undergoing transformation to receive SBCTs; one will be stationed in USARAK, two at Fort Lewis and one at Fort Polk. The specialized ranges, as well as the MSTF, VFTF, FTI, and installation information infrastructure architecture (I3A) projects required for SBCT training are already programmed to be built at these installations. The other installations may eventually receive similar facilities as transformation to the future force occurs over the next 30 years, but at present forts Irwin, Riley, Hood, and Carson are not capable of providing the specialized training an SBCT requires, and there are no plans to construct the required facilities at those installations.

Table ES-4 shows that, of the six installations considered, only USARAK, Fort Lewis, and Fort Polk will have the facilities required to train a Stryker brigade; therefore, the others are excluded from further consideration.

If the 2nd Brigade is to train at either of these installations, all the people, equipment, and vehicles associated with each element of the brigade would have to be transported to Alaska or Washington. This would be required to ensure that the Soldiers could train with their own equipment in accordance with Army doctrine. In addition, equipment belonging to the Stryker brigades in Alaska and Washington cannot be assumed to be available for use by Hawai'i personnel. While it is possible to move equipment by barge from O'ahu to the island of Hawai'i, Alaska and Washington are too far away for this type of transport to be practical, and the equipment and personnel would need to be airlifted. Military Traffic Management Command's Traffic Engineering Agency estimated in December 2000 at least 79 C-5 aircraft and 110 C-17 aircraft would be required to move one Stryker brigade (USARHAW 2001a) effectively removing over 80 percent of the Air Force's transport capabilities during training of one SBCT. The Air Force will receive the last of its 120 C-17 aircraft in November 2004 and has 109 C-5 aircraft, with no more coming. Only 6 C-17s are proposed to be stationed in Hawai'i and will replace 4 C-130s currently stationed in Hawai'i.

Table ES-4
Continental US Army Installations Considered

Installation, State	Total Area (acres)	Current Mission	SBCT Required Facilities Available?
Fort Richardson Fort Wainwright Donnelly Training Area, Alaska	71,441 (28, 923 hectares) 656,241 (265.684 hectares) 640,488 (259,290 hectares)	Home to 172nd Infantry Brigade; programmed for one SBCT.	Will be constructed.[1]
Fort Lewis Yakima Training Center, Washington	86,174 (34,888 hectares) 316,786 (128,253 hectares)	Home to I Corps, 1st Brigade of the 25th ID(L), and the 3rd Brigade of the 2nd Infantry Division. Programmed for two SBCTs.	Will be constructed.[1]
National Training Center, Fort Irwin, California	636,251 (257,591 hectares)	National Training Center—desert training of heavy Army forces.	No
Fort Carson Piñon Canyon Maneuver Site, Colorado	137,404 (55,629 hectares) 235,896 (95,504 hectares)	Home to 7th Infantry Division (mechanized).	No
Fort Hood, Texas	214,352 (86,782 hectares)	Home to III Corps, 1st Cavalry Division, 4th Infantry Division (mechanized).	No
Fort Riley, Kansas	100,656 (40,751 hectares)	Home to the 24th Infantry Division (mechanized).	No
Fort Polk, Louisiana	198,143 (80,220 hectares)	Home of the Joint Readiness Training Center and 2nd Armored Cavalry Regiment.	Will be constructed.[1]

[1]Facilities of the type used to train an SBCT will ultimately be built at all major Army training installations as part of transformation to the future force, except the AALFTR (which is specifically designated for Hawai'i).

Source: Acreage from Table C-8, US Army 2002c

Even though the entire brigade may not need to be transported at one time, moving even one rifle battalion would tie up a substantial portion of the Air Force's airlift capability for an extended period of time. Air Force airlift support would be unavailable for other uses, including actual wartime deployments of the force. Aside from the substantial costs of such operations, it is impractical to expect the Air Force to commit so large a percentage of its resources to support a training exercise.

USARHAW staff estimates that each deployment, including preparation and debrief, would take five days total. Flight times are estimated at six hours each way. Assuming that maneuver training is to be conducted four times per year, approximately 40 training days of the available 270 would be lost during deployments to Alaska or Washington.

An analysis of USARAK and Fort Lewis training facilities and capacity was conducted as an appendix to the USARHAW Range Development Plan. It showed that Fort Lewis and USARAK would lack adequate collective live-fire training facilities to support an additional SBCT. Neither USARAK nor Fort Lewis is proposing to build an anti-armor live-fire and tracking range to provide the capacity for training that has been programmed for Hawai'i. The Army proposes to conduct anti-armor live-fire training at these facilities on ranges constructed for other uses. This requires careful scheduling to avoid conflicts, and adding an

additional SBCT would reduce the throughput capacity to unacceptable levels. Because Fort Polk will already be training an SBCT unit, as well as conducting joint readiness training, the addition of a second SBCT would compromise Fort Polk's capacity to train their Soldiers, a situation that is considered unacceptable.

Owing to climate limitations, training can be conducted only 205 days per year at Fort Wainwright and 224 days per year at Fort Richardson, weather permitting, whereas training in Hawai'i can be conducted 270 days per year. This limitation of training for the SBCT to be stationed in USARAK is considered an acceptable compromise when taken as a part of the Army's overall stationing strategy. However, if the SBCT proposed for stationing in Hawai'i were limited to training only when weather allowed in Alaska, the SBCT's ability to train its units could be diminished, as USARAK's forces would have priority.

In addition, if wartime situations required deploying Hawai'i's SBCT while training on the continental US, the SBCT forces would need to return to Hawai'i for full deployment, making it impossible to meet the 96-hour deployment goal.

In summary, the alternative of conducting collective live-fire training of the 2nd Brigade of the 25th Infantry Division on continental US installations is not feasible or practical and will not meet the purpose and need of the project for the following reasons:

- The Hawai'i-based SBCT could not meet its training requirements using facilities at Forts Irwin, Hood, Riley, and Carson because they lack the specialized facilities required to train an SBCT, and at present there are no plans to construct them;
- The Hawai'i-based SBCT could not meet its training requirements at Fort Lewis and USARAK, which are also to receive SBCTs, because they would not have adequate collective live-fire training capacity to support the requirements of an additional SBCT;
- Transporting a Hawai'i-based SBCT to the continental US for training would consume an unacceptably large portion of the Air Force's strategic airlift capability needed to meet its other missions and would result in a loss of at least 28 training days while in transit; and
- If an SBCT were training at either USARAK or Fort Lewis and military actions required its deployment to an action area, the brigade would have to return to Hawai'i to assemble for full deployment. This would prevent the SBCT from meeting its goal to deploy worldwide within 96 hours.

ES.7.4 Transformation Using Other Existing Military Facilities and Existing USARHAW Facilities in Hawai'i

Under this alternative the Army would attempt to transform relying on existing facilities at USARHAW and other military facilities in Hawai'i not under USARHAW's control. Other branches of the Armed Forces in Hawai'i train at existing Army facilities because they do not have adequate live-fire ranges themselves. In addition, there are no additional maneuver lands available at other bases in Hawai'i.

The Army seeks to have the 2nd Brigade obtain IOC in 2007. This would occur after the unit receives its required Strykers and MGSs and the training necessary to execute its mission. Adequate facilities are required to effectively train to Army-established IOC standards. IOC cannot be attained without the appropriate types of modernized training facilities with adequate capacity to train individual Soldiers and units available. Limited facilities would result in reduced training time, which would mean that fewer Soldiers would be qualified on their individual weapons systems and that elements of the brigade would not be trained in their collective tasks. Shortcomings in capacity and capability of live-fire and simulation training facilities for individual and crew-served weapons, including the lack of a shoothouse, mock villages, and other modernized training facilities, would make it impossible to train the Soldiers of the SBCT to the Army standard.

ES.7.5 Transforming by Moving All Training to PTA

Under this alternative the Army would attempt to transform by moving all SBCT training to PTA. USARHAW would propose and construct all military construction projects and would also construct new barracks, unit headquarters, classrooms, simulation training facilities, family housing, qualification training ranges, and community-support facilities on the island of Hawai'i. All training requirements for SBCT could be met, with the exception of the maneuver training, as approximately 15,219 acres (6,159 hectares) of maneuver lands on O'ahu would not be available or acquired for use. However, a substantial amount of land would need to be acquired to accommodate all the new support facilities required for this alternative, essentially everything that now exists on SBMR and WAAF. Aside from the enormous cost, PTA lacks sufficient water, electric power, sewage treatment capability, and road access to support the required population. In addition, construction of all these support facilities would eliminate additional maneuver lands, further increasing the shortfall for maneuver lands.

The Army seeks to have the 2nd Brigade obtain IOC in 2007. This would occur after the unit receives its required Strykers and MGSs and the training necessary to execute its mission. IOC cannot be attained without the proper types of facilities being readily available and having adequate capacity for training the requisite number of units. Although enough land may be available for acquisition for maneuver training and the required construction of an entire new military installation, SBCT Soldiers would not be able to conduct air deployment training operations between SBMR and PTA. Table ES-3 has a comparison of all alternatives to the training requirements for an SBCT. In the absence of adequate maneuver training, Soldiers would not be adequately trained for deployment.

This alternative is not feasible even though the training requirements for an SBCT would be met because the infrastructure at PTA could not handle the housing and other needs of stationing the SBCT at PTA. This would require substantial travel between housing at O'ahu and training at PTA resulting in lost training days. Therefore, this alternative was not evaluated in detail in the EIS.

ES.7.6 Alternative Land Purchases Considered

In response to public comments about alternative land acquisitions the following previously considered information has been added to the Final EIS.

Pu'u Pā

Pu'u Pā is approximately 14,000 acres (5,666 hectares) farther to the west, northwest of WPAA, next to the town of Waimea. This parcel is close to, but not contiguous with, PTA. USARHAW has habitually used the WPAA more often because it was adjacent to PTA, but the current and proposed tank trail goes through both. The Pu'u Pā parcel was eliminated from detailed analysis because of the following factors:

- The terrain is rougher and less likely to support vehicle maneuver than the WPAA and the parcel is too small, which would require additional purchases elsewhere;
- The area is not contiguous with PTA, requiring the use of public roads to transit from PTA and Pu'u Pā;
- It could have a greater environmental impact in some portions because there is excessive grass that has not been grazed in several years;
- The area is between the community of Waimea and the ocean and would have greater impacts on the scenic viewshed because of visible maneuver activities and dust;
- There are numerous known archaeological sites that would result in additional legal requirements; and
- The parcel is closer to built-up areas (the town of Waimea), increasing concerns about noise and dust.

Lualualei

Naval Magazine Lualualei lies in a large coastal valley near the southwestern shoreline of O'ahu approximately 10 miles southwest of Wahiawa and occupies 8,105 acres of the valley. The nearest urban area is the town of Maili, which lies approximately a mile west. The towns of Waianae and Nanakuli are also nearby. The parcel was eliminated from further analysis because of the following factors:

- The site has extensive environmental and encroachment concerns, including 192 cultural sites, over 25 endangered species in close proximity, wetlands, and a possible hazardous material spill site;
- The site cannot accommodate vehicle maneuvers, so additional lands would need to be purchased and public roads would have to be used to access the site; and
- The cost would be very high considering the limitations on construction and potential cleanup costs.

ES.8 ENVIRONMENTAL ANALYSIS

The environmental analysis evaluates the potential environmental consequences associated with the Proposed Action, Reduced Land Acquisition Alternative, and No Action. Only those environmental and socioeconomic conditions relevant to the Proposed Action are presented, including land use and recreation, visual resources, airspace, air quality, noise, traffic, water resources, geology, soils, and seismicity, biological resources, cultural resources, human health and safety hazards, socioeconomics and environmental justice, and public services and utilities.

The evaluation of potential impacts on any given resource was based on the project potential to conflict with existing laws and regulations, and effects on specific resource components as described in Chapter 4. A specific set of criteria was used for each resource to make a significance determination. Based on this analysis each impact was identified as significant, or having a significant impact on the resource, or less than significant, having an impact but to a less than significant level. For each significant impact specific mitigation measures were identified that, when implemented, would reduce the impacts to less than significant: these are identified as significant impacts mitigable to less than significant.

ES.8.1 Affected Environment Overview

Chapter 3, Affected Environment Overview, provides the general baseline physical, biological, social, and economic conditions that occur within the region of influence (ROI) of the Proposed Action. As applicable, each section gives a background on how the resource is related to the Proposed Action, a general overview of relevant legislative requirements governing the resource, followed by any standard operating procedures the Army maintains to protect the resource. The remainder of the section discusses the general conditions of the resource within the ROI.

ES.8.2 Environmental and Socioeconomic Consequences

Chapter 4, Environmental and Socioeconomic Consequences Overview, describes the impact methodology and factors considered for impact analysis, which are used to determine the level of significance of potential environmental impacts. It also presents a summary of the overall potential environmental impacts of the Proposed Action, the Reduced Land Acquisition Alternative, and No Action when projects at all of the military installations are considered together. Table ES-5 summarizes the impact levels to environmental and socioeconomic resources at each installation for the alternatives.

The summary of impact levels to environmental and socioeconomic resources is based on the analysis of the Proposed Action, Reduced Land Acquisition, and No Action done for each installation (SBMR, DMR, KTA, and PTA) in Chapters 5 through 8. In these chapters, installation-specific environmental conditions for each of the project areas are discussed and the potential environmental impacts of the Proposed Action, Reduced Land Acquisition, and No Action are identified. For each impact, a determination has been made as to whether it would be significant or less than significant. Mitigation measures are identified for any impacts determined to be significant. Beneficial impacts are identified where applicable. There may be both adverse and beneficial impacts within a single resource category; for instance, a project could interfere with a pre-existing land use such as agriculture (an adverse impact) while expanding public access to recreational resources (a beneficial impact).

Tables ES-6 and ES-7 provide lists of environmental impacts by specific SBCT project and resource category. This gives the public and reviewers a more detailed evaluation of impacts deriving from specific SBCT-related actions.

Table ES-5
Summary of Impact Levels from the Proposed Action, Reduced Land Acquisition, and No Action

Impact Issue	SBMR			DMR			KTA/KLOA			PTA			Project-Wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Land use/ Recreation	⊘	⊙	○	⊙	⊙	○	⊗/○	⊗/○	○/○	⊙+	⊙+	○	⊗+	⊗+	○
Visual resources	⊘	⊘	⊙	⊘	⊘	⊙	⊙/○	⊙/○	⊙/○	⊘	⊘	⊙	⊘	⊘	⊙
Air space	○	○	○	○	○	○	○/○	○/○	○/○	⊙	⊙	○	⊙	⊙	○
Air quality	⊘	⊘	⊙	⊘	⊘	⊙	⊘/○	⊘/○	⊙/○	⊗	⊗	⊙	⊗	⊗	⊙
Noise	⊗*	⊗*	⊗	⊙	⊙	⊙	⊙/○	⊙/○	⊙/○	⊘	⊘	⊙	⊗	⊗	⊗
Traffic	⊙	⊙	○	⊙	⊙	○	⊙/⊙	⊙/⊙	○/○	⊙+	⊙+	○	⊙+	⊙+	⊙
Water resources	⊘	⊘	⊙	⊙	⊙	⊙	⊘/⊙	⊘/⊙	⊘/○	⊙	⊙	⊙	⊘	⊘	⊘
Geology and soils	⊗	⊘	⊘	⊗	⊗	⊘	⊗/⊘	⊗/⊘	⊘/⊙	⊗	⊗	⊘	⊗	⊗	⊘
Biological resources	⊗	⊗	⊗	⊘	⊘	⊘	⊗/⊘	⊗/⊘	⊗/⊘	⊗	⊗	⊗	⊗	⊗	⊗
Cultural resources	⊗	⊗	⊙	⊗	⊗	⊙	⊗/⊙	⊗/⊙	⊙/⊙	⊗	⊗	○	⊗	⊗	⊙
Human health & safety hazards	⊘	⊘	⊙	⊘	⊘	⊙	⊘/⊘	⊘/⊘	⊙/⊙	⊘	⊘	⊙	⊘	⊘	⊙
Socioeconomics	⊘+	⊘+	○	⊙+	⊙+	○	⊙+/○	⊙+/○	○/○	⊘+	⊘+	○	⊘+	⊘+	○
Utilities	⊙	⊙	○	⊙+	⊙+	○	⊙+/○	⊙+/○	○/○	⊙+	⊙+	○	⊙+	⊙+	○

This table summarizes project-wide impacts. For installation-specific impacts see Chapters 5 through 8.
In cases when there would be both beneficial and adverse impacts, both are shown on this table. Mitigation measures would only apply to adverse impacts.

* The PA and RLA for SBMR would have a minor increase in noise impacts over the NA. The determination of significance is based on existing NA levels.

LEGEND:

PA = Proposed Action
RLA = Reduced Land Acquisition
NA = No Action
⊗ = Significant impact
⊘ = Significant but mitigable to less than significant impact
⊙ = Less than significant
○ = No impact
\+ = Beneficial impact
N/A = Not applicable

Table ES-6
SBCT Project Impacts under Proposed Action

1391 Project #/ Graphics Code	SBCT Project Title	Location	Land Use/Recreation	Visual Resources	Airspace	Air Quality	Noise	Traffic	Water Resources	Geology and Soils	Biological Resources	Cultural Resources	Human Health & Safety Standards	Socioeconomics /EJ	Utilities
		SBMR/WAAF													
58143/S1	Urban Assault Course and Training Facilities	Main Post	⊙	⊘	○	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊘	⊙+	⊙+
57404/S2	Virtual Fighting Training Facility	Main Post	⊙	⊘	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙+	⊙+
56923/S3	Range Control Facility	Main Post	⊙	⊘	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊙+	⊙+
58144/S4	Battle Area Complex	Main Post	⊙	⊘	○	⊙	⊙	⊙	⊙	⊙	⊘	⊗	⊘	⊙+	⊙+
57421/ 58925/S5	Motor Pool Maintenance Shops	Main Post	⊙	⊘	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊙+	⊙+
57416/S6	Tactical Vehicle Wash Facility	East Range	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊙	⊙+	⊙
N/A/S7	Fixed Tactical Internet	Main Post	⊙	⊙	○	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	○	○+
55270/S8	South Range Land Acquisition	SRAA	⊙	○	○	○	○	○	○	○	○	○	○	○	○
57461/S9	Qualification Training Range, QTR1	Main Post	⊙	⊘	○	⊙	⊙	⊙	⊙	⊙	⊘	⊗	⊘	⊙+	⊙+
57462/S10	Qualification Training Range, QTR2	SRAA	⊘	⊘	○	⊙	⊙	⊙	⊙	⊙	⊘	⊗	⊘	⊙+	⊙+
57422/S11	Multiple Deployment Facility	WAAF	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊙+	⊙
57405/S12	Upgrade Airfield for C-130 Aircraft	WAAF	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙+	⊙
N/A/ N/A	SBCT Training	SBMR	⊙	⊙	○	⊘	⊘	⊙	⊘	⊗	⊗	⊗	⊘	⊘	⊙
57406/K3	Road Construction, Schofield to Helemanō	Helemanō	⊙	⊘	○	⊙	⊙	⊙	⊙	⊘	⊙	⊙	⊙	⊙+	⊙

Table ES-6
SBCT Project Impacts under Proposed Action *(continued)*

1391 Project #/ Graphics Code	SBCT Project Title	Location	Land Use/Recreation	Visual Resources	Airspace	Air Quality	Noise	Traffic	Water Resources	Geology and Soils	Biological Resources	Cultural Resources	Human Health & Safety Standards	Socioeconomics/ EJ	Utilities
57802/K4	Land Easement, Schofield to Helemanō	Helemanō	⊙	○	○	○	○	○	○	○	○	○	○	○	○
		Dillingham													
58161/D1	Land Easement/Construct Road, SB/DMR	Dillingham	⊙	⊘	○	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊙	⊙+	⊙+
N/A/S7	Fixed Tactical Internet	Dillingham	⊙	⊙	○	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	○+	○+
N/A/N/A	SBCT Training	Dillingham	⊙	⊙	○	⊘	⊙	⊙	⊙+	⊗	⊘	⊗	⊘	⊙	⊙
		KTA/KLOA													
57415/K1	Tactical Vehicle Wash Facility	Kahuku	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊙	⊙+	⊙
57305/K2	Combined Arms Collective Training Facility	Kahuku	⊗	⊙	○	⊙	⊙	⊙	⊙	⊙	⊘	⊗	⊙	⊙+	⊙+
N/A/S7	Fixed Tactical Internet	KTA	⊙	⊙	○	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	○+	○+
N/A/ N/A	SBCT Training	KTA/KLOA	⊙	⊙	○	⊘	⊙	⊙	⊘	⊗	⊗	⊗	⊘	⊙	⊙
		PTA													
57197/P1	Battle Area Complex	Pōhakuloa	⊙	⊙	○	⊙	⊙	⊙	⊙	⊘	⊘	⊗	⊘	⊙+	⊙+
57183/P2	Antiarmor Live-fire and Tracking Range	Pōhakuloa	⊙	⊙	○	⊙	⊙	⊙	⊙	⊘	⊘	⊗	⊘	⊙+	⊙+
58273/P3	Construct Military Vehicle Trail, PTA-Kawaihae	Pōhakuloa	⊙	⊘	○	⊙	⊙	⊙+	⊙	⊘	⊘	⊗	⊙	⊙+	⊙
58273/P4	Land Easement for Military Vehicle Trail, PTA-Kawaihae	Pōhakuloa	⊙	○	○	○	○	○	○	○	○	○	○	○	○
57417/P5	Ammunition Storage	Pōhakuloa	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊘	⊙+	⊙+
57414/P6	Tactical Vehicle Wash Facility	Pōhakuloa	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙+	⊙

Table ES-6
SBCT Project Impacts under Proposed Action *(continued)*

1391 Project #/ Graphics Code	SBCT Project Title	Location	Land Use/Recreation	Visual Resources	Airspace	Air Quality	Noise	Traffic	Water Resources	Geology and Soils	Biological Resources	Cultural Resources	Human Health & Safety Standards	Socioeconomics/ EJ	Utilities
57411/P7	West PTA Maneuver Training Area Land Acquisition	Pōhakuloa	⊙+	○	○	○	○	○	○	○	○	○	○	○	○
56994/P8	Range Maintenance Facility	Pōhakuloa	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊙+	⊙
57408/P9	Runway Upgrade/Extension, Bradshaw AAF	Pōhakuloa	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊙	⊙+	⊙
N/A/P10	Fixed Tactical Internet	Pōhakuloa	⊙	⊘	○	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙+	○+
N/A/P11	Installation Information Infrastructure Architecture	Pōhakuloa	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙+	○+
N/A/ N/A	SBCT Training	Pōhakuloa	⊙	⊙	⊙	⊗	⊘	⊙	⊙	⊗	⊗	⊗	⊘	⊙	⊙

In cases when there would be both beneficial and adverse impacts, both are shown on this table. Mitigation measures would only apply to adverse impacts.

LEGEND:

⊗ = Significant impact
⊘ = Significant but mitigable to less than significant impact
⊙ = Less than significant
○ = No impact
\+ = Beneficial impact
N/A = Not applicable

Table ES-7
SBCT Project Impacts under RLA Alternative

1391 Project #	SBCT Project Title	Location	Land Use/Recreation	Visual Resources	Airspace	Air Quality	Noise	Traffic	Water Resources	Geology and Soils	Biological Resources	Cultural Resources	Human Health & Safety Standards	Socioeconomics /EJ	Utilities
		SBMR/WAAF													
58143	Urban Assault Course and Training Facilities	Main Post	⊙	⊘	○	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊘	⊙+	⊙+
57404	Virtual Fighting Training Facility	Main Post	⊙	⊘	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙+	⊙+
56923	Range Control Facility	Main Post	⊙	⊘	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊙+	⊙+
58144	Battle Area Complex	Main Post	⊙	⊘	○	⊙	⊙	⊙	⊙	⊙	⊘	⊗	⊘	⊙+	⊙+
57421/ 58925	Motor Pool Maintenance Shops	Main Post	⊙	⊘	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊙+	⊙+
57416	Tactical Vehicle Wash Facility	East Range	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊙	⊙+	⊙
N/A	Fixed Tactical Internet	Main Post	⊙	⊙	○	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	○	○+
55270	South Range Land Acquisition	SRAA	⊙	○	○	○	○	○	○	○	○	○	○	○	○
57461	Qualification Training Range, QTR1	Main Post	⊙	⊘	○	⊙	⊙	⊙	⊙	⊙	⊘	⊗	⊘	⊙+	⊙+
57422	Multiple Deployment Facility	WAAF	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊙+	⊙
57405	Upgrade Airfield for C-130 Aircraft	WAAF	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙+	⊙
N/A	SBCT Training	SBMR	⊙	⊙	○	⊘	⊘	⊙	⊘	⊗	⊗	⊗	⊘	⊘	⊙
57406	Road Construction, Schofield to Helemanō	Helemanō	⊙	⊘	○	⊙	⊙	⊙	⊙	⊘	⊙	⊙	⊙	⊙+	⊙

Table ES-7
SBCT Project Impacts under RLA Alternative *(continued)*

1391 Project #	SBCT Project Title	Location	Land Use/Recreation	Visual Resources	Airspace	Air Quality	Noise	Traffic	Water Resources	Geology and Soils	Biological Resources	Cultural Resources	Human Health & Safety Standards	Socioeconomics/ EJ	Utilities
57802	Land Easement, Schofield to Helemanō	Helemanō	⊙	○	○	○	○	○	○	○	○	○	○	○	○
		Dillingham													
58161	Land Easement/Construct Road, SB/DMR	Dillingham	⊙	⊘	○	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊙	⊙+	⊙+
N/A	Fixed Tactical Internet	Dillingham	⊙	⊙	○	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	○+	○+
N/A	SBCT Training	Dillingham	⊙	⊙	○	⊘	⊙	⊙	⊙+	⊗	⊘	⊗	⊘	⊙	⊙
		KTA/KLOA													
57415	Tactical Vehicle Wash Facility	Kahuku	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊙	⊙+	⊙
57305	Combined Arms Collective Training Facility	Kahuku	⊗	⊙	○	⊙	⊙	⊙	⊙	⊙	⊘	⊗	⊙	⊙+	⊙+
N/A	Fixed Tactical Internet	KTA	⊙	⊙	○	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	○+	○+
N/A	SBCT Training	KTA/KLOA	⊙	⊙	○	⊘	⊙	⊙	⊘	⊗	⊗	⊗	⊘	⊙	⊙
		PTA													
57197	Battle Area Complex	Pōhakuloa	⊙	⊙	○	⊙	⊙	⊙	⊙	⊘	⊘	⊗	⊘	⊙+	⊙+
57183	Antiarmor Live-fire and Tracking Range	Pōhakuloa	⊙	⊙	○	⊙	⊙	⊙	⊙	⊘	⊘	⊗	⊘	⊙+	⊙+
58273	Construct Military Vehicle Trail, PTA-Kawaihae	Pōhakuloa	⊙	⊘	○	⊙	⊙	⊙+	⊙	⊘	⊘	⊗	⊙	⊙+	⊙
58273	Land Easement for Military Vehicle Trail, PTA-Kawaihae	Pōhakuloa	⊙	○	○	○	○	○	○	○	○	○	○	○	○

Table ES-7
SBCT Project Impacts under RLA Alternative *(continued)*

1391 Project #	SBCT Project Title	Location	Land Use/Recreation	Visual Resources	Airspace	Air Quality	Noise	Traffic	Water Resources	Geology and Soils	Biological Resources	Cultural Resources	Human Health & Safety Standards	Socioeconomics/ EJ	Utilities
57417	Ammunition Storage	Pōhakuloa	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊘	⊙+	⊙+
57414	Tactical Vehicle Wash Facility	Pōhakuloa	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙+	⊙
57411	West PTA Maneuver Training Area Land Acquisition	Pōhakuloa	⊙+	○	○	○	○	○	○	○	○	○	○	○	○
56994	Range Maintenance Facility	Pōhakuloa	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊙+	⊙
57408	Runway Upgrade/Extension, Bradshaw AAF	Pōhakuloa	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊘	⊙	⊙+	⊙
N/A	Fixed Tactical Internet	Pōhakuloa	⊙	⊘	○	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙+	○+
N/A	Installation Information Infrastructure Architecture	Pōhakuloa	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙+	○+
N/A	SBCT Training	Pōhakuloa	⊙	⊙	⊙	⊗	⊘	⊙	⊙	⊗	⊗	⊗	⊘	⊙	⊙
57462	Qualification Training Range, QTR2	Pōhakuloa	⊙	⊙	○	⊙	⊙	⊙	⊙	⊘	⊘	⊗	⊘	⊙+	⊙+

Legend is provided above under Table ES-6.

ES.8.3 Summary of Impacts

Land Use/Recreation

Table ES-8 provides an overview of Land Use/Recreation impacts on each installation from the Proposed Action, RLA Alternative, and No Action.

Table ES-8
Land Use/Recreation Impacts by Installation and Impact Category

Impact Issues	SBMR			DMR			KTA/KLOA			PTA			Project-wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Land Use/Recreation															
Conversion of agricultural land to training land	⊘	⊙	○	⊙	⊙	○	N/A	N/A	N/A	⊙	⊙	○	⊙	⊙	○
Impacts on natural resources management and recreational land use	⊙	○	○	○	○	○	⊗/○	⊗/○	○/○	○+	○+	○	⊗+	⊗+	○
Construction of FTI in a Conservation District	⊙	⊙	○	⊙	⊙	○	N/A	N/A	N/A	⊙	⊙	○	⊙	⊙	○
Impacts on land use during construction activities	⊙	⊙	○	⊙	⊙	○	⊙/○	⊙/○	○/○	⊙	⊙	○	⊙	⊙	○
SBCT training on lands used for current training	⊙	⊙	○	⊙	⊙	○	⊙/○	⊙/○	○/○	⊙	⊙	○	⊙	⊙	○

In cases when there would be both beneficial and adverse impacts, both are shown on this table. Mitigation measures apply only to adverse impacts.

LEGEND:

⊗ = Significant
⊘ = Significant but mitigable to less than significant
⊙ = Less than significant
○ = No impact
\+ = Beneficial impact
N/A = Not applicable
PA = Proposed Action
RLA = Reduced Land Acquisition
NA = No Action

Proposed Action. Significant impacts on land use would result from operation of the CACTF at KTA (see Section 7.2), which would result in a surface danger zone preventing unauthorized access within KTA. Significant but mitigable impacts would occur at SBMR as a result of the use of the SRAA for QTR2, which would affect land use within a portion of the Honouliuli Preserve (see Section 5.2). Beneficial impacts would be realized at the WPAA from the expansion of public access for hunting during periods when no military training is taking place (see Section 8.2).

Reduced Land Acquisition. Project impacts would be the same, except there would be no impact on recreational uses on lands within SRAA, as the QTR2 would not be built at SRAA (see Section 5.2).

No Action. Under No Action, transformation would not occur, so no major changes to training areas would take place in Hawai'i. The Army would continue to operate and maintain its range, training areas, and support facilities in order to meet its current force

training mission requirement. However, the level of training would change occasionally in response to this requirement and, as a result, the land uses of these areas may change. If future changes could affect the environment, NEPA documentation would be prepared.

Visual Resources

Table ES-9 provides an overview of Visual Resources impacts on each installation from the Proposed Action, RLA Alternative, and No Action.

Table ES-9
Visual Impacts by Installation and Impact Category

Impact Issues	SBMR			DMR			KTA/KLOA			PTA			Project-wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Visual Resources															
Impairment of view during the construction phase	⊘	⊘	○	⊙	⊙	○	⊙/○	⊙/○	○/○	⊙	⊙	○	⊘	⊘	○
Modification of existing view	⊘	⊘	○	⊘	⊘	○	⊙/○	⊙/○	○/○	⊘	⊘	○	⊘	⊘	⊙
Alteration of the landscape character	⊘	⊘	○	⊙	⊙	○	⊙/○	⊙/○	○/○	⊙	⊙	○	⊘	⊘	○
Consistency with visual resource policies	⊙	⊙	○	⊙	⊙	○	⊙/○	⊙/○	○/○	⊙	⊙	○	⊙	⊙	○
Impairment of view from visible fugitive dust	⊙	⊙	○	⊙	⊙	○	⊙/○	⊙/○	○/○	⊙	⊙	○	⊙	⊙	○
Alter nighttime light and glare	⊙	⊙	○	⊙	⊙	○	⊙/○	⊙/○	○/○	⊙	⊙	○	⊙	⊙	○

This table summarizes project-wide impacts. For installation-specific impacts see Chapters 5 – 8.
Legend is provided above under Table ES-8.

Proposed Action. Significant but mitigable impacts would occur at SBMR (see Section 5.3) from impairment of views during project construction activities and from alteration of landscape character because of facility construction, and at SBMR, DMR, and PTA (see Sections 5.3, 6.3, and 8.3) from modification of existing views relating to road construction. Project-wide significant but mitigable impacts would occur relating to impairment of views, modification of existing views, and alteration of landscape character (see Section 4.3).

Reduced Land Acquisition. The impacts to visual resources at SRAA would be reduced somewhat but would still be impacted by construction (see Section 5.3). Overall, the project impacts would be the same as the Proposed Action.

No Action. The baseline of current conditions and training exercises at all of the facilities would continue under No Action. The Army would continue to operate and maintain its range and training area facilities in order to meet its training mission requirement. Invariably, the level of training would change occasionally in response to this requirement, and, consequently, the visual impact as a result of these changes might be altered as well. The

level of use of the installation's training assets is not anticipated to alter the physical character of the landscape itself, and no impacts are expected to the six visual resources impact issues.

Airspace

Table ES-10 provides an overview of Airspace impacts on each installation from the Proposed Action, RLA Alternative, and No Action.

Table ES-10
Airspace Impacts by Installation and Impact Category

Impact Issues	SBMR			DMR			KTA/KLOA			PTA			Project-wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Airspace															
Reduction in navigable airspace	○	○	○	○	○	○	○/○	○/○	○/○	○	○	○	○	○	○
New or modified special use airspace	○	○	○	○	○	○	○/○	○/○	○/○	○	○	○	○	○	○
Change to a military training route	○	○	○	○	○	○	○/○	○/○	○/○	○	○	○	○	○	○
Change in en route airways or IFR procedure	○	○	○	○	○	○	○/○	○/○	○/○	⊙	⊙	○	⊙	⊙	○
Restrict access to airport/airfield	○	○	○	○	○	○	○/○	○/○	○/○	○	○	○	○	○	○
Obstruct air navigation	○	○	○	○	○	○	○/○	○/○	○/○	○	○	○	○	○	○
Aviation safety	○	○	○	○	○	○	○/○	○/○	○/○	○	○	○	○	○	○

Legend is provided above under Table ES-8.

Proposed Action. There would be no significant or significant but mitigable impacts on airspace as a result of the Proposed Action.

Reduced Land Acquisition. Project impacts would be the same as the Proposed Action.

No Action. The current baseline of existing conditions would continue under No Action. There would be no direct impacts on airspace at any of the locations because none of the factors considered in determining impacts apply.

Air Quality

Table ES-11 provides an overview of Air Quality impacts on each installation from the Proposed Action, RLA Alternative, and No Action.

Proposed Action. Significant impacts from wind erosion of areas disturbed by military vehicle use would occur at PTA (see Section 8.5). Mitigation measures will substantially reduce the severity of the impact but not to less than significant levels. Significant but mitigable impacts from wind erosion of areas disturbed by military vehicle use would occur at KTA (see section 7.5). Project-wide PM_{10} emissions from wind erosion would average 1,769 tons (1,629 metric tons) per year before mitigation. Significant but mitigable impacts from fugitive dust raised by military vehicle use would occur at SBMR, DMR, KTA, and PTA (see

Table ES-11
Air Quality Impacts by Installation and Impact Category

Impact Issues	SBMR			DMR			KTA/KLOA			PTA			Project-wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Air Quality															
Emissions from construction activities	⊙	⊙	○	⊙	⊙	○	⊙/○	⊙/○	○/○	⊙	⊙	○	⊙	⊙	○
Emissions from ordnance use	⊙	⊙	⊙	⊙	⊙	⊙	⊙/○	⊙/○	⊙/○	⊙	⊙	⊙	⊙	⊙	⊙
Engine emissions from military vehicle use	⊙	⊙	⊙	⊙	⊙	⊙	⊙/○	⊙/○	⊙/○	⊙	⊙	⊙	⊙	⊙	⊙
Fugitive dust from military vehicle use	⊘	⊘	⊙	⊘	⊘	⊙	⊘/○	⊘/○	⊙/○	⊘	⊘	⊙	⊘	⊘	⊙
Wind erosion from areas disturbed by military vehicle use	⊙	⊙	⊙	⊙	⊙	⊙	⊘/○	⊘/○	⊙/○	⊗	⊗	⊙	⊗	⊗	⊙
Emissions from increased aircraft operations	⊙	⊙	⊙	⊙	⊙	⊙	⊙/○	⊙/○	⊙/○	⊙	⊙	⊙	⊙	⊙	⊙
Emissions from wildfires	⊙	⊙	⊙	⊙	⊙	⊙	⊙/○	⊙/○	⊙/○	⊙	⊙	⊙	⊙	⊙	⊙
Other emissions from personnel increases	⊙	⊙	⊙	○	○	○	○/○	○/○	○/○	○	○	○	⊙	⊙	⊙

Legend is provided above under Table ES-8.

Sections 5.5, 6.5, 7.5, and 8.5). Annual fugitive dust PM_{10} emissions from off road military vehicle use would total 1,736 tons (1,575 metric tons) per year, or a net increase of 780 tons per year at SBMR, 211 tons per year at DMR, 315 tons per year at KTA, and 429 tons per year at PTA, before mitigation.

Reduced Land Acquisition. Project impacts would be nearly the same as under the Proposed Action. Fugitive dust emissions at SBMR would be slightly higher than under the Proposed Action, but would be the same as for the Proposed Action at other installations.

No Action. Projected impacts to air quality are expected to be less than significant from emissions from ordnance use, emissions from engines from military vehicle use, fugitive dust, wind erosion, or other emissions from personnel increases.

Noise

Table ES-12 provides an overview of Noise impacts on each installation from the Proposed Action, RLA Alternative, and No Action.

Proposed Action. There would be significant noise impacts from ordnance use at SBMR (see Sections 5.6). At SBMR, increased training and munitions use under the Proposed Action would result in expansion of Zone II and Zone III noise contours. The Zone III noise contour would not change much from existing conditions, but would expand eastward by about 650 to 820 feet (200 to 250 meters) in the southwestern portion of the cantonment area. The Zone II noise contour would expand eastward by about 985 to 1300 feet (300 to 400 meters). Some additional on-post housing would been compassed by the expanded Zone III and Zone II noise contours. Two on-post schools (Solomon Elementary School and Hale

Table ES-12
Noise Impacts by Installation and Impact Category

Impact Issues	SBMR			DMR			KTA/KLOA			PTA			Project-wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Noise															
Noise from construction activities	⊙	⊙	○	⊙	⊙	○	⊙/○	⊙/○	○/○	⊙	⊙	○	⊙	⊙	○
Noise from ordnance use	⊗*	⊗*	⊗	⊙	⊙	⊙	⊙/○	⊙/○	⊙/○	⊘	⊘	⊙	⊗	⊗	⊗
Noise from military vehicle use	⊙	⊙	⊙	⊙	⊙	⊙	⊙/○	⊙/○	⊙/○	⊙	⊙	⊙	⊙	⊙	⊙
Noise from aircraft operations	⊙	⊙	⊙	⊙	⊙	⊙	⊙/○	⊙/○	⊙/○	⊙	⊙	⊙	⊙	⊙	⊙
Noise from added personal vehicle traffic	⊙	⊙	○	○	○	○	○/○	○/○	○/○	○	○	○	⊙	⊙	○

Legend is provided above under Table ES-8.
* The PA and RLA for SBMR would have a minor increase in noise impacts over the NA. The determination of significance is based on existing NA levels.

Kula Elementary School) would remain exposed to Zone II noise conditions. There would be a significant but mitigable noise impacts at PTA where large caliber weapons firing and explosives use would result in Zone II noise contours that extend slightly beyond the installation boundaries (see Section 8.6). The use of blanks and other training munitions on the WPAA would produce unweighted peak dB levels in the Zone II range at the Waiki'i Ranch and Kilohana Girl Scout Camp near the installation boundary. Ordnance firing and detonations at PTA might also lead to Zone II noise conditions at the Mauna Kea State Park rental cabins. Project-wide impacts from ordnance firing would be significant.

Reduced Land Acquisition. Although there would be a slight decrease in noise at the SRAA (see Section 5.6) there would be no appreciable change to project impacts over those described for the Proposed Action.

No Action. There would be a significant but unavoidable impact as a result of continued exposure to noise from ordnance use at SBMR (see Section 5.6), and less than significant impacts as a result from military vehicle use and aircraft operations, and no impact as a result of construction equipment and added personal vehicle traffic under No Action. Project-wide impacts under No Action would be significant.

Traffic

Table ES-13 provides an overview of Traffic impacts on each installation from the Proposed Action, RLA Alternative, and No Action.

Proposed Action. There would be no significant adverse impacts on traffic from the Proposed Action. Military vehicles will travel on public roads until the trails are constructed. The short term impact to traffic from this activity is less than significant. Minor beneficial impacts on traffic would be realized at PTA from the use of military trails for military traffic currently using public roadways.

Table ES-13
Traffic Impacts by Installation and Impact Category

Impact Issues	SBMR			DMR			KTA/KLOA			PTA			Project-wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Traffic															
Intersection operations	⊙	⊙	○	⊙	⊙	○	⊙/⊙	⊙/⊙	○/○	⊙+	⊙+	○	⊙+	⊙+	○
Roadway segment operations	⊙	⊙	○	⊙	⊙	○	⊙/⊙	⊙/⊙	○/○	⊙+	⊙+	○	⊙+	⊙+	⊙
Construction traffic	⊙	⊙	○	⊙	⊙	○	⊙/○	⊙/○	○/○	⊙	⊙	○	⊙	⊙	○
Parking	⊙	⊙	○	○	○	○	○/○	○/○	○/○	○	○	○	⊙	⊙	○

Legend is provided above under Table ES-8.

Reduced Land Acquisition. Project impacts would be the same as the Proposed Action.

No Action. There would be less than significant impacts on traffic as a result of continued operations under No Action.

Water Resources

Table ES-14 provides an overview of Water Resources impacts on each installation from the Proposed Action, RLA Alternative, and No Action.

Table ES-14
Water Resources Impacts by Installation and Impact Category

Impact Issues	SBMR			DMR			KTA/KLOA			PTA			Project-wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Water Resources															
Impacts on surface water quality	⊘	⊘	⊙	⊙	⊙	○	⊘/⊙	⊘/⊙	⊘/○	⊙	⊙	⊙	⊘	⊘	⊘
Impacts on groundwater quality	⊙	⊙	⊙	○	○	○	⊙/○	⊙/○	⊙/○	○	○	○	⊙	⊙	⊙
Increased flood potential	⊙	⊙	⊙	⊙	⊙	⊙	⊙/○	⊙/○	⊙/○	○	○	○	⊙	⊙	⊙
Groundwater supply	⊙	⊙	⊙	○	○	○	○/○	○/○	○/○	○	○	○	⊙	⊙	⊙

Legend is provided above under Table ES-8.

Proposed Action. There would be significant but mitigable long-term impacts on surface water quality from suspended sediment loading resulting from erosion related to maneuver training activities at SBMR, SBER, and KTA (see Sections 5.8 and 7.8), and from sediment loading following wildfires at SBMR and PTA (see Sections 5.8 and 8.8). Project-wide significant but mitigable long-term impacts would occur relating to surface water quality (see Section 4.8).

Reduced Land Acquisition. Project impacts would be the same as the Proposed Action.

No Action. There would be a significant but mitigable impact to water resources as a result of potential soil erosion at KTA. Under the No Action Alternative, the current less than significant impact levels for all of the identified water quality issues are expected to continue

at the same level. Based on available data, the degradation of stream water quality by contaminant residues on training ranges at SBMR is not expected to be a significant impact. Although only the eastern portion of DMR is included in the FEMA flood zone study map for the area, and the flood zone in the rest of DMR has not been determined, it appears likely, based on the portion that was studied, that flooding could occur on the remaining portion of DMR but would not be significant.

Geology, Soils, and Seismicity

Table ES-15 provides an overview of Geological impacts on each installation from the Proposed Action, RLA Alternative, and No Action.

Table ES-15
Geological Resources Impacts by Installation and Impact Category

Impact Issues	SBMR			DMR			KTA/KLOA			PTA			Project-wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Geological Resources															
Soil loss from training activities	⊗	⊘	⊘	⊗	⊗	○	⊗/○	⊗/○	⊘/○	⊗	⊗	○	⊗	⊗	⊘
Soil erosion and loss from wildland fires	⊘	⊘	⊘	⊘	⊘	⊙	⊘/⊘	⊘/⊘	⊘/⊘	⊘	⊘	⊘	⊘	⊘	⊘
Soil compaction	⊘	⊙	⊙	○	○	○	⊙/○	⊙/○	○/○	⊘	⊘	⊙	⊘	⊘	⊙
Exposure to soil contaminants	⊙	⊙	⊙	○	○	○	⊙/○	⊙/○	○/○	⊙	⊙	⊙	⊙	⊙	⊙
Slope failure	⊘	⊘	○	⊘	⊘	○	⊙/⊙	⊙/⊙	⊙/⊙	⊙	⊙	⊙	⊘	⊘	⊙
Volcanic and seismic hazards	○	○	○	⊙	⊙	⊙	⊙/○	⊙/○	⊙/○	⊙	⊙	⊙	⊙	⊙	⊙

Legend is provided above under Table ES-8.

Proposed Action. Significant impacts would occur at SBMR, KTA, DMR, and PTA (see Sections 5.9, 6.9, 7.9, and 8.9) relating to soil loss from training activities. Mitigation measures will substantially reduce the severity of impact but not to less than significant levels. Significant but mitigable impacts would occur at SBMR, DMR, KTA, and PTA (see Sections 5.9, 6.9, 7.9, and 8.9) relating to soil erosion and loss from wildland fires. Significant but mitigable impacts would occur at SBMR and PTA (see Sections 5.9 and 8.9) from soil compaction, and at SBMR and DMR from slope failure (see Sections 5.9 and 6.9). Project-wide impacts would be significant from soil loss, and significant but mitigable from wildland fire-related soil loss, soil compaction, soil contamination, and slope failure (see Section 4.9).

Reduced Land Acquisition. The geologic impacts under the RLA Alternative would be nearly the same as those described for the Proposed Action, except that impacts would be substantially reduced in the SRAA. This would result in reduced impacts related to soil erosion and soil compaction in this area but would result in increased impacts in areas where training would be concentrated. There would be a less than significant impact on soil compaction at SBMR as a result of this change, because no maneuver training would take place at the SRAA, but all other impacts would remain the same. Mitigation would be the same as that under the Proposed Action, except that it is likely to be less successful because,

with reduced land available for training, the impacts of training would be concentrated on a smaller amount of land. One of the available mitigation measures is to take damaged land out of service until it recovers; but this measure would be less feasible if training were concentrated in a smaller land area.

No Action. There would be no significant impact under No Action with the exception of soil compaction. Soils in training areas would be subject to existing levels of compaction. Most of these effects have already occurred, although continued maneuver training would reduce the ability of soils to recover from these effects. Mitigation would be the same as that described under the Proposed Action.

Biological Resources

Table ES-16 provides an overview of Biological Resources impacts on each installation from the Proposed Action, RLA Alternative, and No Action.

Table ES-16
Biological Resources Impacts by Installation and Impact Category

Impact Issues	SBMR			DMR			KTA/KLOA			PTA			Project-wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Biological Resources															
Impacts from fire on sensitive species and sensitive habitat.	⊗	⊗	⊗	⊘	⊘	⊘	⊗/⊘	⊗/⊘	⊗/⊘	⊗	⊗	⊗	⊗	⊗	⊗
Impacts from construction and training activities on sensitive species and sensitive habitat.	⊘	⊘	⊘	⊘	⊘	⊘	⊘/○	⊘/○	⊘/○	⊗	⊗	⊘	⊗	⊗	⊘
Impacts from the spread of nonnative species on sensitive species and sensitive habitat.	⊘	⊘	⊘	⊘	⊘	⊘	⊘/○	⊘/○	⊘/○	⊘	⊘	⊘	⊘	⊘	⊘
Impacts from construction and training activities on general habitat and wildlife.	⊙	⊙	⊙	⊙	⊙	⊙	⊙/○	⊙/○	⊙/○	⊙	⊙	○	⊙	⊙	⊙
Threat to migratory birds.	⊙	⊙	⊙	⊙	⊙	⊙	⊙/○	⊙/○	⊙/○	⊙	⊙	⊙	⊙	⊙	⊙
Noise and visual impacts.	⊙	⊙	⊙	⊙	⊙	⊙	⊙/○	⊙/○	⊙/○	⊙	⊙	⊙	⊙	⊙	⊙
Vessel impacts on marine wildlife and habitat.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	⊙	⊙	⊙	⊙	⊙	⊙
Runoff impacts on marine wildlife and coral ecosystems.	N/A	N/A	N/A	○	○	○	○/N/A	○/N/A	N/A	⊙	⊙	○	⊙	⊙	○

Legend is provided above under Table ES-8.

Proposed Action. Significant impacts from fire on sensitive species and habitat would occur at SBMR, KTA, and PTA, and project-wide. Mitigation measures will substantially reduce the severity of impact but not to less than significant levels. These impacts would be mitigable to less than significant at DMR and KLOA (see Sections 5.10, 6.10, 7.10, and 8.10). Impacts from construction and training activities on sensitive species and sensitive habitat would be significant at PTA and project-wide, and mitigable to less than significant at SBMR, DMR, and KTA. Impacts from the spread of nonnative species on sensitive species and sensitive habitat would be significant but mitigable to less than significant at all installations and project-wide.

Reduced Land Acquisition. Impacts from the RLA Alternative would be the same as the Proposed Action.

No Action. There would be a continuation of existing significant and not mitigable impacts under the No Action Alternative. This includes fire impacts on sensitive species and habitat. Since there is a risk that a wildfire could result in an irretrievable loss of individuals of sensitive species, the Army has made a conservative determination that even under the No Action Alternative species and habitat could be potentially impacted by fire under the current force activities. Significant measures have been developed to prevent and control wildfires and will be implemented through the IWFMP.

Impacts from construction and training activities and the spread of nonnative species would be significant and mitigable to less than significant for all project areas.

Ongoing Army environmental management and stewardship activities, described in Chapter 2, would continue to decrease impact intensity and to protect sensitive plants and habitats within the ROI. All determinations made through Endangered Species Act Section 7 Consultation as described above and detailed in the project location chapters would apply under this alternative as well.

The following less than significant impacts on biological resources would occur as a result of SBCT actions within each of the SBCT training area ROIs: threats to migratory birds and noise and visual impacts, impacts from construction and training on general habitat and wildlife, vessel impacts on marine wildlife and habitat, and runoff impacts on marine wildlife and coral ecosystems. These impacts would be limited and would be addressed by ongoing Army environmental management and stewardship activities.

Cultural Resources

Table ES-17 provides an overview of Cultural Resources impacts on each installation from the Proposed Action, RLA Alternative, and No Action.

Proposed Action. Significant impacts on historic buildings would occur at KTA and PTA. Significant impacts on archaeological resources from range and facility construction would occur at SBMR and PTA; these impacts would also occur at KTA, but would be mitigable to less than significant. Impacts on archaeological resources from training activities would be significant at DMR and PTA, but mitigable to less than significant at SBMR. Significant impacts on areas of traditional importance (ATIs) to Native Hawaiians would occur at SBMR, DMR, and PTA. Impacts on archaeological sites from road or trail construction would be signigicant at PTA but mitigable to less than significant at DMR. Impacts on archaeological sites from road use would be mitigable to less than significant levels at PTA. Project-wide significant impacts would result on historic buildings, on archaeological sites from construction of facilities and roads, and from training activities. Significant but mitigable project-wide impacts would result on archaeological sites from road use. Mitigation for all significant cultural resources impacts has been developed in consultation with the State Historic Preservation Office, Native Hawaiians, and other interested parties,

Table ES-17
Cultural Resources Impacts by Installation and Impact Category

Impact Issues	SBMR			DMR			KTA/KLOA			PTA			Project-wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Cultural Resources															
Impacts on historic buildings	⊙	⊙	○	○	○	○	⊗/○	⊗/○	○/○	⊗	⊗	○	⊗	⊗	○
Impacts on archaeological resources from range and facility construction	⊗	⊗	○	○	○	○	⊘/○	⊘/○	○/○	⊗	⊗	○	⊗	⊗	○
Impacts on archaeological resources from training activities	⊘	⊘	⊙	⊘	⊘	⊙	⊙/○	⊙/○	⊙/○	⊗	⊗	○	⊗	⊗	⊙
Impacts on archaeological sites from construction of FTI	⊙	⊙	○	⊙	⊙	○	○/○	○/○	○/○	⊙	⊙	○	⊙	⊙	○
Impacts on ATIs	⊗	⊗	○	⊗	⊗	○	⊙/○	⊙/○	○/○	⊗	⊗	○	⊗	⊗	○
Impacts from installation information infrastructure architecture construction	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	⊙	⊙	○	⊙	⊙	○
Impacts on archaeological sites from road or trail construction	⊙	⊙	○	⊘	⊘	○	N/A	N/A	N/A	⊗	⊗	○	⊗	⊗	○
Impacts on archaeological sites from road use	○	○	N/A	⊙	⊙	○	⊙/⊙	⊙/⊙	⊙/⊙	⊘	⊘	○	⊘	⊘	○

Legend is provided above under Table ES-8.

and is memorialized in the Programmatic Agreement (PA) found in Appendix J of this FEIS. For those impacts that are significant, mitigation measures will substantially reduce the severity of the impact but not to less than significant levels.

Reduced Land Acquisition. Project impacts would be the same as the Proposed Action.

No Action. Existing conditions would continue under No Action. Less than significant impacts under No Action generally result from ongoing training activities or infrastructure projects. Ongoing training activities include continued off-road vehicle use. This would result in ongoing impacts on cultural resources in the training areas caused by ground troop activities, off-road vehicle movement, and subsurface excavations. Archaeological resources on the training areas are monitored following exercises to document adverse effects on the sites. Under No Action, current training would continue, and there would be no additional impacts on cultural resources. USARHAW will continue efforts to inventory eligible historic properties in compliance with Section 110 of the NHPA, and project planning will comply with Section 106 and its implementing regulations. Impacts on cultural resources would be mitigated in compliance with these regulatory requirements.

Human Health and Safety Hazards

Table ES-18 provides an overview of impacts on Human Health and Safety at each installation from the Proposed Action, RLA Alternative, and No Action.

Table ES-18
Human Health and Safety Impacts by Installation and Impact Category

Impact Issues	SBMR			DMR			KTA/KLOA			PTA			Project-wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Human Health and Safety															
Hazardous materials management	⊙	⊙	○	⊙	⊙	○	⊙/○	⊙/○	⊙/○	⊙	⊙	○	⊙	⊙	⊙
Hazardous waste management	⊙	⊙	○	⊙	⊙	○	⊙/○	⊙/○	⊙/○	⊙	⊙	○	⊙	⊙	⊙
Ammunition	⊘	⊘	⊙	○	○	○	⊙/○	⊙/○	○/○	⊘	⊘	⊙	⊘	⊘	⊙
Unexploded ordnance	⊘	⊘	⊙	○	○	○	○/○	○/○	○/○	⊘	⊘	⊙	⊘	⊘	⊙
General training	⊙	⊙	⊙	⊙	⊙	○	⊙/○	⊙/○	○/○	⊙	⊙	⊙	⊙	⊙	⊙
Installation restoration program sites	⊘	⊘	○	○	○	○	○/○	○/○	○/○	○	○	○	⊘	⊘	⊙
Lead	⊘	⊘	⊙	○	○	○	⊘/○	⊘/○	○/○	⊘	⊘	⊙	⊘	⊘	⊙
Asbestos	⊘	⊘	○	○	○	○	⊘/○	⊘/○	○/○	⊘	⊘	○	⊘	⊘	○
Polychlorinated biphenyls	○	○	○	○	○	○	⊙/○	⊙/○	○/○	○	○	○	⊘	⊘	○
Electromagnetic fields	⊙	⊙	⊙	⊙	⊙	⊙	⊙/○	⊙/○	⊙/○	⊙	⊙	⊙	⊙	⊙	⊙
Petroleum, oils and lubricants	⊙	⊙	○	⊙	⊙	○	⊙/○	⊙/○	⊙/○	⊙	⊙	○	⊙	⊙	⊙
Pesticides/herbicides	⊙	⊙	○	○	○	○	○/○	○/○	○/○	⊙	⊙	○	⊙	⊙	○
Biomedical waste	⊙	⊙	○	○	○	○	○/○	○/○	○/○	⊙	⊙	○	⊙	⊙	○
Radon	○	○	○	○	○	○	○/○	○/○	○/○	○	○	○	○	○	○
Wildfires	⊘	⊘	⊙	⊘	⊘	⊙	⊘/⊘	⊘/⊘	⊙/⊙	⊘	⊘	⊙	⊘	⊘	⊙

Legend is provided above under Table ES-8.

Proposed Action. Significant but mitigable impacts on range contaminant levels resulting from ammunition use increases would occur at SBMR and PTA. Significant but mitigable impacts from the risk of unexploded ordnance (UXO) in construction areas, training ranges, and along the PTA Trail would occur at SBMR and PTA. A significant but mitigable impact relating to Installation Restoration Program (IRP) site management would occur at SBMR. Significant but mitigable impacts due to possible lead exposure during demolition and lead contamination of soils would occur at SBMR, KTA, and PTA. Significant but mitigable impacts due to possible asbestos exposure during demolition would occur at BMR, KTA, and PTA. Significant but mitigable impacts to human health and safety from wildfire risks would occur at SBMR, DMR, KTA, and PTA.

Reduced Land Acquisition. Impacts would be the same as under the Proposed Action, except there would be additional risks from moving soils contaminated with UXOs and lead from construction of QTR2 at PTA, and an increased risk of wildfires at PTA from the increased live-fire training.

No Action. There would be no significant impacts as a result of No Action.

Socioeconomics and Environmental Justice

Table ES-19 provides an overview of Socioeconomic impacts on each installation from the Proposed Action, RLA Alternative, and No Action.

Table ES-19
Socioeconomics Impacts by Installation and Impact Category

Impact Issues	SBMR			DMR			KTA/KLOA			PTA			Project-wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Socioeconomics															
Population	⊙+	⊙+	○	○	○	○	○/○	○/○	○/○	○	○	○	⊙+	⊙+	○
Employment	⊙+	⊙+	○	⊙+	⊙+	○	⊙+/○	⊙+/○	○/○	⊙+	⊙+	○	⊙+	⊙+	○
Income	⊙+	⊙+	○	⊙+	⊙+	○	⊙+/○	⊙+/○	○/○	⊙+	⊙+	○	⊙+	⊙+	○
Economy (business volume)	⊙+	⊙+	○	⊙+	⊙+	○	⊙+/○	⊙+/○	○/○	⊘+	⊘+	○	⊘+	⊘+	○
Housing	⊙	⊙	○	○	○	○	○/○	○/○	○/○	○	○	○	⊙	⊙	○
Schools	⊘	⊘	○	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	⊘	⊘	○
Environmental justice	⊙	⊙	○	⊙	⊙	○	⊙/○	⊙/○	○/○	○	○	○	⊙	⊙	○
Protection of children	⊙	⊙	○	⊙	⊙	○	⊙/○	⊙/○	○/○	○	○	○	⊙	⊙	○

Legend is provided above under Table ES-8.

Proposed Action. Significant but mitigable impacts would occur at SBMR (see Section 5.13) relating to the increase in demand for school capacity and teachers. Significant but mitigable economic impacts to Hawai'i County would occur because of construction activities at PTA (see Section 8.13).

Reduced Land Acquisition. Project impacts would be the same as the Proposed Action.

No Action. Implementing No Action would not result in a change in the local economy or population, and no impacts on population, employment, income or the economy are anticipated. No effects on housing are expected because the number of people requiring housing on- or off-post would not change as a result of No Action. No effects on environmental justice are expected. No Action would not alter the existing health and safety, housing, or economic conditions of minority or low-income populations in Hawai'i or Honolulu Counties. No disproportionate effects on children are expected because No Action would not present any change in the public health or safety risk that could affect children. The Army would continue to provide measures to protect the safety of children, including the use of fencing, limitations on access to certain areas, and provision of adult supervision.

Public Services and Utilities

Table ES-20 provides an overview of impacts on Public Services and Utilities at each installation from the Proposed Action, RLA Alternative, and No Action.

Table ES-20
Public Services and Utilities Impacts by Installation and Impact Category

Impact Issues	SBMR			DMR			KTA/KLOA			PTA			Project-wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Public Services and Utilities															
Impacts to police, fire, and emergency medical services	⊙	⊙	○	⊙+	⊙+	○	⊙/○	⊙/○	○/○	⊙	⊙	○	⊙	⊙	○
Impacts to water distribution	⊙	⊙	○	⊙	⊙	○	⊙/○	⊙/○	○/○	⊙	⊙	○	⊙	⊙	○
Wastewater and stormwater impacts	⊙	⊙	○	○	○	○	⊙/○	⊙/○	○/○	⊙	⊙	○	⊙	⊙	○
Solid waste management	⊙	⊙	○	⊙	⊙	○	⊙/○	⊙/○	○/○	⊙	⊙	○	⊙	⊙	○
Impacts to communications	⊙	⊙	○	○+	○+	○	○/○	○/○	○/○	⊙+	⊙+	○	⊙	⊙	○
Impacts to electricity and natural gas	⊙	⊙	○	⊙	⊙	○	⊙+/○	⊙+/○	○/○	⊙	⊙	○	⊙+	⊙+	○

Legend is provided above under Table ES-8.

Proposed Action. There would be no significant impacts on public services or utilities from the Proposed Action. The Proposed Action could have beneficial effects on the telephone system at DMR and PTA (see Sections 6.14 and 8.14). The Proposed Action would have beneficial effects on the electrical system at KTA (see Section 7.14).

Reduced Land Acquisition. Project impacts would be the same as the Proposed Action.

No Action. No Action is expected to have no long-term adverse impacts on public utilities because no new facilities would be constructed to add demands to utilities infrastructure. No changes to the provision of police, fire, and emergency services would occur.

ES.8.4 Cumulative Impacts

CEQ regulations implementing NEPA require that the cumulative impacts of a proposed action be assessed (40 CFR Parts 1500-1508). Army regulations 200-2 (32 CFR 651.39(a)(2)(ii)) also require that cumulative actions, when viewed with other proposed actions that have cumulatively significant impacts, be discussed in the same impact statement. Direct and cumulative impacts should be viewed together to determine the full impacts from each alternative identified in this EIS. However, cumulative impacts are identified in a separate section of this EIS, because there are different analytical methods for determining significance and because the ROI is often larger than that of direct and indirect impacts. (CEQ 1997). Also, this EIS may identify significant direct impacts for certain resources while finding that there are no significant cumulative impacts for the same resource. This difference is normally because of the different geographical context needed for measuring direct and cumulative impacts.

This EIS uses a variety of methods, depending on the resource area, to determine cumulative socioeconomic and environmental effects. Table ES-21 provides a summary of cumulative environmental impacts identified for this project. Methods for gathering and assessing data

Table ES-21
Summary of Potential Cumulative Impacts

Resource Area	Proposed Action	Reduced Land Acquisition	No Action
Land Use/Recreation	⊗	⊗	○
Visual Resources	⊙	⊙	○
Airspace	⊙	⊙	○
Air quality	⊙	⊙	○
Noise	⊙	⊙	○
Traffic	⊙	⊙	○
Water Resources	⊘	⊘	○
Geologic, Soils, and Seismicity	⊙	⊙	○
Biological Resources	⊗	⊗	⊗
Cultural Resources	⊗	⊗	⊙
Human Health and Safety Hazards	⊗	⊗	⊘
Socioeconomic and Environmental Justice	⊘	⊘	○
Public Service and Utilities	⊙	⊙	○

In cases when there would be both beneficial and adverse impacts, both are shown on this table. Mitigation measures would only apply to adverse impacts.

LEGEND:
⊗ = Significant
⊘ = Significant but mitigable to less than significant
⊙ = Less than significant
○ = No impact
\+ = Beneficial impact
N/A = Not applicable

regarding cumulative impacts include: interviews, use of checklists, trends analysis, and forecasting. In general, past, present, and future foreseeable projects are assessed by resource area. These projects, which are listed in Tables 9-1 and 9-2 (see Chapter 9), are sponsored by the U.S. Army, other federal and state agencies and private entities, and include 34 projects on O'ahu and 9 projects on Hawai'i.

Cumulative impacts from the Proposed Action and the Reduced Land Acquisition Alternative, and the No Action alternative would occur in all resource areas. Significant cumulative impacts would occur in the following resource areas: Land use, biological and cultural resources, water quality, human health and safety hazards, and socioeconomics.

There would be significant cumulative impacts on land use from the acquisition and conversion of agricultural land independent of the Proposed Action, Reduced Land Acquisition Alternative, and No Action Alternative. Significant impacts to biological resources would occur from a cumulative increase in the potential for fire to occur on O'ahu and the island of Hawai'i as a result of SBCT and foreseeable projects identified for both islands.

There would be significant cumulative impacts on cultural resources from cumulative projects and the construction and training associated with the Proposed Action or Reduced Land Acquisition Alternative.

Based on further review and public comments on the Draft EIS, the Army has determined that implementation of the Proposed Action or Reduced Land Acquisition Alternative would result in significant cumulative impacts on human health and safety from significant increases in cumulative ammunition storage, use, transportation, and disposal, and UXO hazards, considering the existing levels of ammunition and unexploded ordnance from cumulative projects. There would be significant but mitigable to less than significant long term cumulative impacts on surface water quality from suspended sediment resulting from training activities at SBMR and KTA, from the potential for chemical residues or spills at SBMR, and from sediment loading following wildfires at SBMR, KTA, and PTA.

There would be a significant but mitigable to less than significant long term cumulative impact to socioeconomics and environmental justice from cumulative projects in association with the Proposed Action and RLA Alternative for population, schools and housing. The Army proposes to mitigate these cumulative impacts through measures discussed in Section 4.13, including notification to the Hawai'i Department of Education at the earliest point practicable of any known increases of students to schools on or near SBMR and WAAF, supplementing the Hawai'i Department of Education budget through the U.S. Department of Education Federal Impact Aid Program, and long-range procurement planning for supply and demand issues related to construction activities.

ES.9 OTHER CONSIDERATIONS

ES.9.1 Significant Unavoidable Adverse Impacts

An EIS must describe any significant unavoidable impacts for which either no mitigation or only partial mitigation is feasible. Significant and unavoidable impacts from the Proposed Action are limited to the following:

- Unauthorized recreational access at KTA may be adversely affected by additional fencing and signs restricting access, which is necessary due to the proposed live-fire use of the area (see Section 7.2, Land Use/Recreation);
- Air quality impacts from wind erosion of areas previously disturbed by off-road vehicle maneuver activity (where vegetation has been decreased resulting in increased wind erosion) at KTA and PTA (see Sections 7.5 8.5, Air Quality);
- Noise impacts from ordnance use at SBMR (see Section 5.6, Noise);
- Soil loss from training activities at SBMR, DMR, KTA, and PTA (see Section 5.9, Section 7.9, and Section 8.9, Geology, Soils, and Seismicity);
- Biological impacts from fire on sensitive species and habitat at SBMR, KTA and PTA (see Section 5.10, Section 7.10, and Section 8.10 Biological Resources);
- Biological impacts from off-road training activities on sensitive species and habitat at PTA (see Section 8.10, Biological Resources);

- Cultural resource impacts to historic buildings at KTA (the Nike Missile Site) and PTA (the Keʻāmuku Village) (see Section 7.11 and Section 8.11, Cultural Resources);
- Cultural resource impacts to archaeological resources from range and facility construction at PTA (see Section 8.11, Cultural Resources);
- Cultural resource impacts to archaeological resources from training activities at DMR and PTA (see Section 6.11 and Section 8.11, Cultural Resources);
- Cultural resource impacts to Areas of Traditional Importance at SBMR, DMR, and PTA (see Section 5.11, Section 6.11, and Section 8.11, Cultural Resources);
- Cumulative impacts to land use (see Section 9.5, Cumulative Impacts);
- Cumulative impacts to biological resources (see Section 9.5, Cumulative Impacts);
- Cumulative impacts to cultural resources (see Section 9.5, Cumulative Impacts);
- Cumulative impacts to human health and safety hazards (see Section 9.5, Cumulative Impacts); and,
- Environmental Justice impacts to Areas of Traditional Importance at SBMR, DMR, and PTA (see Section 10.2.3, Section 10.2.4, and Section 10.2.6, Environmental Justice).

ES.9.2 Relationship Between Local Short-Term Uses of the Environment and Long-Term Productivity

NEPA requires that an EIS include a consideration of the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity.

Construction activities associated with the proposed projects are short-term and temporary. All significant construction impacts would be mitigated where practicable under the constraints of public safety and the military mission. Short-term damage to the environment relating to construction includes direct and indirect loss of habitat and damage to sensitive species, loss of nonrenewable cultural resources, emissions impacts on air quality, and surface water quality impacts. Long-term environmental damage includes loss of important farmland, impacts on soil and water quality, impacts on habitat and wildlife from training activities, erosion, and wildfires, air quality impacts from wind erosion due to training activities, and potential damage to cultural resources in the future.

The conversion of important farmland to military use at PTA and SBMR could affect long-term agricultural productivity in Hawaiʻi. Therefore, there would be some adverse impacts on long-term productivity as a result of the Proposed Action, but regional socioeconomic impacts are not expected to be significant.

Long-term productivity would be served by replacing inadequate and inefficient facilities at SBMR and KTA with modern fuel-efficient buildings designed to reduce long-term reliance on nonrenewable fuel sources. Such replacement would also remove workplace hazards to Army staff, such as lead-based paint (LBP) and asbestos-containing material (ACM).

Infrastructure upgrades (such as communications and power systems) associated with the Proposed Action would result in longer life of these facilities and fewer expenses in maintaining and repairing such facilities. New facilities, such as the vehicle washes, would be designed to reduce the spread of invasive species and would use recycled water, and other facilities, such as select FTI sites, may be designed to use solar power, thus minimizing the project's long-term energy requirements.

The long-term productivity of the Proposed Action is based on the Army's mission, specifically its duty under transformation. Any measurement of long-term productivity in this context must recognize the overriding importance of national defense and the Army's obligation to adapt to changing national security needs. While the Army will take whatever actions are reasonable and practicable to preserve and protect the natural environment under its stewardship, the necessity of national defense requires the Army to provide the nation with capabilities that meet current and evolving national defense requirements. The Proposed Action is designed to meet these goals and further the security and welfare of the US, its residents, and its natural environment.

ES.9.3 Irreversible and Irretrievable Commitments of Resources

NEPA requires that an EIS analyze the extent to which the proposed action's primary and secondary effects would commit nonrenewable resources to uses that future generations would be unable to reverse.

Implementing the Proposed Action or RLA Alternative would require commitments of both renewable and nonrenewable energy and material resources for demolishing inadequate facilities at SBMR and PTA; for constructing FTI antennas, proposed ranges, and support facilities at SBMR, DMR, KTA, WAAF, and PTA; and for constructing Dillingham Road and Helemanō and PTA Trails. Material resources that would be used include wood, concrete, metals, asphalt and other petroleum products, and nonrenewable energy would be used for the construction activities. This temporary energy expenditure would occur over the short term and would be irreversible once construction is completed. Additionally, further review has indicated that maneuver training at the WPAA may result in an irretrievable commitment of soil resources by loss through erosion of soils that support sensitive plant species and habitat.

Other nonrenewable resources would be used during SBCT training, such as the fuel used by Strykers and other vehicles in maneuvers and troop convoys; the water, power, and other resources necessary to maintain and operate the new military vehicle trails and new training facilities at SBMR, KTA, and PTA; and the increase in local resources required to support the additional military personnel and their families.

ES.10 MITIGATION MEASURES

Mitigation actions would be expected to reduce, avoid, or compensate for most adverse effects. Table ES-22 summarizes the potential mitigation measures that have been identified as high priority mitigation measures and are likely to be implemented. These mitigation measures are either regulatory/administrative requirements, will help substantially reduce significant impacts on affected resources, or will provide a substantial benefit to the affected

resources with minimal costs. Table ES-23 summarizes those proposed mitigation measures that are already in progress or not likely to be implemented. The table does not include those measures that are considered SOPs and best management practices (BMPs) and are assumed to be implemented as part of the proposed project; these additional protection measures are outlined in the various resource sections. The table also describes the benefits of a given mitigation measure. The final determination on whether any given mitigation would be implemented will be determined during the preparation of the FEIS. Section ES 9.1 describes those impacts that are significant and unavoidable and cannot be mitigated to less than significant.

Given limited resources, the Army is only able to implement a finite number of mitigation measures. The Army has considered all reasonable mitigation measures and is placing higher priority on proposed mitigation to meet independent regulatory or administrative requirements or to reduce significant impacts. Table ES-23 shows those mitigation measures included in the Draft EIS mitigation matrix or proposed by the public during the DEIS public comment periods that the Army considers lower priority, mitigation measures that are unfeasible and the impact is mitigated through more appropriate measures, and mitigation measures that have been suggested but similar measures are already in place.

Table ES-22
Mitigation Likely to Occur

	Category	Training Area	Direct Effect	Necessary to Mitigate to Less than Significant	Mitigation Measure	Regulatory/Administrative Requirement
Land Use and Recreation						
1	Land Use/ Recreation	SBMR	Impacts on land use as a result of training activities at SRAA.	Yes. Would reduce impacts to access in the Honouliuli Preserve and on the 100-acre portion of SRAA that TNC manages to less than significant.	The Army reoriented QTR2 so that the SDZ would no longer impact any lands within the Honouliuli Preserve. The Army will: • Grant TNC personnel and TNC-sponsored personnel daily, ***controlled access*** to the TNC-managed lands along a route to be determined by the Army in consultation with TNC for as long as they have legal right to use of the affected property for conservation/stewardship purposes. • Develop and implement ***access controls*** to ensure the safety of all personnel. • Receive ***TNC notification*** prior to their entering Army lands. • ***Notify TNC of any unusual activities*** that may present, or appear to present a danger to TNC personnel in the area. • ***Post signs*** on the boundary to prevent unauthorized use/trespass.	
2	Land Use/ Recreation	PTA	Impacts to recreation - hunting.	No. A significant impact to recreation and hunting was not identified.	The Army proposes to coordinate with State of Hawaii DLNR to ***create additional public hunting check in stations*** for the WPAA.	
Visual Resources						
3	Visual Resources	SBMR	Short-term impacts on visual resources due to construction.	Yes. Would reduce impacts on visual resources due to construction activities to less than significant.		***Existing natural features***, including terrain and vegetative cover, ***will be conserved*** where practicable to screen the proposed project sites. Where practicable, permanent screening will be achieved with native tree and shrub plantings that compliment existing natural and ornamental plantings, earthen berms that mimic the color and texture of the surrounding area, fencing designed to fit in with the surrounding area, or some combination of these measures ***in accordance with the Installation Exterior Architectural Plan.***
4	Visual Resources	SBMR	Long-term impacts on visual resources due to construction.	Yes. Would reduce long-term impacts on visual resources due to project features to less than significant.		***Existing site conditions will be enhanced*** where practicable to help screen SBCT-related projects from the surrounding area. Where practicable, mitigation measures will be designed to compliment the existing view. Existing natural features, including terrain and vegetative cover, will be conserved where practicable. Screening will be constructed of materials that mimic the color and/or texture of the surrounding area where practicable. Where practicable, USARHAW will use tree and shrub plantings that compliment existing natural and ornamental plantings, earthen berms which mimic the color and texture of the surrounding area, and fencing materials designed to fit in with the surrounding area, or some combination of these measures ***in accordance with the Installation Exterior Architectural Plan.***
5	Visual Resources	SBMR, DMR, PTA	Long-term impacts on visual resources due to construction of the military vehicle trails.	Yes. Would reduce impacts on visual resources to less than significant.	The Army proposes to construct proposed military vehicle trails to ***conserve existing natural features,*** including terrain and vegetative cover, to the extent practicable. Use of roadbed materials that contrast sharply with existing conditions will be avoided to the extent practicable. To avoid creation of a discordant linear feature, the road alignment would, where possible, follow the natural contours of the land. Cut slopes would be minimized or avoided, where practicable. Cut slopes would be blended into the landscape by rounding the edges of the slope, differential orientation of the slope and the road bed alignments where practicable. Use of these techniques would be varied based on the specific conditions, including depth of the cut, orientation of the slope, and type of material (e.g., dirt slope, rock slope).	
6	Visual Resources	SBMR, DMR, PTA	Long-term impacts on visual resources due to construction of the Fixed Tactical Internet.	Yes. Would reduce impacts on visual resources from the tower construction to less than significant.	Where practicable, the Army proposes to enhance existing site conditions to ***help screen the proposed tower and support shed from the surrounding area.*** The tower site will be developed to conserve existing natural features, including terrain and vegetative cover, to the extent practicable. The equipment shed would be located to maximize use of natural screening if possible. If necessary, additional screening will be installed by either planting vegetation or constructed of materials that mimic the color and/or texture of the surrounding area where practicable. If possible, materials used for construction of the tower and equipment shed will be non-reflective, weathered, or otherwise painted to blend with the natural surroundings.	

Table ES-22
Mitigation Likely to Occur *(continued)*

	Category	Training Area	Direct Effect	Necessary to Mitigate to Less than Significant	Mitigation Measure	Regulatory/Administrative Requirement
Air Quality						
7	Air Quality	SBMR, KTA, PTA	Impacts on air quality as a result of fugitive dust from military vehicles on trails.	Yes. Would reduce impacts on air quality from fugitive dust to less than significant in conjunction with other mitigation measures.		To reduce fugitive dust associated with the use of military vehicle trails, the Army will ***implement dust control measures*** such as dust control chemical applications, the use of washed gravel for surfacing, spraying water, or paving sections of trails. The extent of gravel washing would have to balance dust reduction goals with engineering requirements for achieving a stable roadway surface. Selection of the appropriate dust control products would be based on testing alternative products on dirt and gravel road segments. Based on general characteristics and performance elsewhere, environmentally friendly synthetic polymers (such as polyvinyl acetate and vinyl acrylic) and hygroscopic salt solutions (such as calcium chloride or magnesium chloride) appear to be the most promising groups of dust control agents. The Army will monitor road surface conditions and will apply palliatives as necessary. If moisture levels are adequate to suppress dust, than application of dust palliatives would not be necessary. To the extent possible, the Army would plan dust suppressant applications to be scheduled to immediately precede periods of significant convoy traffic.
8	Air Quality	SBMR, KTA, PTA	Impacts on air quality from fugitive dust associated with training activities over open ground.	Yes. Would reduce impacts on air quality from fugitive dust to less than significant in conjunction with other mitigation measures.		The Army will develop and ***implement a Dust and Soils Management and Monitoring Plan (DuSMMoP)*** for the training area. The plan will address measures such as, but not limited to, restrictions on the timing or type of training during high risk conditions, vegetation monitoring, dust monitoring, soil monitoring, and buffer zones to minimize dust emissions in populated areas. The plan will determine how training will occur in order to keep fugitive dust emissions below CAA standards for PM_{10} and soil erosion and compaction to a minimum. The Army will monitor the impacts of training activities to ensure that emissions stay within the acceptable ranges as predicted and environmental problems do not result from excessive soil erosion or compaction. The plan will also define contingency measures to mitigate the impacts of training activities, which exceed the acceptable ranges for dust emissions or soil compaction.
9	Air Quality	SBMR, KTA, PTA	Impacts on air quality from fugitive dust associated with training activities over open ground.	Yes. Would reduce impacts on air quality from fugitive dust to less than significant in conjunction with other mitigation measures.		The Army will ***continue to implement land restoration measures identified in the INRMP***. Mitigation measures include, but are not limited to, implementation of the ITAM program to identify and inventory land condition using a GIS database; coordination between training planners and natural resource managers; implementation of land rehabilitation measures identified in the INRMP; monitoring of the effectiveness of the land rehabilitation measures; evaluation of erosion modeling data to identify areas in need of improved management; and implementation of education and outreach programs to increase user awareness of the value of good land stewardship.
10	Air Quality	PTA, KTA, SBER	Impacts on air quality from wind erosion associated with areas disturbed by military vehicle use.	Yes. Would reduce impacts on air quality from fugitive dust to less than significant in conjunction with other mitigation measures.		The Army will develop and ***implement a Dust and Soils Management and Monitoring Plan (DuSMMoP)*** for the training area. The plan will address measures such as, but not limited to, restrictions on the timing or type of training during high risk conditions, vegetation monitoring, soil monitoring, and buffer zones to minimize dust emissions in populated areas. The plan will determine how training will occur in order to keep fugitive dust emissions below CAA standards for PM_{10} and soil erosion and compaction to a minimum. The Army will monitor the impacts of training activities to ensure that emissions stay within the acceptable ranges as predicted and environmental problems do not result from excessive soil erosion or compaction. The plan will also define contingency measures to mitigate the impacts of training activities, which exceed the acceptable ranges for dust emissions or soil compaction.
11	Air Quality	ALL	Impacts on air quality from fugitive dust emissions associated with construction activities.	No. A significant determination to air quality from fugitive dust emission generated by construction activities was not identified.		Construction contractors will ***comply with the provisions of Hawaii Administrative Rules***, Sec. 11-60.1-33 on Fugitive Dust as part of the requirements of construction contracts.
Noise						
12	Noise	SBMR	Impacts on noise from ordnance use.	No. Would not reduce noise impacts from ordnance use to less than significant, but would reduce impacts substantially.	The Army proposes to ***evaluate training techniques, scheduling and location*** to reduce overall noise impacts at SBMR. In this evaluation, the Army would consider, as feasible, the benefit of timing restrictions on training and moving certain training activities to PTA.	

Table ES-22
Mitigation Likely to Occur *(continued)*

	Category	Training Area	Direct Effect	Necessary to Mitigate to Less than Significant	Mitigation Measure	Regulatory/Administrative Requirement
13	Noise	SBMR	Impacts on noise from ordnance use.	No. Would not reduce noise impacts from ordnance use to less than significant, but would reduce impacts substantially.	The Army proposes to provide ***noise-insulating measures whenever new buildings are constructed*** or existing buildings are renovated, such as modifications to window materials and cooling systems to noise sensitive land uses that are or that may become exposed to Zone II and Zone III noise conditions.	
14	Noise	PTA	Impacts on noise from ordnance use and aviation.	Yes. Would reduce noise impacts from ordnance use to less than significant. Noise impacts from aviation training are less than significant without any mitigation.	The Army proposes to ***establish a minimum 1,000- foot (305-meter) noise buffer*** around the Waikiʻi Ranch property and the Kilohana Girl Scout Camp. In addition, the Army will consider training guidelines that minimize ***nighttime training*** activities that involve weapons fire or aviation activity within a ***minimum of 2,000 feet*** (610 meters) of those properties. The Army will continue to work with affected communities on noise buffers and may adjust the buffer size dependent upon these discussions.	
Traffic						
15	Traffic	All	Impacts on traffic from military vehicles on public roads.	No. A significant impact to traffic was not identified.	The Army proposes to operate ***a public web site that lists a schedule of upcoming USARHAW activities,*** including training and public involvement projects. Subject to force protection measures and other security measures, the site would contain USARHAW training and convoy schedules, community projects the USARHAW is involved in, any USARHAW activity or function that the public could attend, any general USARHAW news that might be of interest to the public, and USARHAW services available to the public.	
Water Resources						
16	Water Resources	All	Impacts from construction and explosive residues associated with sediment erosion on surface water quality.	Yes. Would reduce impacts on surface water quality to less than significant. Only SBMR has a significant impact from explosive residues associated with sediment erosion. The mitigation measure will reduce the impact to less than significant.		The Army will implement design measures ***in accordance with new Phase II Stormwater Management Regulations of the Clean Water Act.*** The Army will choose the most practicable solution for the specific project or project area during design. As directed via NPDES permit approval, the contractor will be required to implement a Storm Water Pollution Prevention Program during construction.
17	Water Resources	SBMR	Impacts from sediment suspension on surface water quality.	Yes. Would reduce impacts on surface water resources from Helemano Road construction to less than significant.	The Army proposes to implement design measures in accordance with ***Army design standards to reduce soil erosion and sediment loading impacts*** to Waikele Stream, Konokanahua Stream or tributaries from road construction. Mitigation design measures include, but are not limited to, hardening the roads, raising the elevation of the roadway to improve drainage, installing drainage ditches adjacent to roads to control water running on or off the road, planting grasses to slow overland flow. The Army would choose the most practicable solution for the specific project or project area during design.	
18	Water Resources	SBMR, KTA	Impacts from sediment suspension and on surface water quality.	Yes. Would reduce impacts on surface water resources to less than significant.		The Army will develop and ***implement a Dust and Soils Management and Monitoring Plan (DuSMMoP)*** for the training area. The plan will address measures such as, but not limited to, restrictions on the timing or type of training during high risk conditions, vegetation monitoring, soil monitoring, and buffer zones to minimize dust emissions in populated areas. The plan will determine how training will occur in order to keep fugitive dust emissions below CAA standards for PM_{10} and soil erosion and compaction to a minimum. The Army will monitor the impacts of training activities to ensure that emissions stay within the acceptable ranges as predicted and environmental problems do not result from excessive soil erosion or compaction. The plan will also define contingency measures to mitigate the impacts of training activities, which exceed the acceptable ranges for dust emissions or soil compaction.
19	Water Resources	SBMR, KTA	Impacts from sediment suspension on surface water quality.	Yes. Would reduce impacts on surface water resources to less than significant.		The Army will ***continue to implement land restoration measures identified in the INRMP.*** Mitigation measures include, but are not limited to, implementation of the ITAM program to identify and inventory land condition using a GIS database; coordination between training planners and natural resource managers; implementation of land rehabilitation measures identified in the INRMP; monitoring of the effectiveness of the land rehabilitation measures; evaluation of erosion modeling data to identify areas in need of improved management; and implementation of education and outreach programs to increase user awareness of the value of good land stewardship.

Table ES-22
Mitigation Likely to Occur *(continued)*

	Category	Training Area	Direct Effect	Necessary to Mitigate to Less than Significant	Mitigation Measure	Regulatory/Administrative Requirement
20	Water Resources	SBMR, PTA	Impacts from chemical spills on surface water quality.	Yes. Would reduce impacts on surface water quality to less than significant.		The Army will ***implement the existing spill prevention and response plan*** to all new lands and activities under the proposed action.
21	Water Resources	All	Impacts on surface water quality from sediment or contaminant loading following wildland fires.	Yes. Would reduce impacts on surface water quality to less than significant.		The ***Integrated Wildland Fire Management Plan*** for Pohakuloa and Oahu Training Areas was updated on October 2003. The Army will fully implement this plan for all existing and new training areas to reduce the impacts associated with wildland fires. The plan is available upon request.
22	Water Resources	All	Impacts on surface water quality from the dredge or fill of waters of the U.S.	No. There is no significant impact to surface water quality from the dredge or fill of waters of the U.S.		In accordance with Section 404 and 401 of the Clean Water Act, the Army will ***avoid the placement of dredge or fill material in waters of the U.S.*** to the full extent practicable. If the Army is unable to avoid the placement of dredge or fill material in waters of the U.S., the Army will apply for and abide by all permit conditions as set forth in appropriate Section 404 and 401 CWA authorizations issued by the U.S. Army Corps of Engineers, Regulatory Branch and the State of Hawai'i Department of Health, Clean Water Branch.
23	Water Resources	PTA	Impacts due to spills associated with use of the military vehicle trail.	No. A significant impact to water resources from road construction was not identified.	The Army proposes to ***place bollards around the wellheads*** in coordination with the utility and property owners to protect the structures from potential damage.	
24	Water Resources	SBMR and KTA	Impacts from the construction of low-water crossings on surface water quality.	Yes. Would reduce the impact to water resources from construction to less than significant.		The Army will incorporate ***Best Management Practices (BMP's) that will reduce runoff*** and sedimentation to aquatic environments in accordance with CWA regulations for stormwater runoff at construction sites.
Geology, Soils, and Seismicity						
25	Geology, Soils, and Seismicity	All	Impacts to soil loss from training activities.	No. Would not reduce impacts to less than significant but would reduce impacts substantially.		The Army will develop and ***implement a Dust and Soils Management and Monitoring Plan (DuSMMoP)*** for the training area. The plan will address measures such as, but not limited to, restrictions on the timing or type of training during high risk conditions, vegetation monitoring, soil monitoring, and buffer zones to minimize dust emissions in populated areas. The plan will determine how training will occur in order to keep fugitive dust emissions below CAA standards for PM10 and soil erosion and compaction to a minimum. The Army will monitor the impacts of training activities to ensure that emissions stay within the acceptable ranges as predicted and environmental problems do not result from excessive soil erosion or compaction. The plan will also define contingency measures to mitigate the impacts of training activities which exceed the acceptable ranges for dust emissions or soil compaction.
26	Geology, Soils, and Seismicity	KTA PTA	Impacts to soil loss from training activities.	No. Would not reduce impacts to less than significant but would reduce impacts substantially.		The Army will ***implement land management practices and procedures described in the ITAM*** annual work plan to reduce erosion impacts (US Army Hawai'i 2001a). Currently these measures include: implementation of a training requirement integration (TRI) program; implementation of an Integrated Training Area Management (ITAM) program; Sustainable Range Awareness (SRA) program; development and enforcement of range regulations; implementation of an Erosion and Sediment Control Management Plan; coordinating with other participants in the Koolau Mountains Watershed Partnership (KMWP); and continued implementation of land rehabilitation projects, as needed, within the Land Rehabilitation and Maintenance (LRAM) program. Examples of current LRAM activities at KTA include: revegetation projects involving site preparation, liming, fertilization, seeding or hydroseeding, planting trees, irrigation, and mulching; a combat trail maintenance program (CTP); coordination through the Troop Construction Coordination Committee (TCCC) on road maintenance projects; and development of mapping and GIS tools for identifying and tracking progress of mitigation measures.
27	Geology, Soils, and Seismicity	All	Impacts to soil erosion and loss from wildland fires.	Yes. Would reduce impacts to soil erosion and loss from wildland fires to less than significant.		The ***Integrated Wildland Fire Management Plan*** for Pohakoloa and Oahu Training Areas was updated on October 2003. The Army will fully implement this plan for all existing and new training areas to reduce the impacts associated with wildland fires. The plan is available upon request.

Table ES-22
Mitigation Likely to Occur *(continued)*

	Category	Training Area	Direct Effect	Necessary to Mitigate to Less than Significant	Mitigation Measure	Regulatory/Administrative Requirement
28	Geology, Soils, and Seismicity	All	Impacts from slope failure.	Yes. Would reduce impacts from slope failure.	The Army proposes to ***minimize or avoid cut slopes***, where practicable. Cut slopes would be blended into the landscape by rounding the edges of the slope, differential orientation of the slope and the roadbed alignments where practicable. Use of these techniques would be varied based on the specific conditions, including depth of the cut, orientation of the slope, and type of material (e.g., dirt slope, rock slope). In accordance with Army design standards, potential mitigation measures for this impact also include, where practicable selecting the least failure-prone route, geotechnical testing soils where necessary along the route to identify problems, designing the roadbed, slope and surface to avoid slope failure, properly sizing drainage systems, designing storm drainage outfalls for efficient performance, and properly monitoring and maintaining the road.	
Biological Resources						
29	Biological Resources	All	Impacts from constuction and training activities on sensitive species and their habitats.	No. Would not reduce impacts to less than significant but would reduce impacts substantially.		The Army will ***implement all the terms and conditions defined in the Biological Opinions*** issued by USFWS for current force and SBCT proposed actions on the islands of O'ahu and Hawai'i. The terms and conditions which implement the reasonable and prudent measures determined during this consultation will be incorporated into the proposed action. These measures will help avoid effects and compensate for impacts on listed species that would result directly and indirectly from implementation of the proposed action. The Biological Opinions are available upon request.
30	Biological Resources	All	Impacts from constuction and training activities on sensitive species and their habitats.	No. Would not reduce impacts to less than significant but would reduce impacts substantially.		The Army will ***implement land management practices and procedures described in the ITAM*** annual work plan to reduce erosion impacts (US Army Hawai'i 2001a). Currently these measures include: implementation of a training requirement integration (TRI) program; implementation of an Integrated Training Area Management (ITAM) program; Sustainable Range Awareness (SRA) program; development and enforcement of range regulations; implementation of an Erosion and Sediment Control Management Plan; coordinating with other participants in the Koolau Mountains Watershed Partnership (KMWP); and continued implementation of land rehabilitation projects, as needed, within the Land Rehabilitation and Maintenance (LRAM) program. Examples of current LRAM activities at KTA include: revegetation projects involving site preparation, liming, fertilization, seeding or hydroseeding, planting trees, irrigation, and mulching; a combat trail maintenance program (CTP); coordination through the Troop Construction Coordination Committee (TCCC) on road maintenance projects; and development of mapping and GIS tools for identifying and tracking progress of mitigation measures.
31	Biological Resources	All	Impacts from constuction and training activities on sensitive species and their habitats.	No. Would not reduce impacts to less than significant but would reduce impacts substantially.	The Army proposes to ***fence or flag where practicable*** any sensitive plant communities from activities that may take place in the ROI. The Biological Opinions outline fencing for the majority of the sensitive species. USARHAW will evaluate if additional fencing may be necessary.	
32	Biological Resources	All	Impacts from fire on sensitive species and their habitats.	No. Would not reduce impacts to less than significant but would reduce impacts substantially.		The Army will ***implement all the terms and conditions defined in the Biological Opinions*** issued by USFWS for current force and SBCT proposed actions on the islands of O'ahu and Hawai'i. The terms and conditions which implement the reasonable and prudent measures determined during this consultation will be incorporated into the proposed action. These measures will help avoid effects and compensate for impacts on listed species that would result directly and indirectly from implementation of the proposed action. The Biological Opinions are available upon request.
33	Biological Resources	All	Impacts from fire on sensitive species and their habitats.	No. Would not reduce impacts to less than significant but would reduce impacts substantially.		The ***Integrated Wildland Fire Management Plan*** for Pohakoloa and Oahu Training Areas was updated on October 2003. The Army will fully implement this plan for all existing and new training areas to reduce the impacts associated with wildland fires. The plan is available upon request.
34	Biological Resources	All	Impacts from the spread of non-native species on sensitive species and habitats.	Yes. Would reduce the impact of the spread of non-native species to sensitive species to less than significant in conjunction with other mitigation measures.		As required in the terms and conditions of the Biological Opinions, the Army will ***educate soldiers and others*** potentially using the facilities and roads in the importance of cleaning vehicles, equipment and field gear.

Table ES-22
Mitigation Likely to Occur *(continued)*

	Category	Training Area	Direct Effect	Necessary to Mitigate to Less than Significant	Mitigation Measure	Regulatory/Administrative Requirement
35	Biological Resources	All	Impacts from the spread of non-native species on sensitive species and habitats.	Yes. Would reduce the impact of the spread of non-native species to sensitive species to less than significant in conjunction with other mitigation measures.		As required in the terms and conditions of the Biological Opinions, the Army will ***educate contractors and their employees*** about the need to ***wear weed-free clothes*** and to ***maintain weed-free vehicles*** when coming onto the construction site and to avoid introducing non-native species to the project site.
36	Biological Resources	All	Impacts from the spread of non-native species on sensitive species and habitats.	Yes. Would reduce the impact of the spread of non-native species to sensitive species to less than significant in conjunction with other mitigation measures.		In accordance with the terms and conditions of the Biological Opinions, the Army ***will prepare a one-page insert to construction contract bids*** informing potential bidders of the ESA Section 7 consultation requirements.
37	Biological Resources	All	Impacts from the spread of non-native species on sensitive species and habitats.	Yes. Would reduce the impact of the spread of non-native species to sensitive species to less than significant in conjunction with other mitigation measures.		In accordance with the terms and conditions of the Biological Opinions, the Army will ***inspect and wash all military vehicles*** at wash rack facilities prior to leaving SBMR, KTA, or PTA to minimize the spread of weeds, such as fountain grass, and animal (invertebrate) relocations.
38	Biological Resources	All	Impacts from the spread of non-native species on sensitive species and habitats.	Yes. Would reduce the impact of the spread of non-native species to sensitive species to less than significant in conjunction with other mitigation measures.		In accordance with USDA regulations and requirements, ***cargo originating outside of Hawai'i will be inspected by USDA*** and certified to ensure it is not carrying the brown tree snake or other reptiles before transporting cargo for use on training ranges.
39	Biological Resources	All	Impacts from the spread of non-native species on sensitive species and habitats.	Yes. Would reduce the impact of the spread of non-native species to sensitive species to less than significant in conjunction with other mitigation measures.		The Army will implement an ***environmental management system*** to further improve the identification and reduction of environmental risks inherent in mission activities. This would include ecosystem level management for all rare species, pest management, land rehabilitation and maintenance, and fire prevention and suppression.
40	Biological Resources	All	Impacts from the spread of non-native species on sensitive species and habitats.	Yes. Would reduce the impact of the spread of non-native species to sensitive species to less than significant in conjunction with other mitigation measures.	The Army proposes to ***use native plants in any new landscaping*** or planting efforts where practicable. When practicable, natural habitats would remain intact or adjacent areas would be restored as habitat.	
41	Biological Resources	All	Impacts from the spread non-native species on sensitive species and habitats.	Yes. Would reduce the impact of the spread of non-native species to sensitive species to less than significant in conjunction with other mitigation measures.		USARHAW will follow ***HQDA guidance*** developed in consultation with the ***Invasive Species Council*** and compliance with Executive Order 13112, which determines Federal Agency duties in regards to preventing and compensating for invasive species impacts. USARHAW will agree to all feasible and prudent measures recommended by the Invasive Species Council that would be taken in conjunction with SBCT action to minimize the risk of harm. The Implementation of an Environmental Management System will further improve the identification and reduction of environmental risks inherent in mission activities.
42	Biological Resources	PTA	Impacts from construction and training on general habitat and wildlife.	No. There is not a significant impact to general habitat and wildlife.	The Army proposes to conduct more intensive ***surveys of lava tubes*** identified as potentially supporting native root dependent arthropods. Lava tubes found to contain or support native root dependent arthropods will be avoided where practicable. All generated construction and training related drainage will be channeled away from lava tubes where practicable.	
Cultural Resources						
43	Cultural Resources	SBMR, DMR, PTA	Impacts from construction and training on ATIs.	No. Would not reduce impacts to less than significant but would reduce impacts substantially.		Facility construction or training area uses will be designed ***to avoid identified traditional places and limit visual impacts on TCPs*** by site location, design, and orientation, where feasible. If it is ***not possible to avoid*** identified TCPs or ATIs because of interference with the military mission or risk to public safety, the Army will ***consult with the SHPO and Native Hawaiians in accordance with the PA*** to identify impacts and to develop appropriate mitigation measures. Mitigation for impacts on the cultural landscape could include consulting with Native Hawaiians and monitoring of construction by a cultural monitor.

Table ES-22
Mitigation Likely to Occur *(continued)*

	Category	Training Area	Direct Effect	Necessary to Mitigate to Less than Significant	Mitigation Measure	Regulatory/Administrative Requirement
44	Cultural Resources	SBMR, DMR PTA	Impacts from construction and training on ATIs.	No. Would not reduce impacts to less than significant but would reduce impacts substantially.		The Army will continue to ***provide Native Hawaiians access*** to traditional religious and cultural properties in accordance with AIRFA and Executive Order 13007, on a case-by-case basis. This access program will be expanded to include new land acquisitions.
45	Cultural Resources	SBMR, DMR PTA	Impacts from construction and training on ATIs.	No. Would not reduce impacts to less than significant but would reduce impacts substantially.		The Army previously identified Native Hawaiian burial sites in the SBCT ROI. The Army completed notification and consultation for these burial sites, in accordance with NAGPRA and, left these human remains in place. To address any impacts on any burial sites, or an inadvertent discovery of Native Hawaiian human remains or funerary objects, the Army ***will abide by all notification and consultation requirements outlined in Section 3 of NAGPRA.***
46	Cultural Resources	SBMR, KTA, PTA	Impact from range and facility construction on archeological resources.	No. Would not reduce impacts to less than significant but would reduce impacts substantially.		Before construction, the Army will complete ***the evaluation of any archaeological sites*** within areas subject to range and facility construction. Sites determined to be eligible for the NRHP will be ***flagged for avoidance***. The projects will be designed to avoid all eligible and unevaluated archaeological sites, to the full extent practicable. ***GIS and GPS information will be given to project designers*** and range control to insure sites are considered in project design. If it is ***not possible to avoid*** archaeological sites, the Army will ***consult in accordance with the PA*** to determine the appropriate mitigation for the damage to the sites such as data recovery or other mitigation measures. To address the ***accidental discovery*** of archaeological sites, human remains, or cultural items, the Army has developed an ***inadvertent discovery plan (IDP)*** as part of the PA.
47	Cultural Resources	SBMR, DMR, PTA	Impact from training activities on archeological resources.	No. Would not reduce impacts to less than significant but would reduce impacts substantially.		The Army will ***evaluate archaeological sites*** within training areas related to SBCT. Sites determined to be eligible for the NRHP and sites pending evaluation will be ***identified and avoided*** through protective measures, to the full extent practicable. If avoidance of identified archaeological sites or newly discovered sites is not feasible, the Army will ***consult in accordance with the PA*** to determine the appropriate mitigation for the damage to the sites such as data recovery or other mitigation measures. To address the ***accidental discovery*** of archaeological sites, human remains, or cultural items, the Army has developed ***an IDP*** as part of the PA .
48	Cultural Resources	DMR	Impact from training activities on archeological resources.	No. Would not reduce impacts to less than significant but would reduce impacts substantially.		The Army ***will monitor any subsurface excavations in the coastal area*** and the high sensitivity area around the runways area. The Army will place constraints on any training activities that might involve substantial below surface impacts.

Table ES-22
Mitigation Likely to Occur *(continued)*

	Category	Training Area	Direct Effect	Necessary to Mitigate to Less than Significant	Mitigation Measure	Regulatory/Administrative Requirement
49	Cultural Resources	KTA PTA	Impacts from construction of trails on archaeological resources.	No. Would not reduce impacts to less than significant but would reduce impacts substantially.		In accordance with the PA, the Army will ***identify*** cultural properties, ***evaluate*** cultural properties for NRHP eligibility, and ***implement avoidance strategies*** to the full extent practicable. ***GIS and GPS information will be provided to project designers*** to insure sites are considered in the design and construction of all the proposed military vehicle trails and training roads in WPAA. If it is ***not possible to avoid*** archaeological sites, the Army will ***consult in accordance with the PA*** to determine the appropriate mitigation for the damage to the sites such as data recovery or other mitigation measures. To address the ***accidental discovery*** of archaeological sites, human remains, or cultural items, the Army has developed ***an IDP*** as part of the PA.
50	Cultural Resources	SBMR, DMR, PTA	Impacts from military use of trails on archaeological resources.	Yes. Would reduce impacts to less than significant.		Eligible and unevaluated sites will be ***flagged and mapped on a range control GPS map***. Installation cultural resources staff will ***monitor the sites regularly***. Participants in training activities on the ranges will be ordered to ***avoid identified sites***. To address the ***accidental discovery*** of archaeological sites, human remains, or cultural items, the Army has developed ***an IDP*** as part of the PA.
51	Cultural Resources	KTA	Impacts from construction on historic buildings.	No. Would substantially reduce impacts on historic buildings but not to less than significant.		The Army will consult with SHPO, ACHP, and interested parties in accordance with Section 106 of the NHPA on the Nike Missile Site complex. The Army will manage the ***Nike Missile Site*** complex and will conduct renovations ***in compliance with the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings***.
52	Cultural Resources	PTA	Impacts from construction on historic buildings.	No. Would substantially reduce impacts on historic buildings but not to less than significant.		The Army will continue consulting with the SHPO, ACHP, and interested parties in accordance with Section 106 of the NHPA on the proposed PTA master plan to include the ***preservation and protection of historic buildings in the PTA cantonment area.*** The Army will require ***WPAA buildings be avoided*** by using range management protocols, which will require the area around the buildings to be off-limits to military training activities. Keʻāmuku Village will be marked as off limits for training to protect it from damage.
Human Health and Safety						
53	Human Health and Safety	All	Impacts from ammunitions on human health and safety.	Yes. Would mitigate impacts from ammunitions to human health and safety to less than significant.		All government personnel or government contractors accessing impact areas will continue to follow ***OSHA and Army standards*** and guidelines to minimize health and safety impacts from exposure to any contaminants or ordnance. The general public will only be allowed in or near impact areas at times and in group sizes approved by USARHAW Command. Army trained and certified personnel would escort the general public at all times. Access is limited to only those areas deemed safe by USARHAW Range Control.

Table ES-22
Mitigation Likely to Occur *(continued)*

	Category	Training Area	Direct Effect	Necessary to Mitigate to Less than Significant	Mitigation Measure	Regulatory/Administrative Requirement
54	Human Health and Safety	All	Impacts from ammunitions on human health and safety.	Yes. Would mitigate impacts from ammunitions to human health and safety to less than significant.		The Army will undertake additional ***risk based investigations*** as appropriate in the event any active range is closed and transferred out of DoD control. Based on the results of this health risk-based analysis, all remediation necessary to mitigate an imminent threat to human health and the environment would be undertaken at such time.
55	Human Health and Safety	KTA	Impacts on human health and safety from training activities at the CACTF.	Yes. Would mitigate impacts on human health and safety from the introduction of live-fire training to less than significant.		When the CACTF is active, the Army will establish all prudent measures ***to prevent unauthorized access*** within the SDZs for SRTA, which are up to 2,300 feet (700 meters) during training operations. This would help ensure public safety during training.
56	Human Health and Safety	SBMR, KTA, PTA	Impacts from potential lead contamination from construction.	Yes. Would reduce impacts from lead to less than significant.		The Army will expand ***existing programs for Lead Based Paint (LBP)*** to any SBCT related activities that would effect older structures that had the potential use of Lead Based Paint throughout the installations. Lead is managed in place for existing structures. In the event of demolition or renovation projects affecting such structures, a survey is required prior to demolition/renovation and appropriate actions must be taken to prevent the release of these substances into the environment. Construction workers must be properly trained/certified to handle these materials and any debris must be tested by TCLP and disposed according to the results.
57	Human Health and Safety	SBMR, PTA	Impacts from potential lead contamination from construction.	Yes. Would reduce impacts from lead to less than significant.		The Army will ***retain lead-contaminated soils from existing berms on-site*** and use the soils in the construction of new berms associated with the UACTF, PTA AALFTR or PTA BAX. If lead-contaminated soil materials were not reused at the site for new berm construction, contaminated soils would be remediated for lead, in accordance with applicable federal and state standards.
58	Human Health and Safety	SBMR, KTA	Impacts from potential asbestos contamination from construction.	Yes. Would reduce impacts from asbestos to less than significant.		The Army will expand ***existing programs for asbestos*** to any SBCT related activities that would affect older structures that had the potential use of asbestos through the installations. Asbestos is managed in place for existing structures. In the event of demolition or renovation projects affecting such structures, a survey is required prior to demolition/renovation and appropriate actions must be taken to prevent the release of these substances into the environment. Construction workers must be properly trained/certified to handle these materials and any debris must be tested by TCLP and disposed according to the results.
59	Human Health and Safety	SBMR, PTA	Impacts from potential Unexploded Ordnance.	Yes. Would reduce impacts from unexploded ordnance to human health and safety to less than significant.		Prior to initiation of any construction activities, the Army will employ qualified personnel to conduct a ***UXO survey of the proposed construction area***. If the risk of encountering UXO is low, than UXO construction support will be used. If the risk of encountering UXO is high, then UXO clearance will be performed to ensure the safety of the site. The Army will document UXO surveys and removal actions in full accordance with applicable laws, regulations, and guidance. The Army will perform UXO clearance activities if rounds are fired outside of designated impact areas or present an immediate threat to human health or safety.
60	Human Health and Safety	SBMR	Impacts from construction on Installation Restoration Program sites.	Yes. Would reduce impacts from construction on Installation Restoration Program sites to less than significant.	The Army proposes to build the proposed WAAF facility to ***incorporate an existing monitoring well into the design***, as long as construction does not impact the well by either contaminating, destroying, permanently sealing or otherwise preventing future sampling of the well. Technicians would have access to this well in order to continue the monitoring program. As the well currently exists within the apron/runway vicinity, the location is not believed to be a significant hindrance since the wellhead could be flush-mounted in the apron surface similar to those at civilian gasoline service stations.	
61	Human Health and Safety	All	Impacts to public safety due to wildfires.	Yes. Would reduce impacts to public safety from potential wildland fires to less than significant.		The ***Integrated Wildland Fire Management Plan*** for Pohakoloa and Oahu Training Areas was updated on October 2003. The Army will fully implement this plan for all existing and new training areas to reduce the impacts associated with wildland fires. Public and firefighter safety is the first priority in every fire management activity. The plan considers the potential need for firebreaks and/or fuel breaks at each installation along with other safety concerns. The plan is available upon request.

Table ES-22
Mitigation Likely to Occur *(continued)*

	Category	Training Area	Direct Effect	Necessary to Mitigate to Less than Significant	Mitigation Measure	Regulatory/Administrative Requirement
62	Human Health and Safety	KTA	Impacts of potential spread of hazardous waste due to wildland fires.	Yes, would reduce impacts from hazardous materials and waste to less than significant.		The ***Integrated Wildland Fire Management Plan*** for Pohakoloa and Oahu Training Areas was updated on October 2003. The Army will fully implement this plan for all existing and new training areas to reduce the impacts associated with wildland fires. The plan is available upon request.
Socioeconomics and Environmental Justice						
63	Socioeco-nomics and Environ-mental Justice	SBMR	Impacts on local schools.	Yes. Would mitigate potential impacts on local schools to less than significant.		Federal aid will be made available to local schools to compensate for the increased burden through ***the Impact Aid program***. Such aid may take the form of basic support payments, or grants for construction of new facilities to house new students associated with Soldiers located at SBMR. Additional teachers would need to be hired to maintain the current student to teacher ratios.
64	Socioeco-nomics and Environ-mental Justice	SBMR	Impacts of SBCT on local schools.	Yes. Would mitigate potential impacts on local schools to less than significant.	The Army proposes to ***notify the school districts as soon as possible*** before personnel increases to give the schools time to secure funding and hire new teachers, and assist in providing these facilities. Although the local school districts receive additional funding for each military dependent attending public school, it is likely that the school districts would bear some of the costs for additional teachers and physical space, if needed. The Residential Communities Initiative (RCI) Office, as the lead department for planning Army Family Housing, closely coordinates future student requirements with the State Department of Education. To this end, the RCI Project Manager, has been working with DOE District Superintendents. On behalf of the Army, the RCI Project Manager works with the DOE, to generate School Enrollment Projections with as much accuracy as possible. The Development Partnership plans its facilities work years in advance, coordinating with the DOE. Depending on future enrollments and funding levels, the Proposed Action could still adversely affect school budgets, but the impact would be less than significant.	
65	Socioeco-nomics and Environ-mental Justice	PTA	Economic impacts on local business.	Yes. Would mitigate potential impacts on local businesses to less than significant.	Because a substantial amount of construction is proposed over the next several years, the Army plans to ***conduct long-range procurement planning*** to lessen excessive supply and demand issues on local and outside suppliers.	

Table ES-23
Mitigation Already in Progress or Unlikely to Occur

	Category	Training Area	Direct Effect	Additional Mitigation Measure
Limited Resources				
1	Land Use and Recreation	All	Impacts of training activities on local communities.	Establish a citizens advisory board for Oahu and Hawai'i USARHAW training lands made up of local volunteers to assist the USARHAW in identifying impacts and mitigations from USARHAW determined projects and priorities. Focus groups are currently being used to address adverse impacts from training activities on communities. (Identified in the DEIS)
2	Air Quality	All	Impacts from construction emissions.	Evaluate the feasibility of measures to reduce construction emissions, including DPM, PM_{10}, NOx and other air pollutants. (Proposed by USEPA)
3	Noise	SBMR	Impacts to schools.	Install insulation and cooling systems for classrooms at Solomon and Hale Kula Elementary Schools that will remain exposed to Zone II noise and might be exposed to Zone Ill. (Proposed by State Dept. of Education)
4	Water Resources	All	Impacts from wastewater.	Build a treatment plant for wastewater in the mauka lands, producing water for military requirements. (Proposed by the Public)
5	Geology, Soils and Seismicity	SBMR, PTA	Impacts on geologic and water resources from range use.	Monitor surface water quality and soils as a means of measuring potential future impacts. If impacts on surface water or soils were identified through monitoring, further mitigation could include characterizing and remediating contaminant source areas. (Identified in the DEIS).
6	Biological Resources	All	Impacts on sensitive species and habitat from the spread of non-native species.	Replant any area that is damaged by fires with appropriate plants similar to those destroyed by fire. Native species would be used in areas where their establishment seems likely. Plants known to be invasive or noxious would not be used. (Identified in the DEIS).
7	Biological Resources	All	Impacts from construction and training on sensitive species and habitats.	When feasible, preserve or restore sensitive habitat for sensitive plants that are not federally listed on Army owned or leased lands. (Identified in the DEIS).
8	Human Health and Safety	KTA	Impacts from potential PCB contamination.	Conduct further studies to evaluate the status of the chemical attenuation and extent of PCB contamination at the proposed CACTF site. If the findings show there is an imminent threat to human health and safety, a remedial cleanup would be implemented to remove contamination prior to CACTF construction, if necessary. Troops and Army personnel would avoid driving or training on and around the former transformer area until the release had been abated. (Identified in the DEIS)

Table ES-23
Mitigation Already in Progress or Unlikely to Occur *(continued)*

	Category	Training Area	Direct Effect	Additional Mitigation Measure
9	Socioeconomics and Environmental Justice	SBMR	Impacts to children's safety.	Increase Army efforts to protect the safety of children, including increased fencing at Hale Kula Elementary, Solomon Elementary, Wheeler Elementary, and Wheeler Intermediate schools, increased limitations on access to certain areas and the provision of more adult supervision. (Proposed by State Dept. of Education)
Unfeasible				
10	Biological Resources	PTA	Impacts from soil erosion due to fire.	Continue to allow grazing on the West PTA Acquisition Area when it is not in use for training to keep the fuel load of the alien grasses below a dangerous level. (Identified in the DEIS)
11	Biological Resources	PTA	Impacts due to the introduction of non-native species.	Build a vehicle wash facility at Kawaihae Harbor so that any Army vehicle transported from another island/training area would undergo a mandatory vehicle wash and inspection before traveling to or from PTA. (Identified in the DEIS)
12	Human Health and Safety	All	Impacts from training activities.	Provide resources to help adjacent private landowners and/or organizations manage their properties to minimize potential impacts of fire or other threats that may result from USARHAW activities or that may originate on private property and impact USARHAW activities. (Identified in the DEIS).
13	Public Services and Utilities	All	Impacts on water conservation.	Use gray water in all dust control projects; install dual gray water and potable water systems on bases. (Proposed by the Public)
Similar program in place				
14	Land Use	SBMR, PTA	Impacts on agricultural land use as a result of training activities	Establish a cooperative relationship with the landowner and lessee to allow continued pineapple cultivation at SBMR and grazing at PTA in conjunction with training on the land. (Identified in the DEIS)
15	Air Quality	All	Impacts from construction emissions.	Reduce downwind construction emissions by the use of particle traps and low-sulfur diesel fuel, by reducing trips, by using clean new equipment, by conducting maintenance inspections, and by developing a construction emission reduction plan in consultation with the Hawaii Department of Health. (Proposed by USEPA)
16	Water Resources	All	Impacts from chemical contaminants.	Further restrict the use of pesticides chemicals and fertilizers over all known aquifers. (Proposed by the Public)
17	Water Resources	All	Impacts to vegetated stream buffers.	Establish additional vegetated corridors around all streams. (Proposed by the Public)
18	Water Resources	All	Impacts to watershed discharge areas.	Further protect watershed discharge areas. (Proposed by the Public)
19	Biological Resources	All	Impacts of training activities on migratory birds.	Share information gathered on migratory birds and natural resources with the USFWS, the Biological Resources Division of the USGS, and other appropriate repositories such as the Cornell Laboratory of Ornithology. (Proposed by the Public)

Table ES-23
Mitigation Already in Progress or Unlikely to Occur *(continued)*

	Category	Training Area	Direct Effect	Additional Mitigation Measure
20	Biological Resources	All	Impacts of training activities on migratory birds	Avoid pollution or detrimental alteration of the environment for the benefit of migratory birds and monitor migratory birds in the proposed ROI, with particular focus on species of concern. (Identified in the DEIS)
21	Biological Resources	All	Impacts on natural resources from training activities.	Investigate a new regulatory authority to work with nonprofit organizations to purchase buffer lands. (Identified in the DEIS)
22	Cultural Resources	PTA	Impacts from construction and training activities.	Construct a natural and cultural resources visitor center at PTA, adjacent to the new Saddle Road alignment. The visitor center would provide interpretive displays of the biological and cultural resources of not only PTA but also the region between Mauna Loa and Mauna Kea and would include a small theater for interpretive video or live presentations. The center also would house the PTA resource managers and lab facilities. (Identified in the DEIS)
23	Human Health and Safety	SBMR	Impacts on installation restoration program sites	Work with the EPA, Del Monte, and Campbell Estates regarding allocating, apportioning, and assigning liability and responsibilities for cleanup and would conduct any cleanup required by law. (Identified in the DEIS)
24	Human Health and Safety	KTA	Impacts from potential contamination from use of SRTA.	Follow existing USARHAW protocol of removing all target equipment and shell casings following training for SRTA rounds. Restore the range to its condition prior to use. Produce a site-specific training management plan to establish best management practices (BMPs) during training and identify preventative measures to prevent safety hazards, ensure security precautions, and otherwise maintain environmental stewardship. (Identified in the DEIS)
25	Socioeconomics and Environmental Justice	All	Impacts from dust emissions or other impacts on low-income and minority populations.	Develop mitigation, in consultation with low-income or minority communities and address how proposed mitigation reflects their needs and preferences to the extent PM_{10} and other impacts present a disproportionately high, adverse effect on low-income or minority populations. Include the concerns of Native Hawaiians to avoid, reduce or mitigate adverse effects on resources of cultural importance to Native Hawaiian residents. (Proposed by USEPA)
26	Public Services and Utilities	PTA	Impacts on water conservation.	Construct rain catchment systems to use for irrigation and dust control where practicable. (Proposed by the Public)
27	Public Services and Utilities	All	Impacts on water conservation.	Install water saving devices, such as low-flow shower-heads in all of its existing buildings. Install water saving devices in all new construction in accordance with the various Federal, State, and Army design standards for housing and workspaces.(Proposed by the Public)
28	Public Services and Utilities	All	Impacts on water conservation.	After Department of Health approval of two ongoing studies, Use R1 quality effluent for irrigation to develop and maintain groundcover at SBMR and WAAF. (Proposed by the Public)