



Draft

Environmental Impact Statement /  
Overseas Environmental Impact Statement

GUAM AND CNMI MILITARY RELOCATION

Relocating Marines from Okinawa,  
Visiting Aircraft Carrier Berthing, and  
Army Air and Missile Defense Task Force

**Volume 1: Overview of Proposed Actions and Alternatives**

November 2009

Comments may be submitted to:

Joint Guam Program Office  
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**DRAFT**  
**ENVIRONMENTAL IMPACT STATEMENT/  
OVERSEAS ENVIRONMENTAL IMPACT STATEMENT (EIS/OEIS)**

**Lead Agency:** Department of the Navy  
**Title of Proposed Action:** Guam and Commonwealth of the Northern Mariana Islands (CNMI)  
Military Relocation  
**Affected Jurisdictions:** Guam, CNMI  
**Designation:** EIS/OEIS

**Abstract**

The National Environmental Policy Act of 1969 requires federal agencies to examine the environmental effects of their proposed actions. On behalf of the Department of Defense, the Department of the Navy is preparing this Draft EIS/OEIS to assess the potential environmental effects associated with the proposed military activities. The Navy is the lead agency for preparation of this Draft EIS/OEIS. The Office of the Secretary of Defense directed the Navy to establish a Joint Guam Program Office that serves as the NEPA proponent of the proposed actions. A number of federal agencies were invited to be cooperating agencies in the preparation of this Draft EIS/OEIS. These agencies have either jurisdiction or technical expertise for certain components of the proposed actions or a potentially affected resource. The agencies that have accepted the invitation to participate as cooperating agencies are United States (U.S.) Fish and Wildlife Service, Department of Transportation Federal Highways Administration, Federal Aviation Administration, U.S. Environmental Protection Agency Region 9, U.S. Office of Insular Affairs, U.S. Department of Agriculture, U.S. Army Corps of Engineers, and U.S. Air Force.

The proposed actions are complex, multi-service projects involving components of the U.S. Marine Corps, Navy, and Army. Each volume evaluates a discrete portion of the proposed actions. Volume 1 presents an overview of the proposed actions and alternatives. The analyses presented in Volumes 2 through 6 each include the details of alternatives and a no-action alternative. The no-action alternative represents status quo. The proposed actions would not occur and there would be no changes to military facilities, training or operations, in Guam and on Tinian. Volume 2 analyzes the effects of the proposed facilities and infrastructure to accommodate the Marine Corps relocation to Guam, including the associated training and operations on Guam. Volume 3 analyzes the effects of the proposed facilities and infrastructure for the Marine Corps, including operations and training on Tinian in the CNMI. Volume 4 analyzes the effects of the Navy's proposed deep-draft port with shoreside improvements creating a new capability in Apra Harbor, Guam, to support a transient nuclear-powered aircraft carrier. Volume 5 analyzes the proposed site of the Army's Air and Missile Defense Task Force. Volume 6 evaluates related actions such as utilities and roadway projects on Guam. Volume 7 summarizes the best management practices, potential mitigation measures, and preferred alternatives' impacts from Volumes 2 through 6. In addition, Volume 7 includes an assessment of cumulative impacts. Volume 8 presents other environmental and regulatory considerations that were evaluated and addressed.

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**November 2009**

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## EXECUTIVE SUMMARY

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### ES-1 INTRODUCTION

As a result of reviews of the United States (U.S.) defense posture in the Pacific region and the U.S. alliance with Japan, a portion of U.S. Marine Corps (Marine Corps) forces currently located in Okinawa, Japan would be relocated to Guam. This relocation is proposed to occur during the same timeframe as a proposed wharf construction in Guam's Apra Harbor to support U.S. Navy (Navy) transiting nuclear aircraft carriers. A U.S. Army (Army) Air and Missile Defense Task Force (AMDTF) is also proposed for Guam to protect against the threat of harm from ballistic missile attacks. For the purposes of this Draft Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS), these three proposed actions are referred to as the Guam and the Commonwealth of the Northern Mariana Islands (CNMI) military relocation.

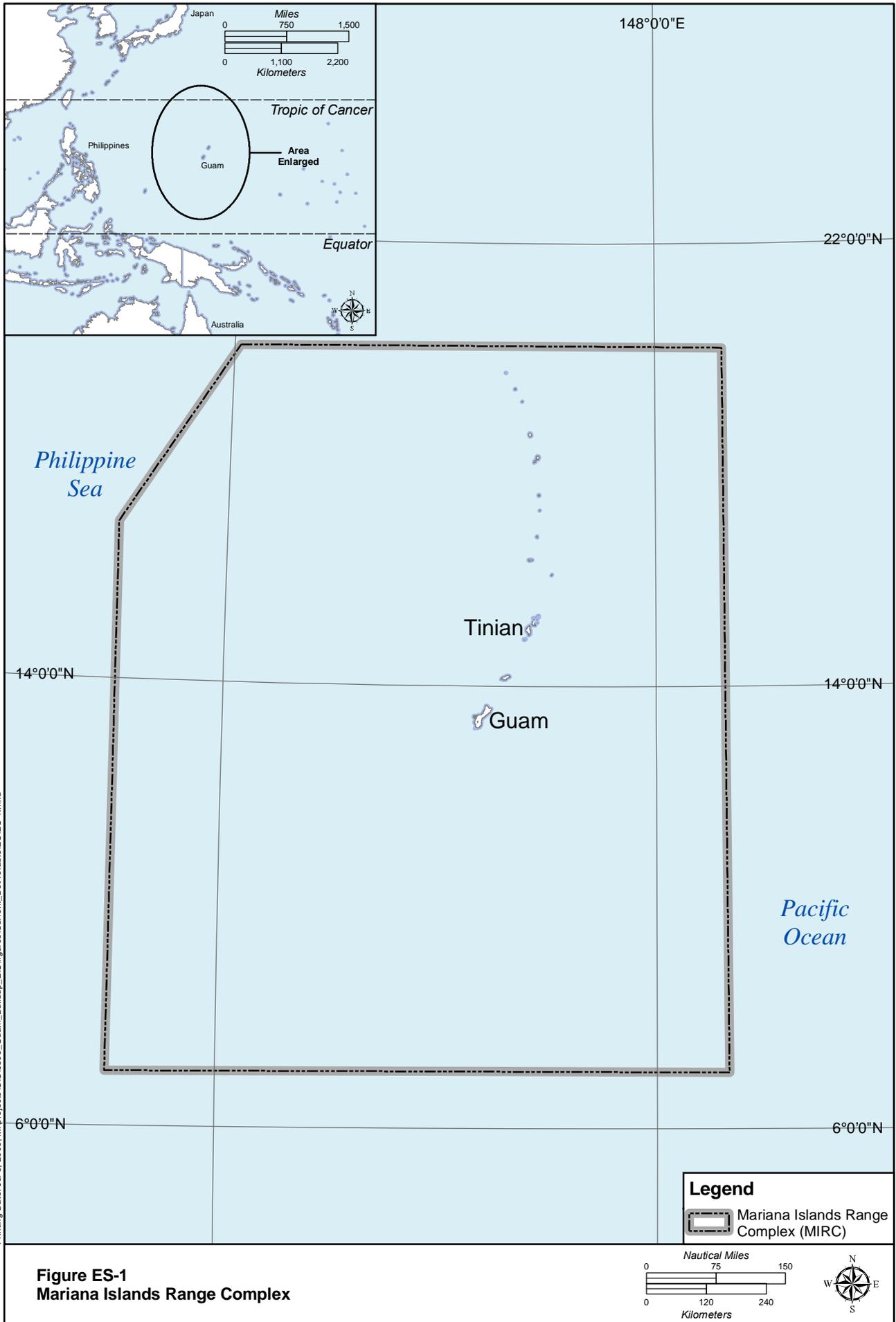
This Draft EIS/OEIS was prepared in compliance with the National Environmental Policy Act (NEPA) (42 United States Code § 4321, as amended); the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (Title 40 Code of Federal Regulations [CFR] § 1500-1508, July 1, 1986); and the Navy Procedures for Implementing NEPA (32 CFR § 775). It was prepared to inform decisions based on an understanding of the environmental consequences of the proposed Guam and CNMI military relocation and take measures to protect, restore, and enhance the environment. The decisions to be made are whether and how to implement the proposed actions.

Actions with the potential to significantly harm the environment beyond U.S. territorial waters (i.e., beyond 12 nautical miles (nm) (22.2 kilometers [km])) must be analyzed using the procedures set forth in Executive Order (EO) 12114 and associated implementing regulations. An impact statement prepared under EO12114 is identified as an Overseas Environmental Impact Statement (OEIS). Although this document was also initiated as an OEIS, EO 12114 is not applicable to the actions as now proposed. The document, through this draft, remains labeled as a Draft EIS/OEIS. It will, however, be re-titled as an EIS and developed solely under NEPA, subject to information received during the public comment process.

The three main components of the proposed actions are briefly stated as follows:

1. *Marine Corps.* (a) Develop and construct facilities and infrastructure to support approximately 8,600 Marines and their 9,000 dependents relocated from Okinawa to Guam. (b) Develop and construct facilities and infrastructure to support training and operations on Guam and Tinian (CNMI) for the relocated Marines.
2. *Navy.* Construct a new deep-draft wharf with shoreside infrastructure improvements creating the capability in Apra Harbor, Guam to support a transient nuclear powered aircraft carrier.
3. *Army.* (a) Develop facilities and infrastructure on Guam to support relocating approximately 600 military personnel and their 900 dependents to establish and operate an Army AMDTF.

The proposed action for the Marine Corps includes personnel from the units being relocated and the associated base support personnel that must also be present at an installation to support the military mission.



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**Figure ES-1**  
**Mariana Islands Range Complex**

The project locations addressed in this Draft EIS/OEIS are Guam and Tinian. Guam and Tinian are part of the Mariana Islands archipelago. They are located within the Mariana Islands Range Complex (MIRC), an area used by the Department of Defense (DoD) for readiness training. Figure ES-1 depicts the region for the proposed actions.

## **ES-2 OVERARCHING PURPOSE AND NEED**

The overarching purpose of the proposed actions is to locate U.S. military forces to meet international agreement and treaty requirements and to fulfill U.S. national security policy requirements to provide mutual defense, deter aggression, and dissuade coercion in the Western Pacific Region. The need for the proposed actions is to meet the following criteria based on U.S. policy, international agreements, and treaties:

- Position U.S. forces to defend the homeland including the U.S. Pacific territories
- Location within a timely response range
- Maintain regional stability, peace and security
- Maintain flexibility to respond to regional threats
- Provide powerful U.S. presence in the Pacific region
- Increase aircraft carrier presence in the Western Pacific
- Defend U.S., Japan, and other allies' interests
- Provide capabilities that enhance global mobility to meet contingencies around the world
- Have a strong local command and control structure

## **ES-3 GLOBAL STRATEGIC PERSPECTIVE**

The U.S. maintains military capabilities in the Western Pacific to support U.S. and regional security; economic and political interests; and to fulfill treaty and alliance agreements.

### Relocation of Marines to Guam

In response to the evolving security environment in the Pacific region, the Integrated Global Presence and Basing Strategy (IGPBS) and Quadrennial Defense Review (QDR) initiatives began to focus on posture changes in the Pacific region. These initiatives included reduction of overseas forces while striving to base forces in locations that support flexibility and speed of response to anywhere in an unpredictable environment. Based on the QDR recommendations for global repositioning and operational realignments in the Pacific Region, the Department of Defense began to identify suitable locations to relocate the Marine Corps from Okinawa that met: (1) treaty and alliance requirements; (2) response times to potential areas of conflict; and (3) freedom of action (use of base without restrictions).

In a parallel initiative with the IGPBS that began in December 2002, the U.S. engaged the Government of Japan in discussions to coordinate changes in U.S. force posture in Japan and the options on how best to coordinate those changes with other force realignments in the Pacific. Over a three and one-half-year period, the U.S. engaged with the Government of Japan in a series of sustained security consultations under the auspices of the U.S.-Japan Security Consultative Committee (SCC), the pre-eminent treaty oversight body, composed of the U.S. Secretary of State and Secretary of Defense and the Japanese Minister of Foreign Affairs and Minister of Defense. These talks, which came to be known as the Defense Policy Review Initiative (DPRI), were aimed at evolving the U.S.-Japan Security Alliance to reflect today's rapidly changing global security environment. The DPRI, which served as the primary venue for accomplishing IGPBS objectives regarding Japan, focused on alliance transformation at the strategic and

operational levels, with particular attention to the posture of U.S. and Japanese forces in Japan, as well as transforming capabilities in the Western Pacific around the U.S. and Japanese alliance.

Ultimately, these discussions and negotiations resulted in an agreement known as the Alliance Transformation and Realignment Agreement (ATARA). In development of the ATARA, the U.S. and Japan confirmed several basic concepts relevant to bilateral defense cooperation, the defense of Japan and responses to situations in areas surrounding Japan. These concepts include the following: (1) bilateral defense cooperation remains vital to the security of Japan as well as to peace and stability of the region; (2) the U.S. will maintain forward-deployed forces, and augment them as needed, for the defense of Japan and to deter and respond to situations in areas surrounding Japan; (3) the U.S. will provide all necessary support for the defense of Japan; (4) U.S. and Japanese operations in the defense of Japan, and responses to situations in areas surrounding Japan, must be consistent to ensure appropriate responses when situations in areas surrounding Japan threaten to develop into armed attacks against Japan, or when an armed attack against Japan may occur; and (5) U.S. strike capabilities and the nuclear deterrence provided by the U.S. remain an essential complement to Japan's defense capabilities and preparedness in ensuring the defense of Japan and contribute to peace and security in the region.

At the May 1, 2006, SCC meeting, the two nations recognized that the realignment initiatives described in the SCC document *U.S.-Japan Roadmap for Realignment Implementation* (the "Roadmap") would lead to a new phase in alliance cooperation. The Roadmap outlined details of different realignment initiatives, including the relocation of the Marines and associated cost sharing arrangements with the Japanese government. The Mutual Security Treaty and follow-on U.S.-Japan agreements require the U.S. to respond quickly to areas of potential conflict in the Asia-Pacific region. Consistent with these obligations, the ATARA and Roadmap initiatives require relocating approximately 8,000 III Marine Expeditionary Force personnel and 9,000 dependents from Okinawa to Guam with a target completion date of 2014. Moving these forces to Guam would place them on the furthest forward element of sovereign U.S. territory in the Pacific capable of supporting such a presence, thereby maximizing their freedom of action while minimizing the increase in their response time relative to their previous stationing in Okinawa.

Under the ATARA and Roadmap, Japan has agreed to a cost-sharing arrangement with the U.S. that would assist in funding up to \$6.09 billion of the facilities construction costs for the relocation of the Marines from Okinawa to Guam. This cost-sharing agreement acknowledges that the Marine Corps forces on Guam would continue to support U.S. commitments to provide for the defense and security of Japan. These international commitments for funding, and locations of the repositioned forces were re-affirmed on February 17, 2009 in the document titled: *Agreement Between the Government of the U.S. and the Government of Japan Concerning the Implementation of the Relocation of the III Marine Expeditionary Force Personnel and Their Dependents from Okinawa to Guam* (Guam International Agreement), signed by the U.S. Secretary of State and the Japanese Foreign Minister. The Agreement was approved by the Japanese Diet on May 13, 2009 and transmitted to the U.S. Congress in accordance with each party's respective legal procedures.

#### Training on Tinian

Guam cannot accommodate all training for the relocating Marines. Tinian is approximately 100 mi (160 km) away and provides the best opportunities for training groups of 200 Marines or larger due to greater land availability. It provides reliable access and maximum opportunity to realistically train with their weapons and equipment while minimizing "down time" lost when travelling to training locations. The northern two-thirds of Tinian are leased to the DoD. Company and battalion level non-live fire training

areas already exist and are utilized on these lease parcels. The land, however, could be developed to accommodate live fire ranges.

#### Development of a Navy Transient Aircraft Capability in Guam

The 2006 QDR states that the U.S. realignment strategy included the need for greater availability of aircraft carriers in the Pacific to support engagement, presence, and deterrence, supplementing current ship deployments, port visits in the region, and the aircraft carrier base (homeport) in Japan. Port visits are generally of short duration with limited availability for maintenance support. In contrast, a transient capable port has greater support for vessel maintenance and crew quality of life enabling longer stays in a region to meet the QDR strategy. Based upon the QDR and treaty and alliance requirements, DoD began to identify suitable locations for a new transient carrier capability in the Pacific that met: (1) treaty and alliance requirements; (2) response times to potential areas of conflict; and (3) freedom of action (use of a base without restrictions, including implementation of force protection measures to deter/avoid terrorist attacks). The QDR concept is that the U.S. should strive to position forces in locations that support flexibility and speed of response to anywhere in an unpredictable environment. The proposed action to create a transient carrier capability on Guam meets all of these requirements.

#### Development of an Army AMDTF

The proposed Army AMDTF would be placed on Guam to defend U.S. interests on Guam. Its defensive umbrella would ensure that local military assets are protected and remain available to meet their military missions.

### **ES-4 PROPOSED ACTIONS**

The main components of the proposed actions are as follows:

1. *Marine Corps.* (a) Develop and construct facilities and infrastructure to support approximately 8,600 Marines and their 9,000 dependents relocated from Okinawa (Japan) to Guam, (b) Develop and construct facilities and infrastructure to support training and operations on Guam and Tinian for the relocated Marines.
2. *Navy.* Construct a new deep-draft wharf with shoreside infrastructure improvements creating the capability in Apra Harbor, Guam to support a transient nuclear powered aircraft carrier.
3. *Army.* Develop facilities and infrastructure on Guam to support relocating approximately 600 military personnel and their 900 dependents to establish and operate an AMDTF.

The proposed actions are a complex, multi-service proposal involving components of the Marine Corps, Navy, and Army, as well as existing Air Force assets on Guam. Facilities construction and improvements would be necessary to accommodate the three major elements of the proposed actions. The proposed actions would entail increased operational activities associated with Marine Corps and Army basing, more frequent ship berthing, and the establishment of aviation maintenance operations and facilities. There would also be increased opportunities for additional military personnel to meet critical training requirements. Training could take the form of communications/control, combat skills, aviation, amphibious vehicle maneuvers, and weapons firing activities. Thus, required construction would include the facilities and infrastructure for maintaining a permanent presence on Guam, and the creation of new training ranges to accommodate training a larger population of military personnel. These training facilities would be located on Guam and on Tinian. In summary, implementation of the proposed actions would result in the following:

- Temporary increase in population related to the construction-related work force
- Permanent increase in number of military and civilian personnel and dependents on Guam
- Increase in transient presence on Guam and Tinian
- Increase in number and type of major equipment assets to support military personnel and operations (e.g., aircraft, ships, amphibious watercraft)
- Increase in number and type of training activities
- Construction of new facilities
- Improvements to existing facilities
- Improvements to infrastructure (including roads and utilities)
- Acquisition or long-term leasing of additional land (required for three of the Marine Corps Relocation – Guam action alternatives)

### Proposed Population Changes

Even though Guam currently hosts a significant permanent Navy and Air Force population, the proposed actions would increase the direct military population on Guam as summarized in Table ES-1. The proposed action for the Marine Corps relocation include personnel from the units being relocated and the associated base support personnel that must also be present at an installation to support the military mission. The transient population would increase due to the Navy's transient berthing of an aircraft carrier that is usually accompanied by supply and combatant escort ships. Collectively, the aircraft carrier and accompanying ships are referred to as a carrier strike group (CSG). Table ES-1 portrays the maximum potential loading of permanent and transient personnel. Given the transient cycle of both the Navy and the Marine Corps, however, the projected average daily loading is 2,178, much less than the potential 9,222 transient loading for both services.

**Table ES-1. Summary of Direct Military Population Changes on Guam**

Service	Permanent Military Personnel	Dependents	Transient Military Personnel	DoD Civilian Workforce (from off island)	Subtotals by Service
Marines	8,552	9,000	2,000	1,710	21,262
Navy*	0	0	7,222*	0	7,222*
Army	630	950	0	126	1,706
<b>Subtotals by Population Type</b>	<b>9,182</b>	<b>9,950</b>	<b>9,222*</b>	<b>1,836</b>	<b>Total Proposed Actions Population = 30,190*</b>

\*Note: Up to 7,222 personnel on the aircraft carrier and CSG could be in port at a given time, currently planned for a cumulative total of up to 63 visit days per year with an anticipated length of 21 days or less per visit. Marine Corps vessels would be berthed at Apra Harbor when in port. These vessels could include up to 6,213 personnel. However, this group would not be in port at the same time as the Carrier Strike Group, so the larger of the two personnel numbers is used in this table for conservative analysis purposes.

Uniformed military personnel would be supported by civilian personnel some of whom would likely be newly relocated to Guam and some would be current Guam residents. For purposes of this analysis it was assumed that of the DoD civilian workforce: 75% would be coming from off island and 25% would be current Guam residents. It is also assumed that 25% will live on base (because they are military dependents) and 75% will live off base.

Table ES-2 presents the estimated total population increase on Guam from off-island that would result from the proposed actions. The population numbers in Table ES-2 are larger than the numbers presented in ES-1 because they additionally include: (1) the dependents of off-island DoD Civilian workforce and; (2) the off-island population increase related to indirect and induced jobs. Project-related construction work is expected to begin in 2010 and reach its peak in 2014. It is also assumed in this analysis that most of the Marines and their families would arrive on Guam in 2014. Since the peak in construction activities and expenditures would coincide with the arrival of Marines and their families, 2014 represents the peak year for population increase. At this peak, the total increase in Guam residents from off-island would be an estimated 79,178 people.

After the 2014 peak, project-related construction expenditures and the associated influx of construction workers would decline rapidly because 2014 is the last year that any new construction would begin. By the time construction is completed and military operational spending reaches a steady state, the off-island population increase is projected to level off to an estimated 33,608 persons, approximately 58% below the peak level.

**Table ES-2. Estimated Total Population Increase on Guam from Off-Island  
(Direct, Indirect, and Induced)**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Direct DoD Population<sup>1</sup></b>											
Active Duty Marine Corps	510	1,570	1,570	1,570	10,552	10,552	10,552	10,552	10,552	10,552	10,552
Marine Corps Dependents	537	1,231	1,231	1,231	9,000	9,000	9,000	9,000	9,000	9,000	9,000
Active Duty Navy <sup>2</sup>	0	0	0	0	0	0	0	0	0	0	0
Navy Dependents	0	0	0	0	0	0	0	0	0	0	0
Active Duty Army	0	50	50	50	50	630	630	630	630	630	630
Army Dependents	0	0	0	0	0	950	950	950	950	950	950
Civilian Military Workers	102	244	244	244	1,720	1,836	1,836	1,836	1,836	1,836	1,836
Civilian Military Worker Dependents	97	232	232	232	1,634	1,745	1,745	1,745	1,745	1,745	1,745
Off-Island Construction Workers (DoD Projects) <sup>3</sup>	3,238	8,202	14,217	17,834	18,374	12,140	3,785	0	0	0	0
Dependents of Off-Island Construction Workers (DoD Projects)	1,162	2,583	3,800	3,964	4,721	2,832	1,047	0	0	0	0
<b>Direct DoD Subtotal</b>	<b>5,646</b>	<b>14,112</b>	<b>21,344</b>	<b>25,125</b>	<b>46,052</b>	<b>39,685</b>	<b>29,545</b>	<b>24,713</b>	<b>24,713</b>	<b>24,713</b>	<b>24,713</b>
<b>Indirect and Induced Population</b>											
Off-Island Workers for Indirect/Induced Jobs <sup>3</sup>	2,766	7,038	11,773	14,077	16,988	12,940	6,346	4,346	4,346	4,482	4,482
Dependents of Off-Island Workers for Indirect/Induced Jobs	2,627	6,685	11,184	13,373	16,138	12,293	6,028	4,372	4,372	4,413	4,413
<b>Indirect/Induced Subtotal</b>	<b>5,393</b>	<b>13,723</b>	<b>22,957</b>	<b>27,450</b>	<b>33,126</b>	<b>25,233</b>	<b>12,374</b>	<b>8,718</b>	<b>8,718</b>	<b>8,895</b>	<b>8,895</b>
<b>Total Population</b>	<b>11,038</b>	<b>27,835</b>	<b>44,301</b>	<b>52,575</b>	<b>79,178</b>	<b>64,918</b>	<b>41,919</b>	<b>33,431</b>	<b>33,431</b>	<b>33,608</b>	<b>33,608</b>

Note:<sup>1</sup> DoD population includes military personnel, DoD civilian workers and dependents from off-island.

<sup>2</sup>The Navy rows do not include increases from the transient presence of aircraft carrier crew with its carrier strike group (CSG).

<sup>3</sup> Population figures do not include Guam residents who obtain employment as a result of the proposed actions.

## ES-5 ALTERNATIVES DEVELOPMENT

To accomplish the Guam and CNMI proposed actions, the DoD has considered many development and operational alternatives. Analysis of alternative actions is a key aspect of the NEPA process. This analysis begins with establishing a set of possible alternatives and then separating those into the ones that were considered but dismissed from further analysis and the ones that were considered and brought forward for analysis. The no action alternative represents the baseline and is addressed throughout the NEPA process. This section summarizes the alternatives that have been considered to accomplish the proposed actions.

### Alternatives Considered but Dismissed

The Navy identified criteria to generate potential alternatives for consideration. After a thorough review, the Navy eliminated several alternatives from further consideration. These alternatives were not considered reasonable due to factors such as significant constraints on land use, time frame for land acquisition, geographic constraints, or presence of protected species or cultural resources. A description of the alternatives considered but dismissed from further analysis is presented in Chapter 2 of Volumes 2-6 of this Draft EIS/OEIS.

### Alternatives Considered

Several action alternatives for each of the proposed actions were carried forward for evaluation. The no action alternative was also carried forward. Presented below are summaries of the action alternatives for each volume.

#### *Marine Corps Relocation – Guam (Volume 2)*

The proposed action for the Marine Corps relocation involves constructing and utilizing all required facilities, infrastructure, and training assets necessary to establish a Marine Corps base of operations on Guam. Under the proposed action, the relocated Marines would also conduct training operations in support of mission objectives and sustainment.

The facilities and operational and training requirements of the military elements associated with the relocation to Guam were analyzed. The requirements could be grouped into four functional components:

1. *Main Cantonment Area functions.* Main cantonment military support functions (also known as base operations and support) include headquarters and administrative support, bachelor housing, family housing, supply, maintenance, open storage, community support (e.g., retail, education, recreation, medical, day care, etc.), some site-specific training functions, and open space (e.g. parade grounds, open training areas, open green space in communities, etc), as well as the utilities and infrastructure required to support the cantonment area.
2. *Training functions.* There are three subclasses of training support functions required by Marine Corps units that would be stationed on Guam:
  - *Firing ranges* are required for live and inert munitions practice, which generates the need for safety buffers called Surface Danger Zones (SDZs), and special use airspace (SUA) for certain weapons.
  - *Non-fire maneuver ranges* are required for vehicle and foot maneuver training, including urban warfare training. Urban warfare training is conducted in buildings that simulate an urban environment. There could be multi-story buildings arranged close together where Marines can practice entering and maneuvering in tight spaces.

- *Aviation training ranges* are either improved (paved runway) or unimproved (unpaved landing sites) used to practice landing/takeoff and air field support (including loading/unloading of fuel, munitions, cargo, and personnel).
3. *Airfield functions*. The proposed relocation would include aviation units and aviation support units that require runway and hangar space, and maintenance, supply and administrative facilities. The capability to conduct air embarkation operations would also be required. This capability refers to loading and unloading cargo and passengers to and from aircraft, comparable to a civilian airport terminal.
  4. *Waterfront functions*. Transient vessels support Marine Corps operations and the transient forces that presently train on Guam and on Tinian. The proposed Marine Corps relocation would increase the need for ships and amphibious assault craft due to the increase in personnel being trained in the region. The waterfront capabilities must be upgraded to accommodate this increased traffic. Although the requirements are indirectly related to training, planning criteria for harbors are unique. Therefore, the proposed waterfront requirements are being discussed separately from other training actions.

The distinct facility and operational requirements of the above functions were used to develop the alternatives below.

#### *Main Cantonment Alternatives*

Eight Main Cantonment alternatives were developed and evaluated. Alternatives 4 through 7 were dismissed from further consideration. Alternatives 1, 2, 3, and 8 were retained for further analysis and are being evaluated for the Main Cantonment and training areas. Figure ES-2a shows the proposed action and the alternatives carried forward for the Marine Corps relocation on Guam.

Table ES-3 provides a summary of information on the needed land for each of the candidate alternatives to meet the requirements of the Main Cantonment. As depicted, the total area needed would be approximately 2,500 acres (ac) (1.012 hectares [ha]). Alternatives 1, 2 and 8 would need both DoD and non-DoD controlled lands. Alternative 3 would be accommodated solely on DoD lands. Each alternative would need DoD lands that are currently designated as Overlay Refuge. The Overlay Refuge is land established by DoD, US Fish and Wildlife Service and Government of Guam (GovGuam) for the protection of endangered and threatened species and other native flora and fauna, maintenance of native ecosystems, and the conservation of native biological diversity. As noted in Table ES-3, the alternatives under consideration would take from approximately 600 ac (243 ha) to 1,100 ac (445 ha) of Overlay Refuge in the Finegayan area.

**Table ES-3. Summary of Parcels for Each Main Cantonment Alternative**

Alternative	Total Land (ac/ha)	DoD Lands				Private Lands		Finegayan Overlay Refuge <sup>1</sup> (ac/ha)
		NCTS Finegayan <sup>1</sup> (ac/ha)	South Finegayan <sup>3</sup> (ac/ha)	Navy Barrigada <sup>2</sup> (ac/ha)	Air Force Barrigada <sup>4</sup> (ac/ha)	Former FAA <sup>5</sup> (ac/ha)	Harmon Land <sup>6</sup> (ac/ha)	
1	2,386/966	1,090/441	290/117			680/275	326/132	599/242
2	2,580/1,044	1,610/652	290/117			680/275		1,106/448
3	2,707/1,096	1,610/652	290/117	377/153	430/174			1,106/448
8	2,490/1,008	1,090/441	290/117		430/174	680/275		599/242

Notes: <sup>1</sup>Based on calculations for vegetation cover in Volume 2 Chapter 10.

<sup>2</sup>Proposed developed area only.

<sup>3</sup>Assumes entire parcel is developed.

<sup>4</sup>Excludes NEXRAD (weather radar system).

<sup>5</sup>Total acquisition area, including planned open space.

<sup>6</sup>Total acquisition area.

The following provides additional detail about each of the Main Cantonment alternatives.

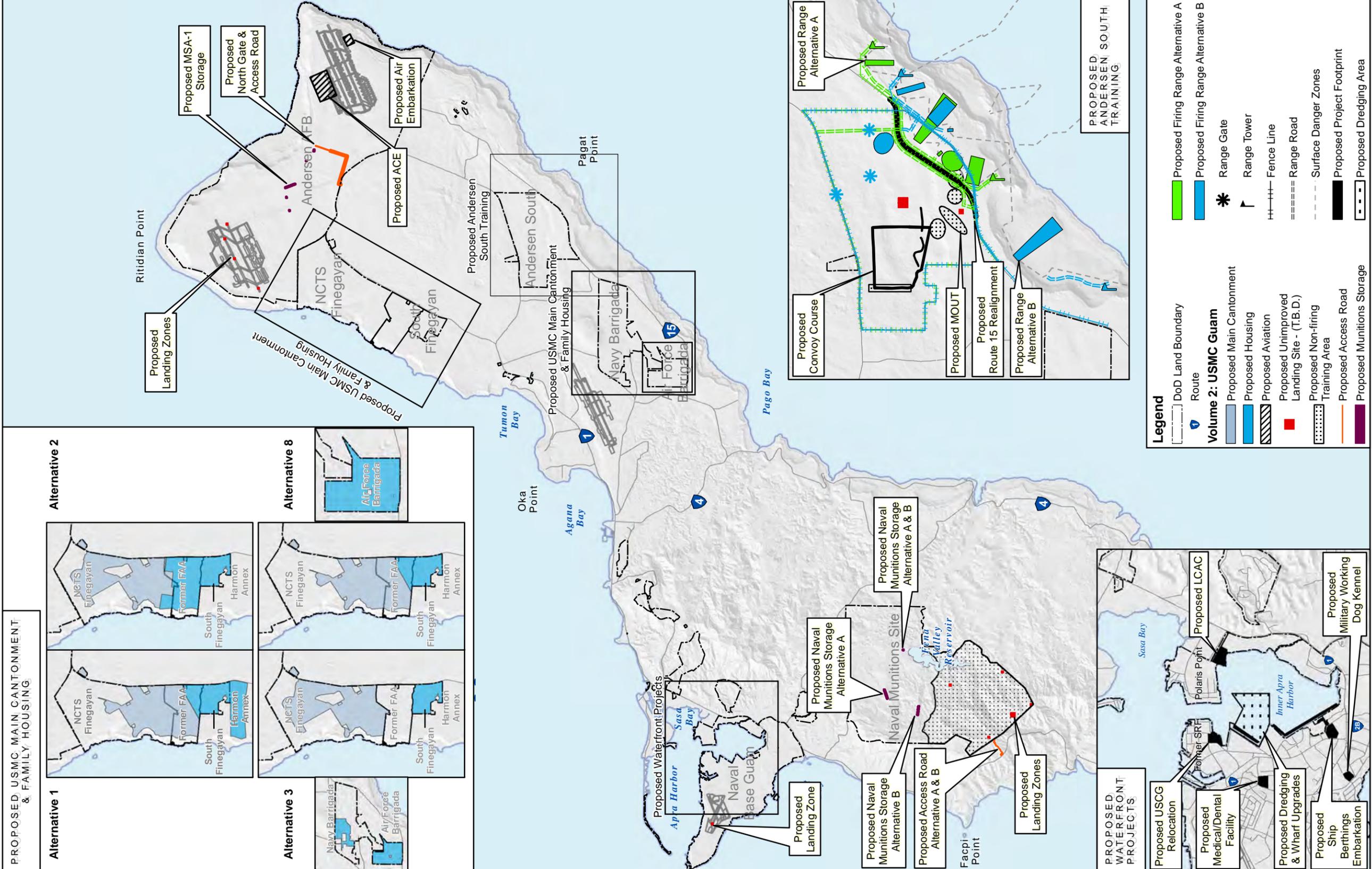
*Alternative 1.* Alternative 1 would require land parcels from the Naval Computer Telecommunications Station (NCTS) Finegayan and DoD parcels in South Finegayan as well as acquisition or long-term leasing of Federal Aviation Administration (FAA) land, and acquisition or long-term leasing Harmon Annex, for a total of 2,386 ac [966 ha]. Of the total Overlay Refuge (2,095 ac [848 ha]) in the Finegayan area, this alternative would develop approximately 29% (599 ac [242 ha]). The Overlay Refuge that is managed pursuant to a Memorandum of Agreement with the U.S. Fish and Wildlife Service (DoD 1994). “Overlay Refuge” refers to designated areas on Guam, consistent with the national defense mission of the Navy and Air Force, to be managed for the protection of endangered and threatened species and other native flora and fauna, maintenance of native ecosystems, and the conservation of native biological diversity. The areas were established in cooperation with Guam Department of Agriculture Division of Aquatic and Wildlife Resources.

This alternative is bounded to the north by Andersen Air Force Base (AFB) Northwest Field (NWF) and Route 3; on the west by a cliff line (within DoD property) and the Philippine Sea; on the east by limited residential development; and to the south by the Harmon Village residential area (non-DoD property). Although DoD property goes down to the waterline, the Main Cantonment area would be situated on the upper area of NCTS Finegayan and would not encroach on the cliff line leading to the ocean.

*Alternative 2 (Preferred).* Alternative 2 would include land parcels from NCTS Finegayan, South Finegayan, and acquisition or long-term leasing of FAA land, for a total of 2,580 ac [1,044 ha]. Of the total Overlay Refuge (2,095 ac [848 ha]) in the Finegayan area, this alternative would develop approximately 53% (1,106 ac [448 ha]). Under Alternative 2, the Main Cantonment area would also be configured such that all facilities would be on one contiguous parcel of land, including the family housing area.

The site of Alternative 2 is bounded on the north by Andersen AFB NWF, and by Route 3; on the west by a cliff line (within DoD property) and the Philippine Sea; on the east by a limited residential development; and to the south by the Harmon Village residential area (non-DoD property).

*Alternative 3.* Alternative 3 would include land parcels from NCTS Finegayan, South Finegayan, and portions of the military housing and quality of life (QOL) services at Air Force and Navy Barrigada, for a total of 2,707 ac (1,096 ha). Of the total Overlay Refuge (2,095 ac [848 ha]) in the Finegayan area, this



**Figure ES-2**  
**Volume 2: Marine Corps Relocation Alternatives (Guam)**

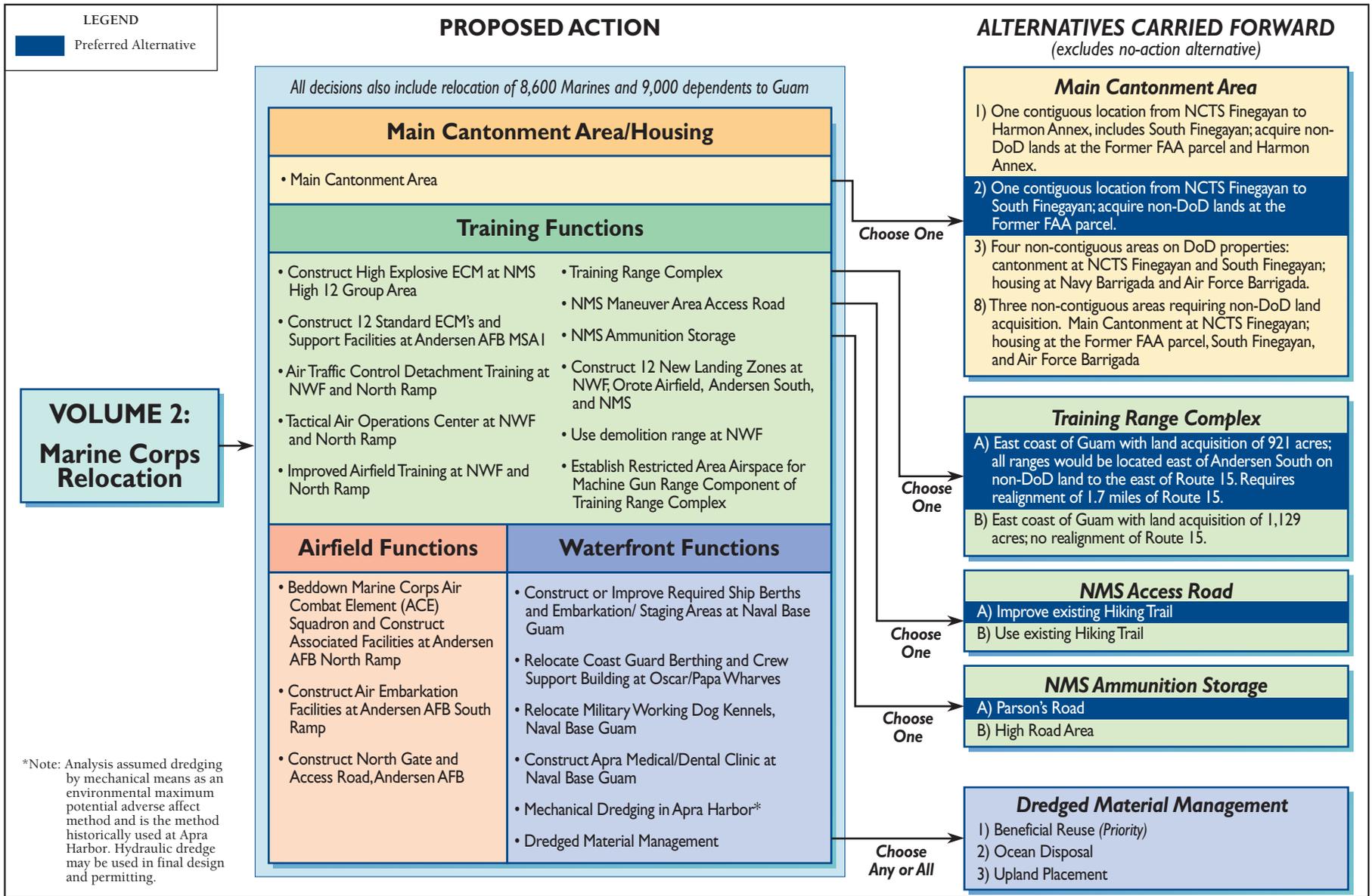
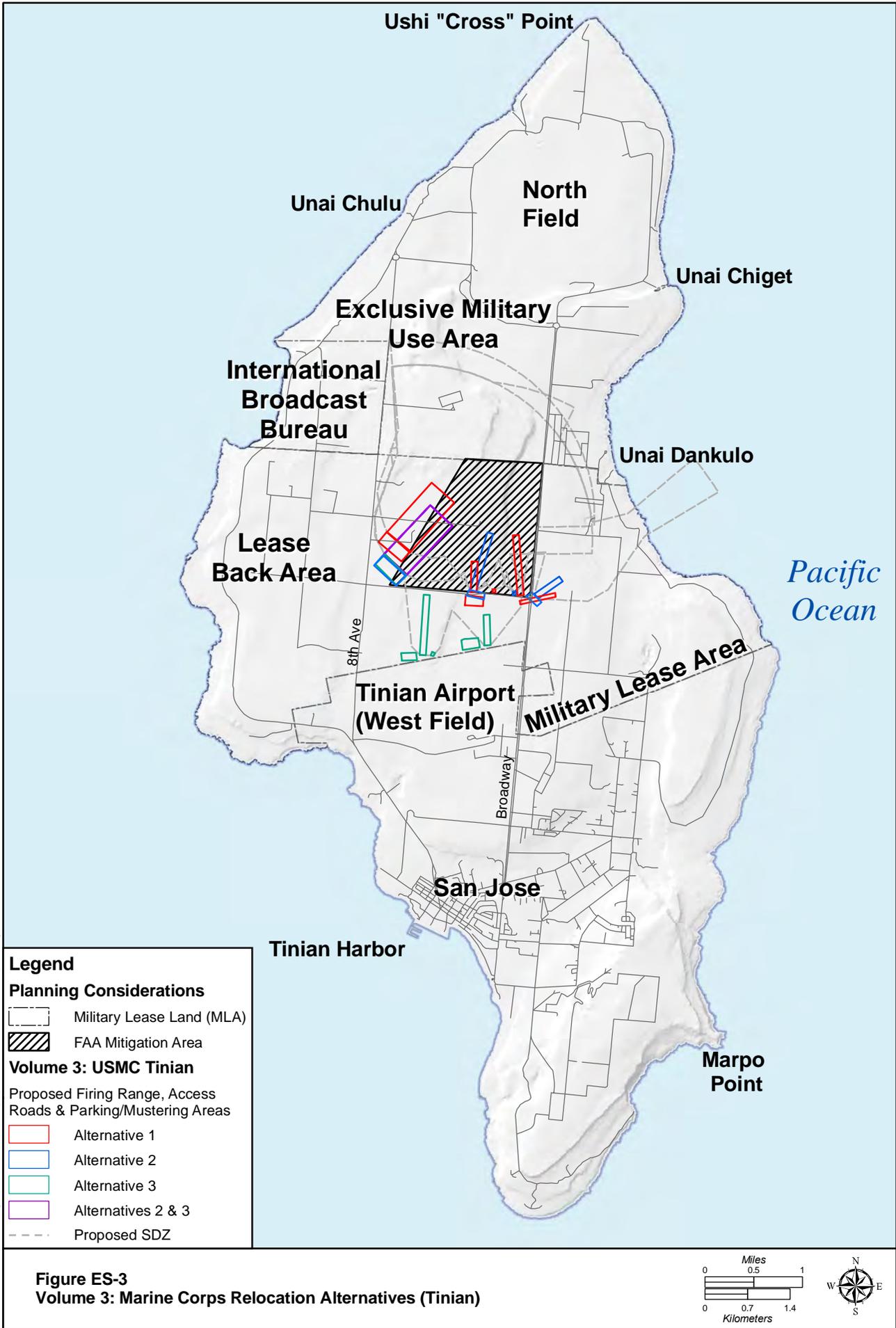


Figure ES-2a  
 Summary of Proposed Action and Alternatives Carried Forward for the Marine Corps Relocation, Guam



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alternative would develop approximately 53% (1,106 ac [448 ha]). Under this alternative, the Main Cantonment area would be configured such that the housing would be located non-contiguous to the Main Cantonment.

This configuration of the Main Cantonment area is bounded on the north by Andersen AFB, on the west by a cliff line and the Philippine Sea, by Route 3 and limited residential development to the east, and by the former FAA area to the south. South Finegayan would be used for housing; it is located south of the former FAA area. Navy and Air Force Barrigada are located on the eastern side of Guam, approximately 9 miles (mi) (14 km) from the Main Cantonment under this alternative. Navy and Air Force Barrigada have Route 15 bordering the site to the east, and Routes 10 and 16 bordering the site to the west. Navy Barrigada is largely used to support DoD communication high frequency transmitting activities. Headquarter facilities for the Guam Army National Guard are located adjacent to Navy land at Barrigada. Navy Barrigada is 1,418 ac (574 ha), and of that 250 ac (101 ha) are available for development. The Air Force Barrigada property is a 433-ac (175-ha) parcel that is used by the Air Force to accommodate the NEXRAD weather satellite receiver. It has been estimated that 400 ac (162 ha) of this parcel is available for development. Navy Barrigada and Air Force Barrigada are currently connected by the existing Navy Golf Course. The golf courses would need to be removed if it was determined that the two parcels should be connected.

*Alternative 8.* Alternative 8 would include parcels from NCTS Finegayan, acquisition or long-term leasing of FAA land (680 ac [275 ha]), South Finegayan, and portions of military housing and QOL services at Air Force Barrigada, for a total of 2,490 ac (1,008 ha). Of the total Overlay Refuge (2,095 ac [848 ha]) in the Finegayan area, this alternative would develop approximately 29% (599 ac [242 ha]). In Alternative 8, as with Alternative 3, a portion of the housing would be located non-contiguous to the Main Cantonment.

*Airfield Alternatives.* Four sites on Guam were analyzed for the Marine Corps airfield functions: North Ramp Andersen AFB, Won Pat International Airport, Orote Airfield at Naval Base Guam, and NWF at Andersen AFB. Suitability criteria included: land availability, operational capability, training capability, encroachment, anti-terrorism/force protection, and compliance with military vision. Feasibility was a qualitative assessment of compatibility with future missions, environmental considerations (including cultural and historical significance), and anticipated public concerns.

Based on existing land availability and Air Force operations, the only reasonable alternative for the air combat element airfield functions was North Ramp at Andersen AFB. An area on South Ramp is the only reasonable alternative for an air embarkation facility. It would be co-located with the Air Force air embarkation facility.

*Waterfront Alternatives.* The only reasonable alternative for the waterfront functions was Apra Harbor. Inner Apra Harbor has existing wharf infrastructure that would be improved to support the Marine Corps waterfront functions. Administrative and operational facilities would be constructed in addition to the wharf upgrades. Based on existing land availability and Navy operations, there was only one alternative within Apra Harbor for these Marine Corps facilities. An embarkation and staging area, including a port support buildings and an area for equipment cleaning and inspections related to bio-hazard and customs requirements, would be created.

Other projects proposed for the Apra Harbor Navy Base to support the Marine Corps include a new medical/dental clinic to replace the existing clinic, and relocation of the Military Working Dog Kennel and a portion of the U.S. Coast Guard facilities (ship berthing and crew support building). These proposed projects are depicted in Figure ES-2.

*Training Range Complex Alternatives.* There was an extensive screening analysis for firing ranges and non-firing training ranges that examined various geographic alternatives on Guam. Based on the analysis, the only geographic alternative that met the purpose and need was a combined firing and non-firing range complex located on the east coast of Guam. Andersen South would continue to be the non-firing training location and adjacent land east of Andersen South would be acquired to site new firing ranges. The SDZs would extend over the ocean.

There are two alternatives for the training ranges on the east coast. Range Alternative A would require the realignment of approximately 1.7 mi (2.8 km) of Route 15 to the interior of the existing Andersen South parcel. The total land area, not including submerged lands, is estimated at 921 ac (373 ha).

Range Alternative B would not require realignment of Route 15 and would require more land (1,129 ac [426 ha]) than Alternative A. These alternatives are depicted in Figure ES-2.

Land acquisition or long-term leases would be required for control of lands associated with the SDZs east of Route 15. SUA would also be required above the SDZs in the vicinity of Route 15.

The training ranges represent the largest development projects for the training function; however, there are other smaller projects not described in this Executive Summary, e.g., ammunition storage and an access road for the Naval Munitions Site.

*Development of Future Training Ranges.* All Marine units, to include those relocating from Okinawa to Guam, are required to complete core competency Marine Air-Ground Task Force (MAGTF) training to ensure that forward deployed Marines sustain operational readiness in core competencies to meet all readiness requirements and are able to support operational requirements assigned by the Combatant Commander. This level of training involves integration of ground, aviation, and logistics elements under a common command element in preparation for large scale combat operations, which is beyond individual live fire qualification and requalification training which would be conducted on training ranges being constructed in Guam and Tinian. The training ranges currently planned for Guam and Tinian only replicate existing individual-skills training capabilities on Okinawa and do not provide for all requisite collective, combined arms, live and maneuver training the Marine Corps forces must meet to sustain core competencies. As with Marine Corps forces currently in Okinawa who must now travel to mainland Japan, other partner nations and the U.S. to accomplish this requisite core competency training, the Marine Corps forces relocating from Okinawa to Guam would also have to use alternate locations to accomplish requisite core competency training.

The Marine Corps ultimately desires to conduct core competency training in areas that limit the time Marines must travel to train and thereby reduce operational non-availability. There is an ongoing need to reassess current training locations and to develop additional training capacity for higher level integrated core competency training in the Western Pacific. As part of the DoD continuing efforts to address these existing training issues as well as the training needs of other services in the Western Pacific, the DoD is evaluating all DoD training needs in the Western Pacific as part of 2010 Quadrennial Defense Review (QDR). As part this effort, the QDR will specifically evaluate the need for additional Marine Corps training facilities in the CNMI to address the higher level combined arms, live fire and maneuver training needs of Marine Corps forces in the area.

It is anticipated that the QDR will result in recommendations to address the Marine Corps' need for in-theatre training and provide the Combatant Commander with operational ready forces with minimum down time by limiting the amount of time Marines need to travel to accomplish their core competency training. To the extent that these recommendations result in proposals subject to NEPA or EO 12114, the

DoD will conduct additional NEPA/EO 12114 analysis as necessary prior to implementation. Such proposals, and any associated NEPA/EO 12114 analysis, are separate and distinct from the ongoing proposed relocation of Marine Corps forces from Okinawa to Guam and have independent utility from the proposed relocation. Further, such actions that may develop out of the QDR review process are not connected to the relocation of Marine Corps forces from Okinawa to Guam.

#### Marine Corps Relocation – Training on Tinian (Volume 3)

Training operations proposed on Tinian would support individual up to company level sustainment training for the relocated Marines. Sustainment training is training that enables Marine Corps forces to maintain combat readiness. The training that would take place on Tinian is essential to sustaining combat readiness of Guam-based Marines. The proposed Tinian ranges would provide a training capability not available on Guam. They would enable tactical scenarios training in combination with the battalion landing and maneuver exercises, and other larger unit training.

Tinian was considered for maximum utilization because Guam and Tinian possess the most available DoD properties for exclusive military use within the Marianas. The DoD leases the Military Lease Area (MLA) from the CNMI. The MLA 15,353 ac (6,213 ha) covers the northern portion of Tinian. Training on Tinian is conducted on two parcels within the MLA: the Exclusive Military Use Area (EMUA) encompassing 7,574 ac (3,065 ha) on the northern third of Tinian, and the Leaseback Area (LBA) encompassing 7,779 ac (3,848 ha) and the middle third of Tinian. Company and battalion level non-live fire training areas already exist on these lease parcels; however, the land could be developed to accommodate live fire ranges. The training requirements analysis resulted in the alternatives graphically depicted in Figure ES-3. Figure ES-3a shows the proposed action and alternatives carried forward for Marine Corps training on Tinian.

#### *Alternative 1 (Preferred)*

This alternative includes construction of four ranges within the leaseback area on the island of Tinian. The analysis for range locations would be based upon lands identified as “preferred for development” or “less preferred for development” by virtue of the potential presence of archaeological, historical, or ecologically important resources. The Rifle Known Distance (KD) Range, the Automated Combat Pistol/Multipurpose Firearms Qualification Course, and Field Firing Range are located along 90th Street and west of Broadway. All three are generally aligned to the north. The Platoon Battle Course is located northwest of the other ranges and is generally aligned toward the northeast. All four range footprints partially overlay the FAA Mitigation Area. The associated notional SDZs for these ranges would overlap to a large extent. They would extend over the FAA Mitigation Area, DoD “No Wildlife Disturbance” Mount Lasso escarpment area, and a segment of Broadway. No SDZs would extend beyond land and into the ocean.

#### *Alternative 2*

Under the Range Training Area Alternative 2, no ranges would be located south of 90th Avenue. Compared to Alternative 1, there would be more range footprint encroachment on the FAA Mitigation Area. Portions of the existing designated FAA Mitigation Area are under consideration for relocation. The Platoon Battle Course would be located south of its Alternative 1 location. The orientation would be aligned toward the northeast, similar to Alternative 1. The Field Firing Range SDZ would extend over the ocean.

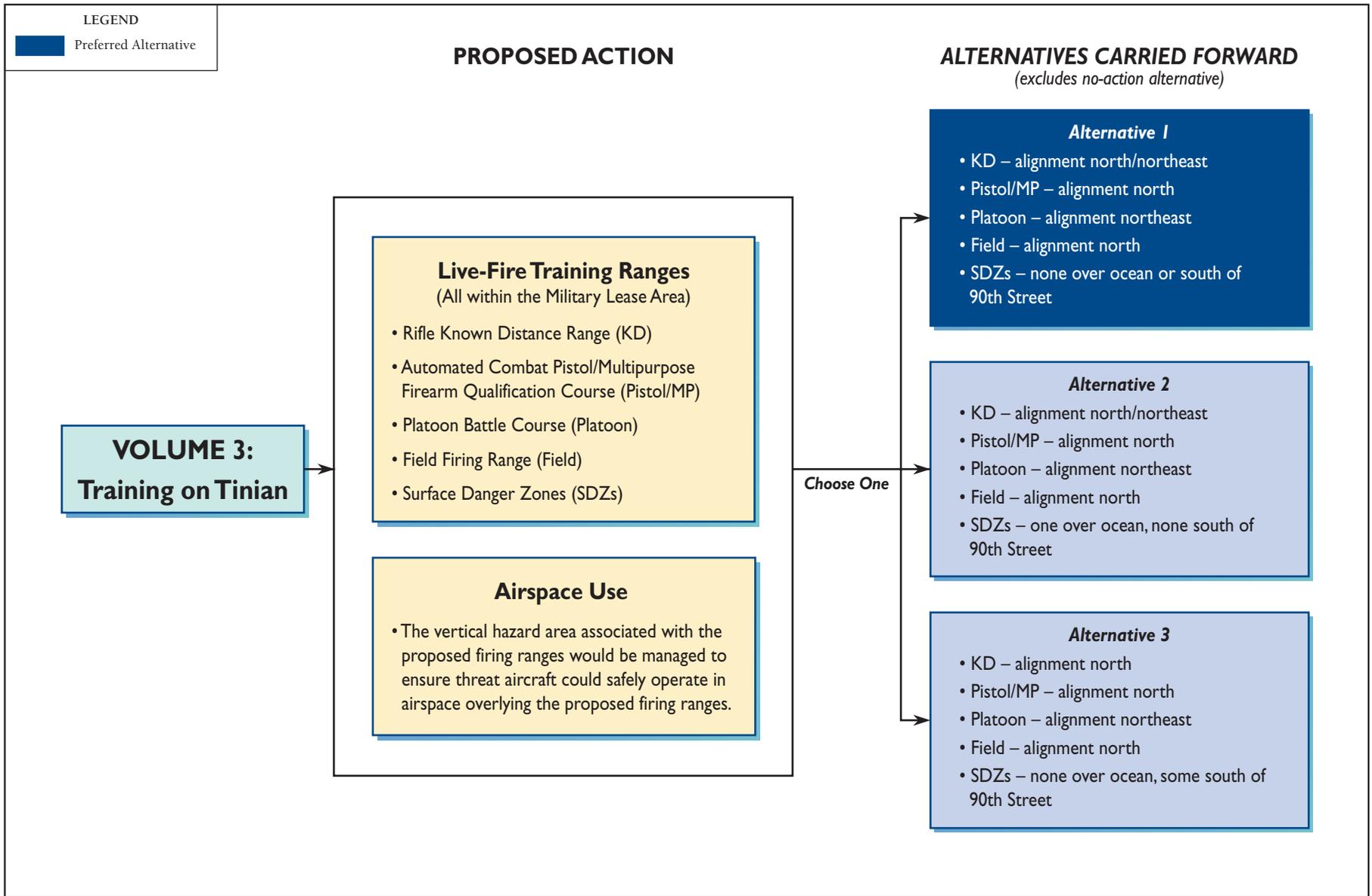


Figure ES-3a  
 Summary of Proposed Action and Alternatives Carried Forward for the  
 Marine Corps Relocation – Training, Tinian

### *Alternative 3*

Alternative 3 configuration is notably different from Alternatives 1 and 2 due to three of the ranges being sited south of 90<sup>th</sup> Avenue and north of West Field. These three ranges are the Field Firing Range, Combat Pistol/Multipurpose Firearms Qualification Course and the Rifle KD Range. All three ranges are sited along the southern MLA boundary and aligned generally to the north. None of these range footprints is within the FAA Mitigation Area. None of the SDZs under Alternative 3 extend into the ocean.

### Aircraft Carrier Berthing (Volume 4)

The analysis and selection of reasonable alternatives for a new deep-draft wharf for transient carrier visits were based on consideration of the following criteria:

- Practicability (with subcriteria)
  - Meets security/force protection requirements
  - Meets operational/navigational characteristics
  - Available and capable of being implemented after taking into consideration cost, existing technology, and logistics in light of the overall project purpose
- Avoids environmental impacts to the extent practicable
- Minimizes unavoidable environmental impacts

The two alternatives being evaluated for the deep draft aircraft carrier wharf with shoreside infrastructure improvements are depicted in Figure ES-4: Polaris Point (Alternative 1) (Preferred) and Former Ship Repair Facility (SRF) (Alternative 2). Figure ES-4a shows the proposed action and alternatives carried forward for the Navy aircraft carrier berthing.

The wharf alternatives are located on either side of the entrance to the Inner Apra Harbor channel. Each shares the same navigational approach through Outer Apra Harbor. The aircraft carrier would come through Outer Apra Harbor using the minimum power required to achieve forward motion and assisted by tugboats to provide lateral guidance. Ship navigation into the new berth would require a turning basin in front of the wharf. The turning basin for either alternative are similarly aligned.

### *Alternative 1 (Polaris Point) (Preferred)*

This alternative would construct a new deep-draft wharf at Polaris Point with shoreside infrastructure improvements. For both alternatives, the existing Outer Apra Harbor Channel would be widened to 600 feet (ft) (183 meters [m]) with minor adjustments to centerline and navigational aids. No dredging would be required to widen the Outer Apra Harbor east-west portion of the navigation channel. There is a sharp southward bend in the existing channel toward Inner Apra Harbor that would require widening to 600 ft (183 m) and dredging to meet aircraft carrier requirements. A new ship turning basin would be established and would require dredging to -49.5 ft (-15 m) Mean Lower Low Water plus 2 ft (0.6 m) overdraft. The turning basin would be located near the wharf and north of the Inner Apra Harbor entrance channel.

The shoreside utility and operational support requirements would be the same. Shoreside facilities include utilities to meet 100% of aircraft carrier requirements. A new Port Operations support building and various utility buildings would be constructed on a staging area at the wharf. There would be an area established for Morale, Welfare, and Recreation (MWR) activities and vehicle parking. The aircraft carrier would be assisted by tug boats, pivoted within the minimum radius turning basin to be aligned starboard (i.e., right side when facing the front or “bow” of the ship) to the wharf and the bow would be facing east. On departure, the aircraft carrier would follow the same route.

### Aircraft Carrier Berthing (Volume 4)

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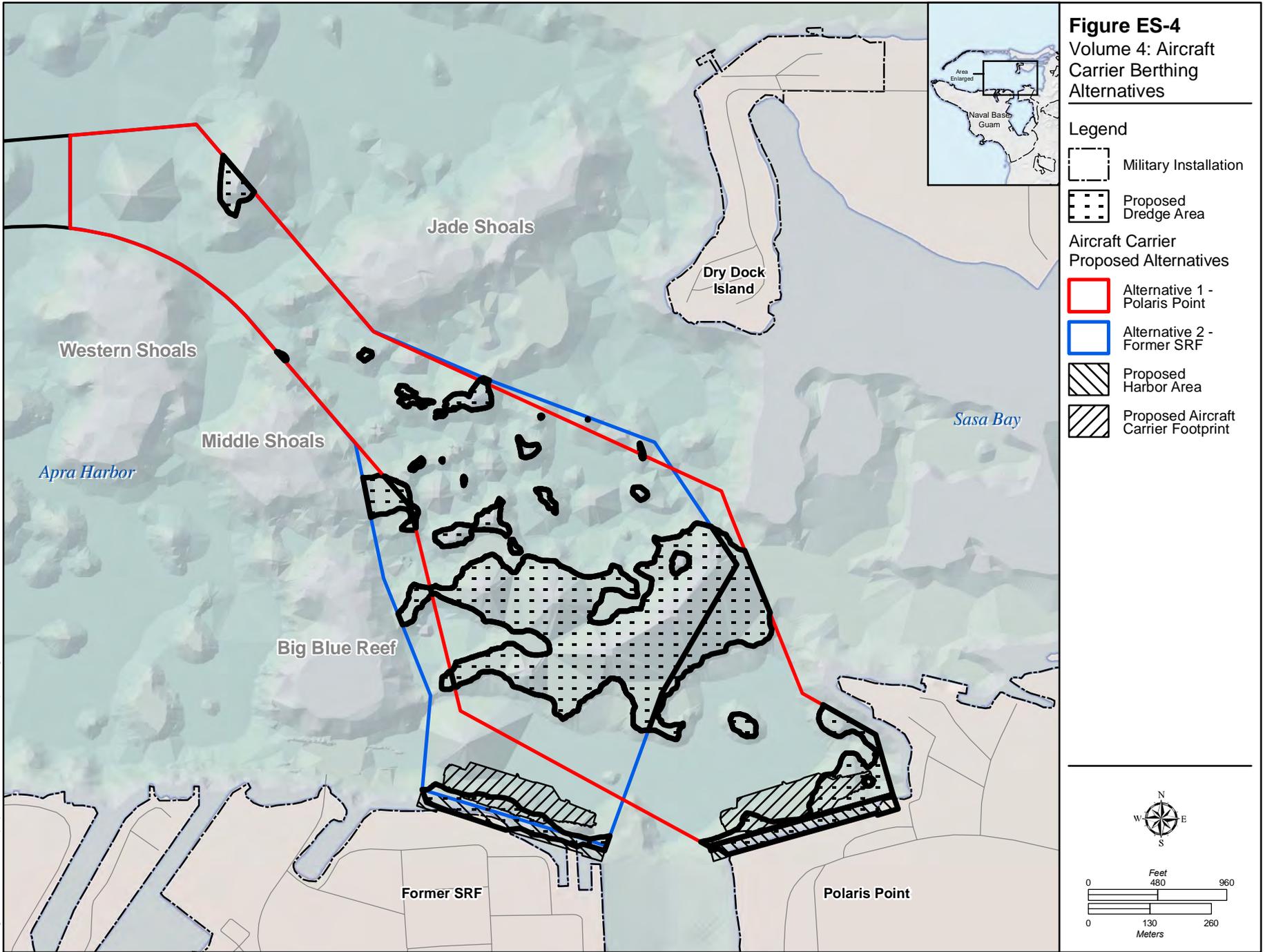
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The aircraft carrier would be assisted by tug boats, pivoted within the minimum radius turning basin to be aligned starboard (i.e., right side when facing the front or “bow” of the ship) to the wharf and the bow would be facing east. On departure, the aircraft carrier would follow the same route.

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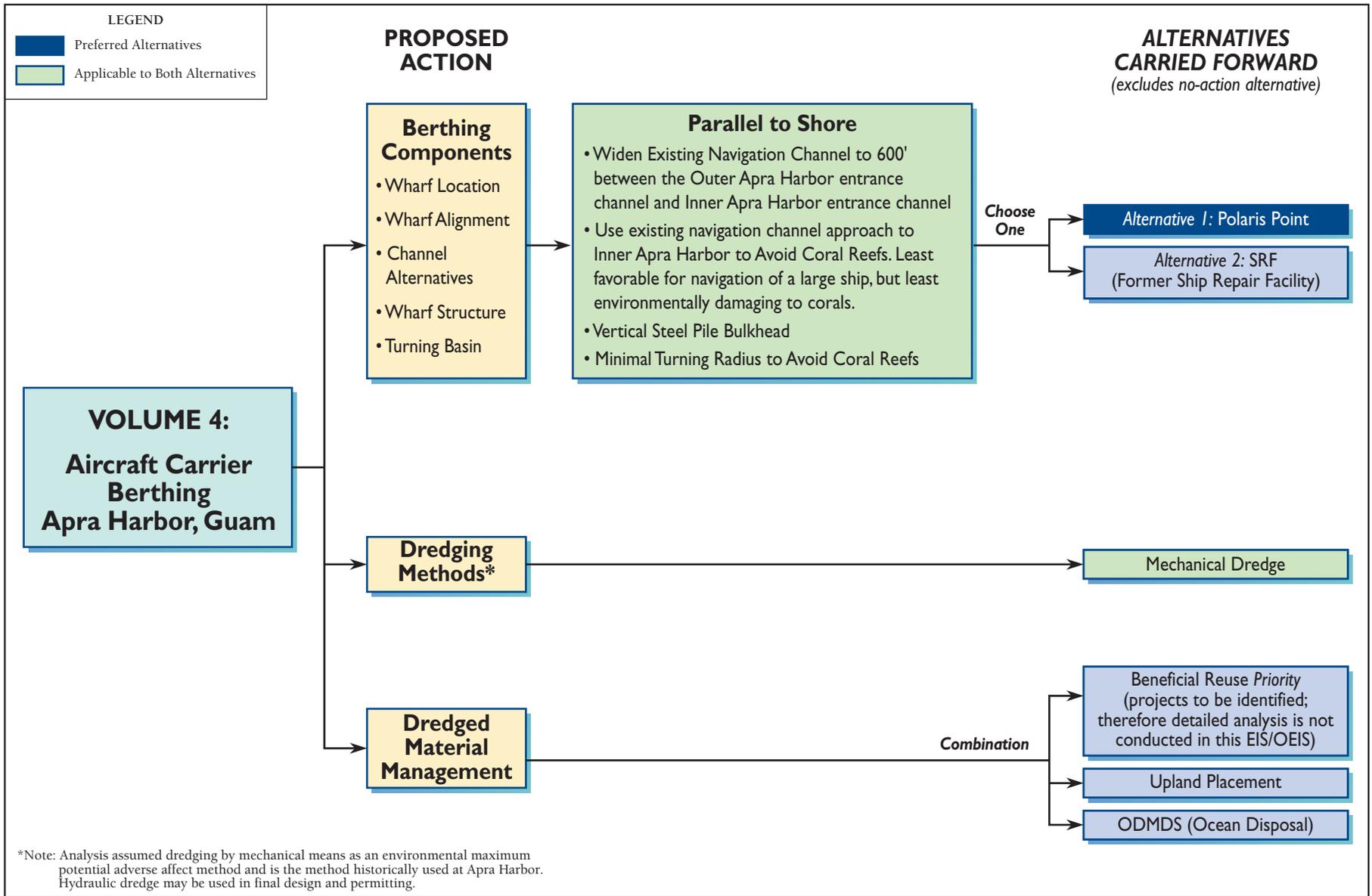


Figure ES-4a  
Summary of Proposed Action and Alternatives Carried Forward for the Navy Aircraft Carrier Berthing, Guam

*Alternative 2 (Former SRF)*

This alternative would have the aircraft carrier berthing at the former SRF. The Outer Apra Harbor channel improvements would be as described in Alternative 1. The turning basin location would be similar to Alternative 1, with a slight shift to the west. Unlike Alternative 1, the full 600-ft (183-m) approach distance in front of the wharf would be accommodated. The aircraft carrier would be pivoted within the minimum radius turning basin to be aligned starboard to the wharf and the bow would be facing east. On departure, the aircraft carrier would follow the same route with assistance by tugs. Both alternatives are on Navy submerged lands and affect manmade coastlines. They have the same security/force protection requirements and satisfactorily meet those requirements.

Army Air and Missile Defense Task Force (AMDTF) (Volume 5)

The Navy and Army identified three action alternatives for the proposed AMDTF facilities and operations on Guam and three action alternatives for munitions storage. All action alternatives have been evaluated to ensure they satisfy the stated purpose and need for the proposed AMDTF action. Alternatives being evaluated for the Army AMDTF are graphically shown in Figure ES-5. Figure ES-5a shows proposed action and alternatives forward for the AMDTF. Weapons platform siting is classified and is assessed in Classified Appendix L to this public Draft EIS/OEIS.

*Headquarters/Housing Alternative 1 (Preferred)*

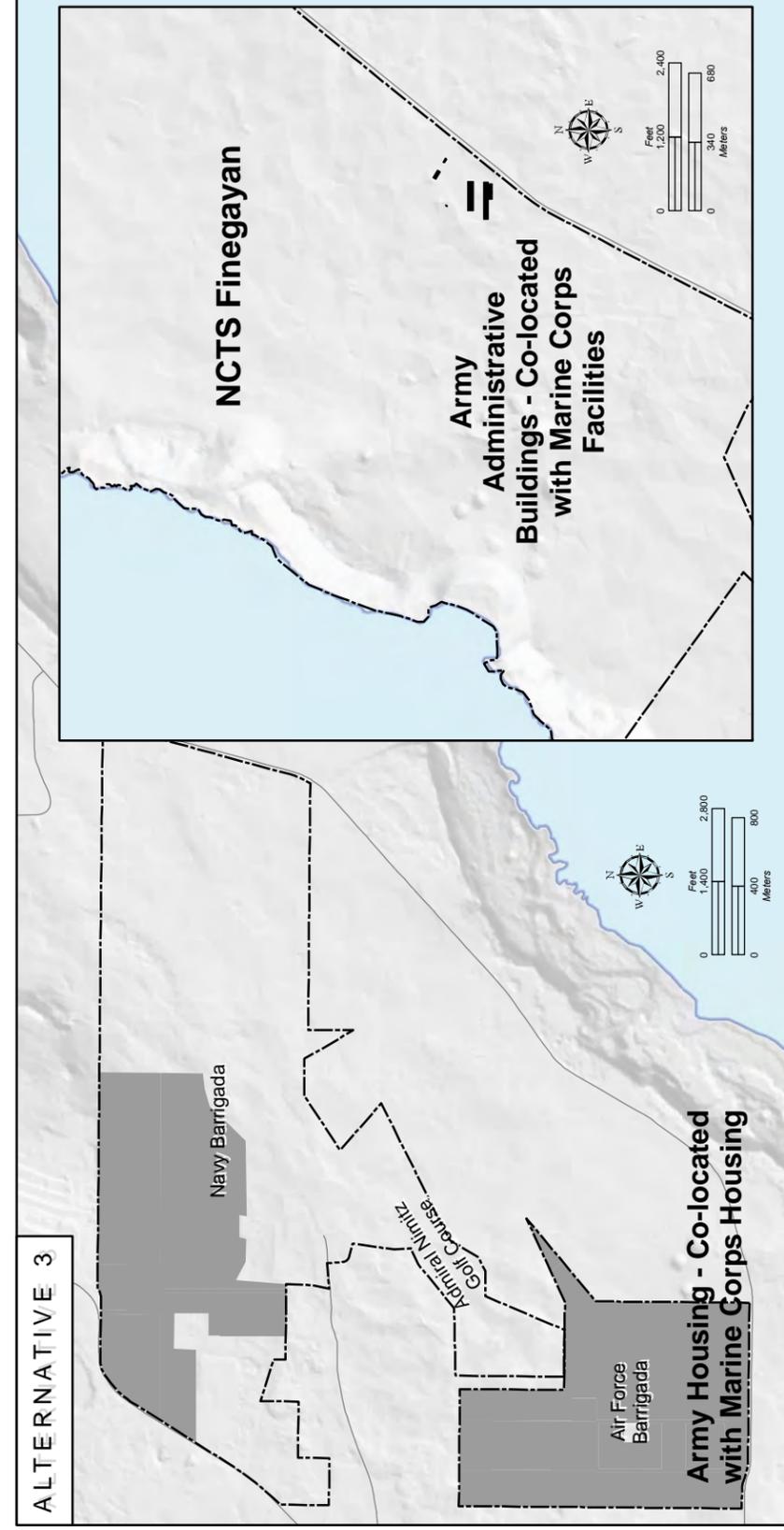
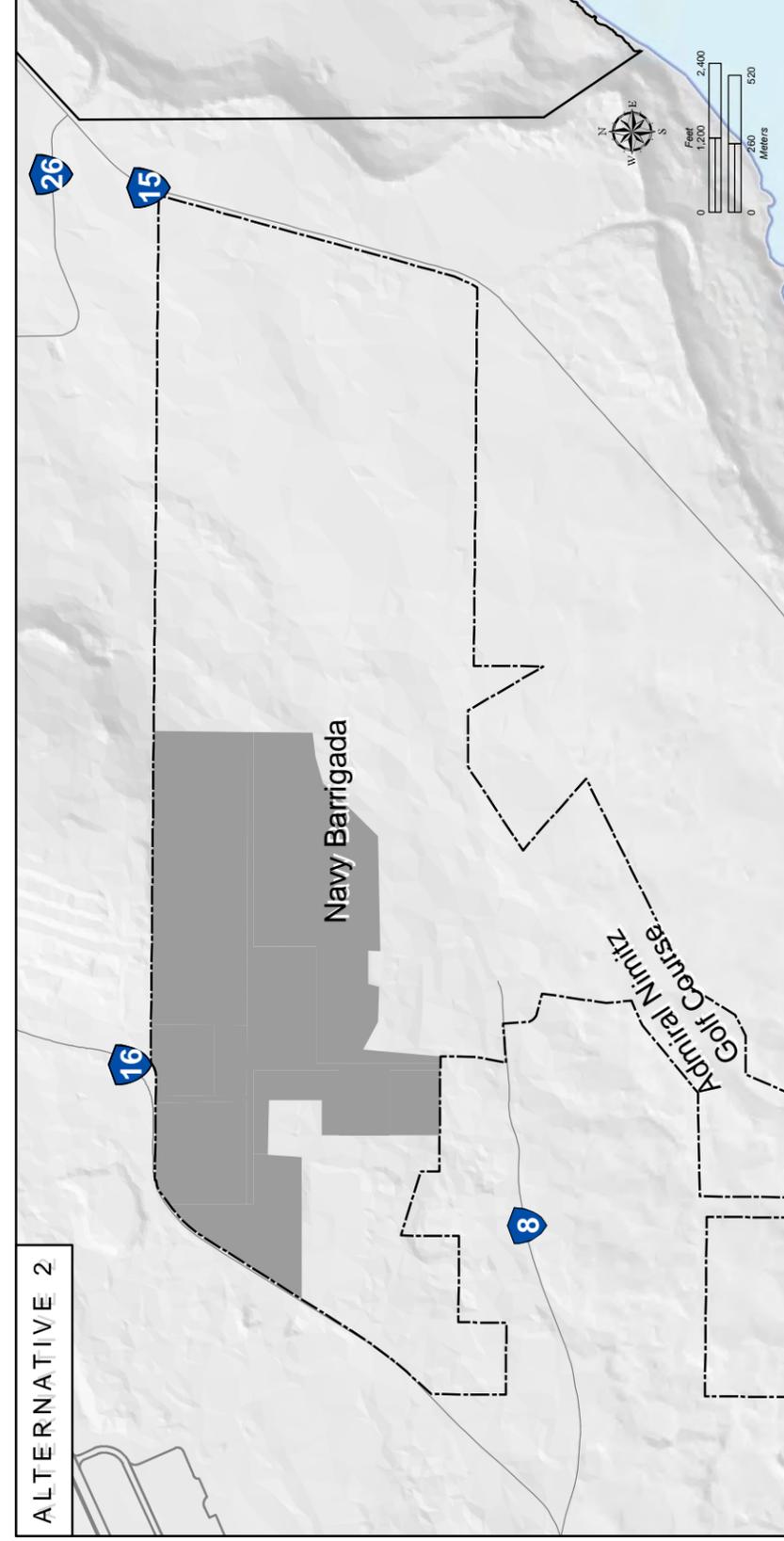
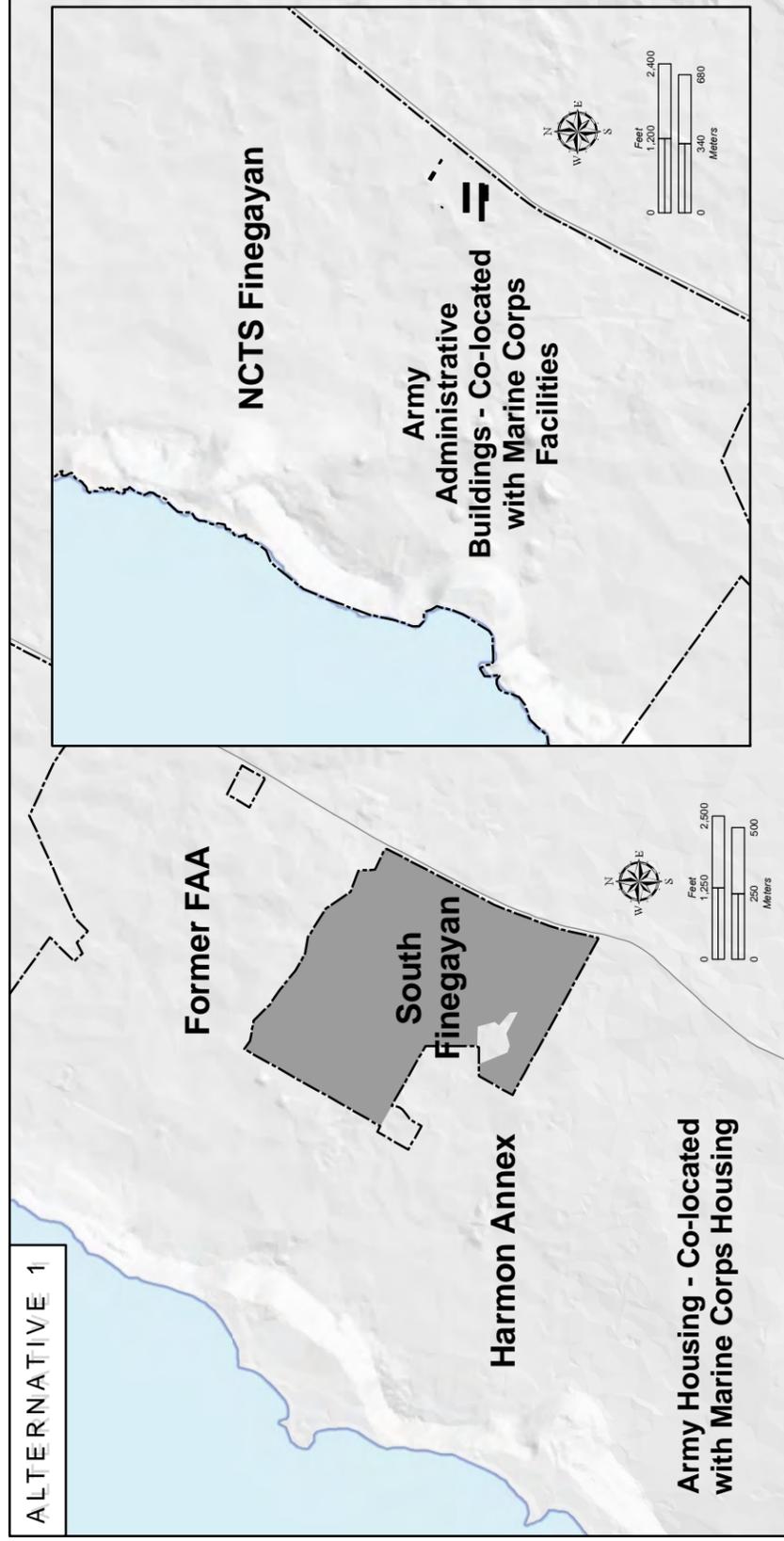
This alternative would co-locate Army AMDTF support facilities with the proposed Marine Corps units at Finegayan. The Administration/headquarters (HQ) and Maintenance operations would be co-located in the eastern portion of NCTS Finegayan and would be compatible with adjacent proposed Marine Corps land uses. Housing facilities for unaccompanied personnel would be located within NCTS Finegayan. Accompanied personnel housing facilities would be co-located with the Main Cantonment housing areas in South Finegayan, while recreational and QOL facilities would be co-located within and adjacent to the housing areas. The Administrative/HQ, maintenance, housing, and QOL portions of this alternative are included in U.S. Marine Corps Alternative 2.

*Headquarters/Housing Alternative 2*

This alternative has the Army AMDTF support facilities located at Navy Barrigada. The Administration/HQ and Maintenance element would be located within Navy Barrigada adjacent to NCTS antenna farms. Accompanied and unaccompanied housing facilities would be located within Navy Barrigada. The administrative/HQ, maintenance, housing, and QOL portions of this alternative are included in U.S. Marine Corps Cantonment Alternatives 1, 2 and 8 (refer to Volume 2). Munitions storage magazines would be consolidated at one site that is located north of B Avenue.

*Headquarters/Housing Alternative 3*

This alternative would co-locate Army AMDTF with the proposed Marine Corps units at Finegayan. The Administration/HQ, Maintenance, and unaccompanied housing would be co-located in the eastern portion of NCTS Finegayan and would be compatible with adjacent proposed Marine Corps land uses. Accompanied housing facilities would be co-located with Marine Corps housing within Navy Barrigada and Air Force Barrigada. Recreational and QOL facilities would be included in the housing areas. The Administrative/HQ, maintenance, housing, and QOL portions of this alternative are included in U.S. Marine Corps Alternative 3 (refer to Volume 2). Munitions storage magazines would be consolidated at a site located northeast of the Habitat Management Unit (HMU) and an unnamed road.



**Figure ES-5**  
**Volume 5: Army AMDTF Alternatives**

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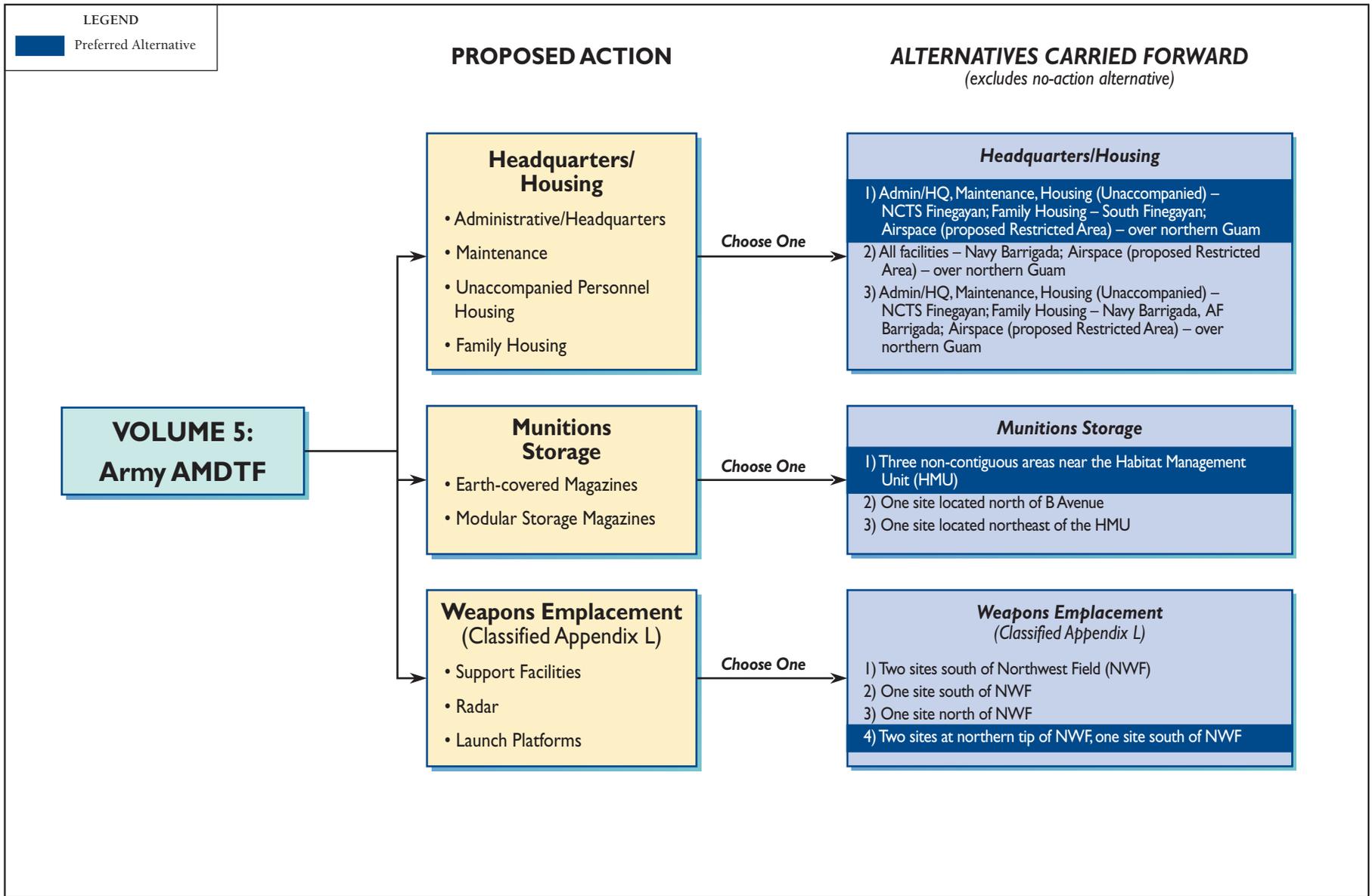


Figure ES-5a  
 Summary of Proposed Action and Alternatives Carried Forward for the  
 Army Air and Missile Defense Task Force, Guam

### *Munitions Storage Alternatives*

*Munitions Storage Alternative 1 (Preferred Alternative).* Munitions storage would be in three non-contiguous areas near the HMU at Munitions Storage Area (MSA) 1 at Andersen AFB. The proposed magazines would be constructed at these two sites (requiring demolition) and at a third site located east of the HMU across an unnamed roadway. The area of ground disturbance including a buffer (and excluding the existing munitions storage facilities) is estimated 6.6 ac (2.7 ha).

*Munitions Storage Alternative 2.* Munitions storage magazines would be consolidated at one site that is located north of B Avenue at MSA 1. The area of ground disturbance including a buffer is estimated 2.7 ac (1.1 ha).

*Munitions Storage Alternative 3.* Munitions storage magazines would be consolidated at a site located northeast of the HMU and an unnamed road at MSA 1. The area of ground disturbance including a buffer is estimated 2.7 ac (1.1 ha).

### *Weapons Emplacement Alternatives (Analysis in Classified Appendix)*

Four alternatives exist near NWF at Andersen AFB for the weapons emplacement sites. The general areas of the proposed weapons emplacement sites are not classified, but the proposed configurations within the areas are classified. Detailed information on the weapons emplacements is contained in a Classified Appendix (Appendix L) that is only available to regulatory agency reviewers with the appropriate security clearance.

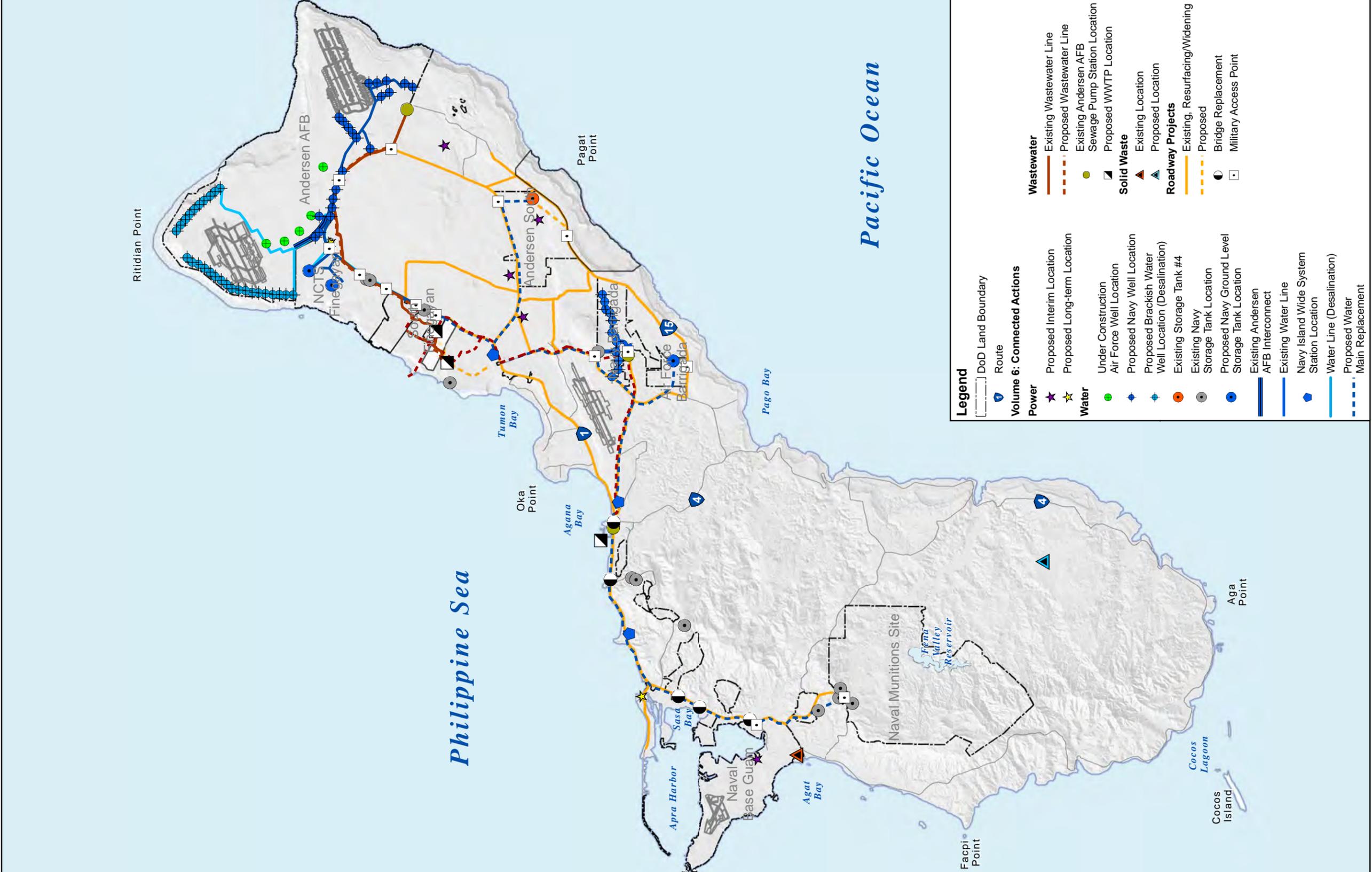
### *Airspace*

During Terminal High Altitude Area Defense radar operations, there is a potential hazard to military and civilian aircraft. Therefore, proposed SUA would be located along and off the northwest coast of Guam. The SUA would consist of a proposed restricted area (to be called R-7205) to accommodate hazards associated with THAAD radar operations. R-7205 would be from the surface up to 22,000 ft (6,700 m) above mean sea level (Flight Level 220) and would be activated based on FAA approved airspace periods required for system maintenance, training, certification, and contingency operations. Planned preventive maintenance would require a minimum continuous period of 45 minutes daily Monday-Friday. Training and certification periods would be processed to the FAA for approval to use the R-7205 airspace. The FAA would issue a Notice to Airmen prior to scheduled use of the airspace.

### Utilities and Roadway Projects – Guam (Volume 6)

The activities related to the Marine Corps relocation to Guam increase demand on existing utilities and roadway infrastructure. In addition to Marine Corps personnel there will be a temporary surge in construction personnel and construction activities. This Draft EIS/OEIS analyzes the related actions and presents alternatives to reduce the effects of the increased population.

The alternatives presented may be either interim alternatives to meet immediate needs; basic alternatives to meet both immediate and long-term needs; or long-term alternatives that would meet needs beyond the temporary surge of the proposed relocation. In addition, while interim and basic alternatives are addressed with known or project-specific information, long-term alternatives are dealt with more generally. The proposed interim utility alternatives bridge the gap between existing conditions and final long-term utility solutions. The interim alternatives provide a solution until future implementation of the long-term solution. This approach anticipates that long-term alternatives may not be implemented in time to accommodate the Marine Corps relocation schedule. However, interim alternatives and basic



**Figure ES-6**  
**Volume 6: Related Actions – Utilities and Roadway Projects (Guam)**

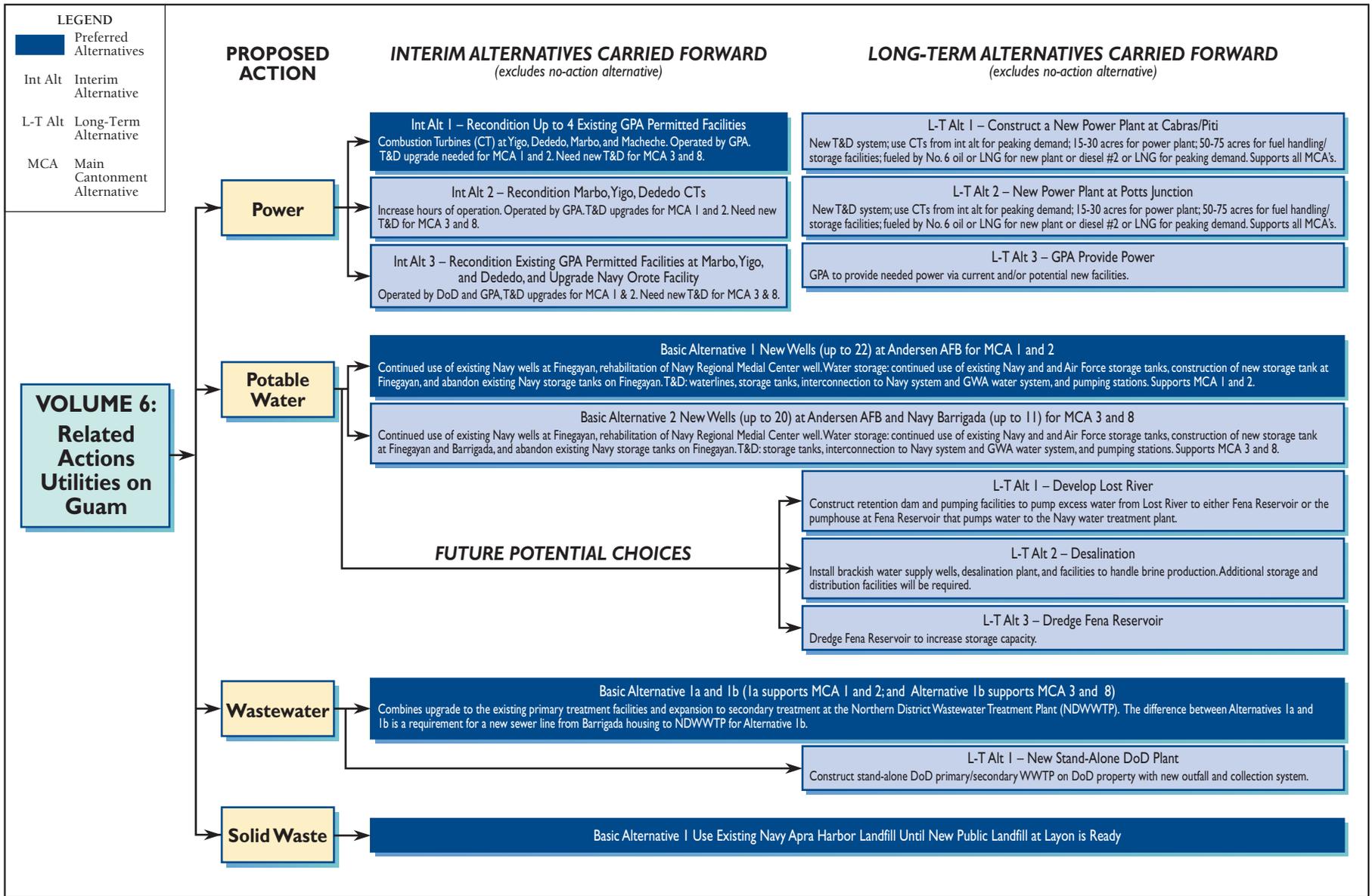


Figure ES-6a  
Summary of Proposed Action and Alternatives Carried Forward for Utilities, Guam

would be initiated after signature of the Record of Decision and completed soon enough to support the DoD build up.

Some long-term solutions have not been finalized since it is anticipated that implementation would be through Special Purpose Entities (SPE). Pursuant to the Realignment Roadmap Agreement the Government of Japan has agreed to provide up to \$740M in loans for a SPE to provide utilities support for the III MEF forces that will be realigning from Okinawa to Guam. The Utility SPE(s) will be private ventures that provide long-term solutions to the underlying utility needs for the realignment efforts. For example, private entities might develop, construct, and manage a power plant or a wastewater treatment plant. The U.S. government would then agree to purchase utilities from that plant as a fee that provides payback to the SPE on its investment. Given that these SPEs have yet to be formed, these long-term solutions are not currently defined in detail. Therefore, they are presented as “conceptual” alternatives and are addressed as long-term alternatives. Long-term utility alternatives would require further NEPA tiered and/or supplemental documentation.

Alternatives being evaluated for the related actions are listed below and shown in Figure ES-6. Figure ES-6a shows the proposed action and alternatives carried forward for utilities on Guam.

#### *Power*

*Interim Alternative 1 (Preferred).* Interim Alternative 1 would recondition existing combustion turbines and upgrade transmission and distribution (T&D) systems and would not require new construction or enlargement of the existing footprint of the facility. This work would be undertaken by the Guam Power Authority (GPA) on its existing permitted facilities. Reconditioning would be made to existing permitted facilities at the Marbo, Yigo, Dededo No. 1, and Macheche combustion turbines. These combustion turbines are not currently being used up to permit limits. T&D system upgrades would be on existing above ground and underground transmission lines. This alternative supports Main Cantonment Alternatives 1 and 2. Main Cantonment Alternatives 3 and 8 would require additional upgrades to the T&D system.

*Interim Alternative 2.* Interim Alternative 2 is a combination of reconditioning existing permitted GPA facilities, increasing in operational hours for existing combustion turbines, and upgrading existing T&D systems. Interim Alternative 2 would not require new construction or enlargement of the existing footprint of the facility. Reconditioning would be performed on the existing permitted GPA facilities at the Marbo, Yigo, and Dededo combustion turbines. This alternative supports Main Cantonment Alternatives 1 and 2. Main Cantonment Alternatives 3 and 8 would require additional upgrades to the T&D system.

*Interim Alternative 3.* Interim Alternative 3 is a combination of reconditioning existing GPA permitted facilities at Marbo, Yigo, and Dededo and upgrades to the DoD power plant at Orote. Upgrades would be made to existing T&D. The proposed reconditioning to the existing power generation facilities at Marbo, Yigo, and Dededo would not require new construction or enlargement of the existing footprint of the facility. For the Orote power plant, upgrades would include a new fuel storage facility to facilitate longer run times between refueling. This would disturb approximately one acre (4,047 square meters). This alternative supports Main Cantonment Alternatives 1 and 2. Main Cantonment Alternatives 3 and 8 would require additional upgrades to the T&D system.

*Long-Term Alternative 1.* Long-Term Alternative 1 would be to build a new power plant at Cabras/Piti. This new plant would combine re-powering existing generation units for peaking power, a new power plant for base load power, and new/upgraded distribution system. The base load generation would be

fueled by No. 6 oil or Liquefied Natural Gas (LNG) and peaking generation would be fueled by diesel oil No. 2 or LNG.

*Long-Term Alternative 2.* Long-Term Alternative 2 would be to build a new power plant at Potts Junction. This alternative would combine re-powering existing generation units for peaking power, a new power plant for base load power, and a new/upgraded distribution system. The base load generation would be fueled by No. 6 oil or LNG and peaking generation would be fueled by diesel oil No. 2 or LNG.

*Long-Term Alternative 3.* Long-Term Alternative 3 would be for the GPA to provide needed power via current and/or potential new facilities.

#### *Potable Water*

*Basic Alternative 1 (Preferred).* Basic Alternative 1 would consist of installing up to 22 new potable water supply wells at Andersen AFB, rehabilitating existing wells, and interconnecting with the Guam Water Authority (GWA) water system, and associated water line transmission and distribution systems. A new 5 million gallons (MG) (19 million liters [ML]) water storage tank would be constructed at ground level at Finegayan.

*Basic Alternative 2.* Basic Alternative 2 would consist of installing up to 20 new potable water supply wells at AFB, up to 11 new potable water supply wells at Barrigada, rehabilitating existing wells, interconnecting with the GWA water system, and associated T&D systems upgrades. Additionally, new 3.6 MG (13.6 ML) and 1 MG (3.8 ML) water storage tanks would be constructed at ground level at Finegayan and Barrigada, respectively.

*Long-Term Alternative 1.* Develop Lost River by constructing a retention dam and pumping facilities to pump excess water from Lost River to either Fena Reservoir or the pumphouse at the Reservoir that pumps water to the Navy water treatment plant.

*Long-Term Alternative 2.* Install brackish water supply wells, a desalination plant, and facilities to handle brine production. Additional storage and distribution facilities would be required.

*Long-Term Alternative 3.* Dredge Fena Reservoir to increase storage capacity.

#### *Wastewater*

*Basic Alternative 1a (Preferred) and 1b.* Basic Alternative 1 (Basic Alternative 1a supports Main Cantonment Alternatives 1 and 2; and Basic Alternative 1b supports Main Cantonment Alternatives 3 and 8) combines upgrade to the existing primary treatment facilities and expansion to secondary treatment at the Northern District Wastewater Treatment Plant (NDWWTP). The difference between Basic Alternatives 1a & 1b is a requirement for a new sewer line from Barrigada housing to NDWWTP for Basic Alternative 1b.

*Long-Term Alternative 1.* Construct a stand-alone DoD primary/secondary WWTP on DoD property with a new outfall and collection system.

#### *Solid Waste*

*Basic Alternative 1 (Preferred).* The Preferred Alternative for solid waste would be the continued use of the Navy Landfill at Apra Harbor until the Layon Landfill is opened, which is scheduled for July 2011.

#### *Roadway Projects*

The roadway improvements sections have been prepared jointly by the Federal Highway Administration (FHWA) as a federal cooperating agency, the Navy's Joint Guam Program Office as the federal lead

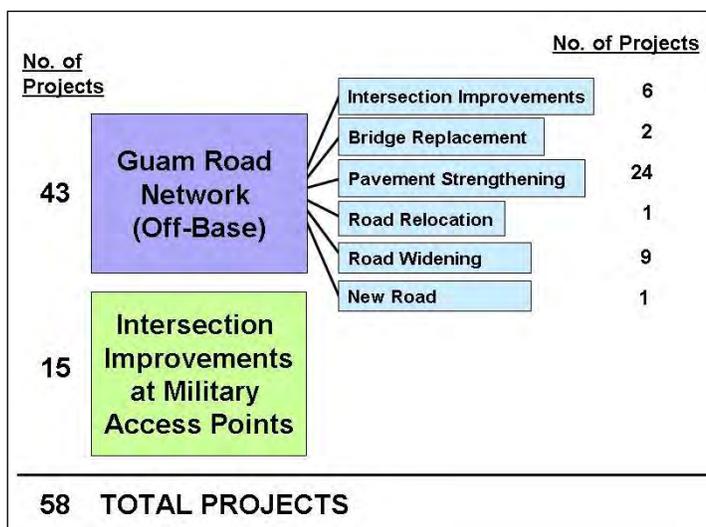
agency for the Guam and CNMI military relocation, and the Guam Department of Public Works (DPW) as a participating agency.

The purpose of the proposed construction of the Guam Roadway Network (GRN) is to improve the existing network through the Defense Access Road Program and provide mission-critical transportation infrastructure as part of the planned military buildup. The improvements proposed for the GRN would result in strengthened roadways, bridge replacement, increased roadway capacity, roadway realignment (Route 15), new access, and enhanced roadway safety on Guam as a response to construction for military buildup and growth.

The project may be funded by FHWA through annual allocations for calendar years 2010 through 2016 and funding requested under the Defense Access Road Program. The Defense Access Road Program provides the means for DoD to pay a fair share for public highway improvements required as a result of a sudden or unusual defense-generated traffic impact or unique defense-related public highway requirement.

Individual projects have been identified from recent transportation and traffic studies on the island of Guam. These consist of 43 GRN (off-base) projects and 15 intersection improvement projects at military access points (MAPs) (i.e., gates). The 43 GRN (off-base) projects are composed of six types of roadway improvements:

- Intersection improvement projects
- Bridge replacement projects (involving five bridges)
- Pavement strengthening (combined with roadway widening at some locations)
- Roadway relocation (Route 15)
- Roadway widening
- Construction of a new road (Finegayan Connection)



The 58 projects cover four geographic regions on Guam: North, Central, Apra Harbor, and South. Not all 58 projects would be implemented since only a specific combination of roadway projects support each cantonment alternative.

- Main Cantonment Alternative 1 — There are 49 GRN projects that would be required for Alternative 1. These projects include 29 pavement strengthening, 8 roadway widening, 14 intersection improvements (includes 8 MAPs), 5 bridge replacements, 1 road relocation, and 1 new road.
- Main Cantonment Alternative 2 (Preferred) — A different combination of 49 GRN projects would be required for Alternative 2. These projects include 29 pavement strengthening, 8 roadway widening, 14 intersection improvements (includes 8 MAPs), 5 bridge replacements, 1 road relocation, and 1 new road.

- Main Cantonment Alternative 3 — There are 51 GRN projects that would be required for Alternative 3. These projects include 29 pavement strengthening, 10 roadway widening, 17 intersection improvements (includes 11 MAPs), 5 bridge replacements, and 1 road relocation.
- Main Cantonment Alternative 8 — A different combination of 51 GRN projects would be required for Alternative 8. These projects include 28 pavement strengthening, 8 roadway widening, 15 intersection improvements (includes 9 MAPs), 5 bridge replacements, 1 road relocation, and 1 new road.

## **ES-6 PREFERRED ALTERNATIVES FOR THE MAJOR ACTIONS**

The preferred alternatives that comprise the proposed actions and within which volume of the full Draft EIS/OEIS further details appear are:

- Volume 2, Marine Corps Guam: Alternative 2 (use of NCTS and South Finegayan with acquisition or long-term lease of former FAA lands), Range Complex Alternative A (east of Andersen South with the realignment of Route 15).
- Volume 3, Marine Corps Tinian: Alternative 1, construction of 4 ranges within the leaseback area, three oriented north and the Platoon Battle Course oriented northeast.
- Volume 4, Aircraft Carrier Berthing: Alternative 1, construction of a deep-draft wharf at Polaris Point.
- Volume 5, Army AMDTF: Alternative 1, administration, headquarters, and maintenance would be located at NCTS Finegayan with the Marine Corps. Family housing at South Finegayan. Munitions storage in three non-contiguous areas near the Habitat Management Unit. Restricted airspace over the coastal area of Guam.
- Volume 6, Related Actions:
  - Power: Interim Alternative 1: recondition up to four existing permitted GPA combustion turbines with upgrades to appropriate transmission and distribution systems to support interim loads.
  - Potable Water: Basic Alternative 1: develop up to 22 new wells at Andersen AFB, interconnection with GWA water system, rehabilitation of existing wells, and distribution upgrades.
  - Wastewater: Basic Alternative 1a: combine upgrade to existing primary treatment and expansion to secondary treatment at NDWWTP.
  - Solid Waste: Alternative 1: continue utilizing the Navy sanitary landfill at Apra Harbor until the new Layon Landfill is opened.
  - Roadway Projects: Alternative 2: implement the forty-nine individual projects that have been identified to support DoD Alternative 2.

## **ES-7 ENVIRONMENTAL IMPACTS FROM PROPOSED GUAM MILITARY RELOCATION**

The Draft EIS/OEIS provides information on the affected environment and impacts of the proposed actions for eighteen distinct resource areas. Volumes 2 through 5 of the Draft EIS/OEIS provide details on the impacts of individual proposed Marine Corps, Navy and Army actions while Volume 6 addresses island wide impacts of utilities and roadway proposed improvement projects. Volume 7 provides a summary of the impacts of all of the proposed actions should the preferred alternative development project in each case be implemented. Table ES-4 provides a brief summary of the environmental impacts,

as well as potential mitigation measures, on several key resource areas on Guam and Tinian as a result of the proposed Guam and CNMI military relocation program.

## **ES-8 POTENTIAL MANAGEMENT PRACTICES AND MITIGATION MEASURES**

Mitigation refers to actions that would be taken to avoid, minimize, rectify, reduce/eliminate, or provide compensation for an impact that would result from an alternative. In 40 Code of Federal Regulations 1500, the Council on Environmental Quality defines mitigation as:

- Avoidance: Avoid the impact by changing the action. Do not take certain actions that would cause the environmental effect.
- Minimization: Minimize impacts by changing the intensity, timing, magnitude, or duration of the action and its implementation.
- Rectifying: Rehabilitate, repair, or restore damage that may be caused by implementing the proposed actions.
- Reducing/Eliminating: Reduce or eliminate the impact over time.
- Replacement: Compensate for an impact by replacing the damage and improving the environment elsewhere, or by providing other substitute resources such as funds to pay for the environmental impact.

For the purposes of this Draft EIS/OEIS, best management plans (BMPs) are management actions that are implemented by the Navy on an ongoing basis as part of standard operating procedures. These BMPs serve to minimize, and reduce/eliminate potentially adverse impacts. Additional detail on the BMPs is provided in Volumes 2 – 6 and a summary is in Volume 7, Chapter 2. The following is a list of BMPs that would be implemented:

- Erosion Control
- Stormwater Management under the Clean Water Act: Stormwater Management Plan and Stormwater Pollution Prevention Plan
- Water Quality Monitoring Plan
- Biosecurity Plan (*Micronesian Biosecurity Plan*)
- Leadership in Energy and Environmental Design Certification
- Low Impact Development design technology
- Energy Policy Act of 2005
- Water Conservation Plan
- Hazardous Waste Management Program
- Spill Prevention Control and Counter-measures Plans
- Facility Response Plans
- Hazardous Materials Management Plans

- Munitions and explosives of concern procedures
- Land Use Planning and Project Design measures
- Biological resource protections (Terrestrial and Marine)
- Public Outreach/Education
- Army Corps of Engineers permit conditions

In addition to the listed BMPs that DoD would implement, there are a number of potential mitigation measures that are being considered that would further minimize significant adverse impacts.

Table ES-4 presents the impacts by resource area that have been deemed significant in the context of NEPA. Potential mitigation measures that would reduce the adverse impacts of implementing the Guam and CNMI military relocation program are also listed as appropriate with each identified significant impact. With implementation of these potential mitigation measures, the environmental consequences would be reduced. Mitigation measures for the selected alternative will be identified in the Record of Decision. These measures will be funded, and efforts to ensure their successful completion or implementation will be treated as compliance requirements and tracked as part of annual data calls.

**Table ES-4. Summary of Significant Impacts of the Preferred Alternatives**

<i>Potentially Impacted Resource</i>	<i>Significant Impacts and Potential Mitigation of Preferred Alternatives</i>
Water Resources	Construction SI-M (Guam and Tinian) <ul style="list-style-type: none"> <li>• Temporary water quality impacts on near shore waters and coral in Apra Harbor during dredging. Implementation of a suite of mitigation measures required by dredging permits, such as physical barriers to limit sediment dispersal, would reduce impacts to less than significant.</li> <li>• Potential fill of wetlands and indirect wetland impacts. Mitigation measures would include creation of replacement wetlands or preservation or improvement of existing wetlands.</li> </ul>
Noise	Operation (Guam only) SI <ul style="list-style-type: none"> <li>• Roadway noise would be a significant impact in the north and central areas of Guam. Mitigation has not been determined. Noise walls are a potential mitigation, but they have adverse impacts on views.</li> </ul>
Land, Roadways, and Submerged Land Use	Construction (Guam only) SI-M <ul style="list-style-type: none"> <li>• Roadway construction on Guam would have a significant adverse impact on roadway use during construction. Mitigation would include a Traffic Management Plan implemented by the Federal Highway Administration that would identify measures to reduce impacts during the construction period.</li> </ul> Operation SI-M (Guam) <ul style="list-style-type: none"> <li>• Federal acquisition of land for main cantonment, firing ranges, and roadway improvements on Guam. Mitigation would include long-term leases of the property instead of purchase.</li> </ul> SI (Tinian) <ul style="list-style-type: none"> <li>• Agricultural/grazing permits within the Tinian Lease Back Area would be terminated, causing significant impact on consistency with the Farmland Protection Policy Act of 1981. The permits are subject to termination at military discretion.</li> </ul>
Terrestrial Biological Resources	Construction SI (Guam and Tinian) <ul style="list-style-type: none"> <li>• Special Status Species: loss of habitat for special-status species on Guam and Tinian, including federal threatened and endangered species, from clearing of vegetation.</li> <li>• Invasive species introduction, mitigated through existing interdiction plans and policies, and new measures identified in the Micronesian Biosecurity Plan (being developed).</li> </ul> Operation SI-M (Guam and Tinian) <ul style="list-style-type: none"> <li>• Operational noise would result in the disturbance of special status species.</li> <li>• A suite of existing procedures, BMPs and mitigation measures including noise barriers would be implemented to address construction and operational impacts on terrestrial biology.</li> </ul>
Marine Biological Resources	Construction SI-M (Guam only) <ul style="list-style-type: none"> <li>• Dredging in Outer Apra Harbor would result in significant direct impacts to the coral reef ecosystem. Potential compensatory mitigation being considered includes watershed management projects and artificial reef construction.</li> </ul>

<i>Potentially Impacted Resource</i>	<i>Significant Impacts and Potential Mitigation of Preferred Alternatives</i>
Cultural Resources	Construction (Guam and Tinian) SI-M <ul style="list-style-type: none"> <li>• Potential significant adverse direct impacts to approximately 34 NRHP-eligible or listed archaeological resources on Guam and 10 on Tinian. Mitigation would be conducted in accordance with Programmatic Agreement with State Historic Preservation Office that would require avoidance, survey, monitoring during construction, data recovery, building documentation, public education, and training of military personnel.</li> <li>• Potential significant adverse impacts to four traditional cultural properties. Mitigated to less than significant through public education and implementation of a preservation plan.</li> </ul>
Utilities	Construction and Operation (Guam only) SI-M <ul style="list-style-type: none"> <li>• Impact to existing overburdened utilities infrastructure on Guam</li> <li>• Potable Water: The projected water demand for the Guam civilian population throughout 2010-2019, not including the effects of the military buildup, exceeds the current Guam Water Authority (GWA) water system capacity. Projected potable water demand would not exceed sustainable yield of the Northern Guam Lens Aquifer.</li> <li>• Higher than currently permitted wastewater flow to NDWWTP. GWA would be required to upgrade the NDWWTP to secondary treatment.</li> <li>• A suite of mitigation measures are under consideration to mitigate impacts to utilities on Guam, including adaptive management techniques to adjust construction tempo.</li> </ul>
Socioeconomics and General Services	Construction and Operation (Guam and Tinian) SI-M <ul style="list-style-type: none"> <li>• Beneficial impacts to economics and tourism.</li> <li>• Adverse impacts to population, housing, public services, crime, social order, and community.</li> <li>• Impacts of sudden activity (both positive and negative) that peak during the 2013-2015 timeframe.</li> <li>• Effects on Neighborhoods and Businesses.</li> <li>• Property Acquisition and Relocation.</li> <li>• A suite of mitigation measures under DoD and non-DoD control are under consideration to mitigate impacts to socioeconomics and services on Guam, including adaptive management techniques to adjust construction tempo.</li> </ul>
Environmental Justice and the Protection of Children	Construction (Guam only) SI-M <ul style="list-style-type: none"> <li>• Roadway traffic and noise would impact low income, Children and racial minorities. Noise mitigation for noise is proposed, but has visual impacts to consider.</li> </ul> Operation (Guam and Tinian) SI-M (Guam) and SI (Tinian) <ul style="list-style-type: none"> <li>• Access restrictions to cultural sites.</li> <li>• Limited health care services for under-insured.</li> <li>• Access restrictions on chili-pepper gathering (Tinian only).</li> <li>• <u>No mitigation proposed for Tinian impacts.</u></li> </ul>

Legend: SI = Significant impact, SI-M = Significant impact mitigable to less than significant.

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# Guam and CNMI Military Relocation EIS/OEIS

## Volume 1: Overview of Proposed Actions and Alternatives

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# CHAPTER 1.

## PURPOSE OF AND NEED FOR ACTION

### 1.1 INTRODUCTION

This Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) was prepared in compliance with the National Environmental Policy Act (NEPA) (42 United States Code § 4321, as amended); the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (Title 40 Code of Federal Regulations [CFR] §§ 1500–1508, July 1, 1986); and the United States (U.S.) Department of the Navy (Navy) Procedures for Implementing NEPA (32 CFR § 775).

Under customary international law, U.S. territory generally extends into the ocean a distance of 3 nautical miles (nm) (5.63 kilometer [km]) from the coastline. By Presidential Proclamation 5928, issued December 27, 1988, the U.S. extended its exercise of sovereignty and jurisdiction under international law to 12 nm (22.2 km). The Navy policy has been to apply the NEPA to the 12 nm (22.2 km) limit established by the Proclamation. Impacts within these boundaries are subjected to analysis under the NEPA. Actions with the potential to significantly harm the environment beyond U.S. territorial waters (i.e., beyond 12 nm [22.2 km]) must be analyzed using the procedures set forth in Executive Order (EO) 12114 and associated implementing regulations. An impact statement prepared under EO 12114 is identified as Overseas Environmental Impact Statement (OEIS).

The Notice of Intent to prepare an EIS published in the Federal Register identified this document as an EIS/OEIS and it was similarly identified at the public scoping meetings in order to ensure that alternatives, whether inside or outside the territorial seas, would be analyzed in the same document. This inclusive approach required compliance with both EO 12114 and NEPA regulations.

As the proposed actions were more fully developed through public scoping and subsequent refinement of requirements, as discussed in Volume 3, only routine vessel and aircraft transit activities between Guam and Tinian are proposed to occur outside the geographic scope of NEPA. The character of these activities has been studied and determined not to have the potential to significantly harm the global commons. Therefore, only NEPA requirements are applicable to the proposed actions since no activities trigger coverage by EO 12114. The document through this draft remains labeled as an EIS/OEIS. It will be re-titled as an EIS in the final and developed solely under NEPA, if no additional information to the contrary is revealed during the public comment process.

An illustration of the EIS/OEIS organization is presented in the Reader's Guide. A list detailing the organization of the EIS/OEIS is provided below:

#### **Chapter 1:**

- 1.1 Introduction*
- 1.2 Existing Military In The Marianas*
- 1.3 Purpose and Need*
- 1.4 Global Perspective Background*
- 1.5 Decisions To Be Made*
- 1.6 Site Specific Analysis vs. Analysis of Long-term Projects*
- 1.7 Summary of Action Alternatives*
- 1.8 National Environmental Policy Act and Executive Order 12114 Compliance*
- 1.9 Agency Coordination*
- 1.10 Sustainability*
- 1.11 Documents Incorporated by Reference*

- *Volume 1: Overview of the Proposed Actions and Alternatives.* This volume includes the executive summary, overarching purpose of and need for all actions, a brief description of military facilities and associated training on Guam and Commonwealth of Northern Mariana Islands (CNMI), and a summary of alternatives.
- *Volume 2: Marine Corps Relocation – Guam.* This volume provides resource-specific information about existing conditions on Guam, a description of the purpose and need for the action, a description of reasonable alternatives including the proposed action, impact analysis, and identifies and discusses mitigation measures.
- *Volume 3: Marine Corps Relocation – Training on Tinian.* This volume provides resource-specific information about existing conditions in the Commonwealth of the Northern Mariana Islands (CNMI), a description of the purpose and need for the action, a description of reasonable alternatives, provides an impact analysis, and identifies and discusses mitigation measures.
- *Volume 4: Aircraft Carrier Berthing.* This volume discusses the purpose and need for the action, describes the reasonable pier location alternatives, analyzes impacts, and identifies and discusses mitigation measures.
- *Volume 5: Army Air and Missile Defense Task Force (AMDTF).* This volume discusses the purpose and need for the action, describes the reasonable alternatives, analyzes impacts, and identifies and discusses mitigation measures.
- *Volume 6: Related Actions – Utilities and Roadway Projects on Guam.* This volume discusses alternatives, provides an impact analysis, and identifies and discusses mitigation measures.
- *Volume 7: Potential Mitigation, Preferred Alternatives’ Impacts and Cumulative Impacts.* This volume summarizes potential mitigation measures, best management practices, Clean Water Act, § 404 actions and preferred alternatives’ impacts from Volumes 2 through 6. The mitigation chapter includes a discussion of adaptive management practices that would reduce the construction phase impacts of the proposed actions. Volume 7 concludes with a cumulative impact analysis of the incremental impacts of the preferred alternatives when added to the impacts of other past, present, and reasonably foreseeable future actions.
- *Volume 8: Additional Items Required by NEPA.* The Navy and regulatory agencies have kept CEQ apprised of interagency issues and progress on resolving those issues. This volume discusses consistency with other federal, state and local land use plans, policies, and controls; required permits and approvals, irreversible and irretrievable commitments of resources; the relationship between short term use of the environment and long-term productivity; and sustainability. Finally, this volume provides a distribution list for the Draft EIS, references, and a list of preparers.
- *Volume 9: Appendices, including certain agency correspondence, highly cited studies, and the classified annex.*
- *Volume 10: Public Comments on the Draft EIS/OEIS.* This volume will contain the full list of public comments received on the Draft EIS/OEIS, analysis, and responses to these comments (Volume to be included in the Final EIS).

Volumes 2 through 5 are organized into the following chapters:

- *Chapter 1: Purpose of and Need for Action.* This chapter states the purpose of and need for the proposed action and presents background information about the proposed action.

- *Chapter 2: Proposed Action and Alternatives.* This chapter describes the siting criteria and the screening process to evaluate and identify the reasonable alternatives, the proposed action and reasonable alternatives, and the no-action alternative.
- *Chapters 3-19: Resource Sections.* These chapters describe existing conditions and identify potential impacts to the respective resources:
  - Chapter 3: Geological and Soil Resources
  - Chapter 4: Water Resources
  - Chapter 5: Air Quality
  - Chapter 6: Noise
  - Chapter 7: Airspace
  - Chapter 8: Land and Submerged Land Use
  - Chapter 9: Recreational Resources
  - Chapter 10: Terrestrial Biological Resources
  - Chapter 11: Marine Biological Resources
  - Chapter 12: Cultural Resources
  - Chapter 13: Visual Resources
  - Chapter 14: Marine Transportation: This chapter covers marine transportation.  
(Volume 6 covers roadway transportation)
  - Chapter 15: Utilities
  - Chapter 16: Socioeconomics and General Services
  - Chapter 17: Hazardous Materials and Waste
  - Chapter 18: Public Health and Safety
  - Chapter 19: Environmental Justice and the Protection of Children
  - Chapter 20: References

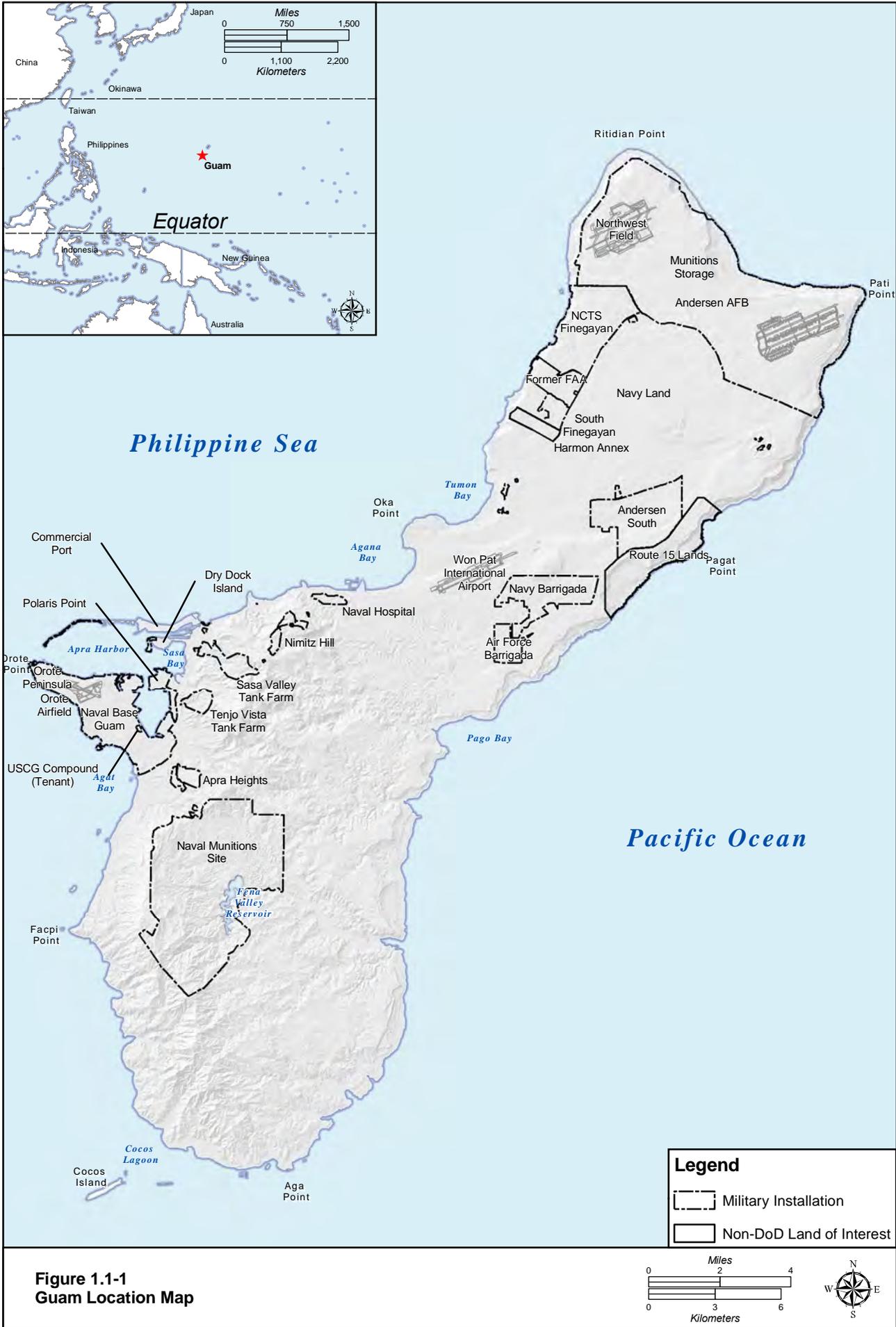
The proposed actions include components involving the U.S. Marine Corps (Marine Corps), the Navy and the U.S. Army (Army). A summary overview of the proposed actions and alternatives is presented in Chapter 2 of this volume. The three main components of the proposed actions are briefly stated as follows:

1. *Marine Corps.* (a) Develop and construct facilities and infrastructure to support approximately 8,600 Marines and their 9,000 dependents relocated from Okinawa (Japan) to Guam. (b) Develop and construct facilities and infrastructure to support training and operations on Guam and Tinian (CNMI) for the relocated Marines.
2. *Navy.* Construct a new deep-draft wharf with shoreside infrastructure improvements creating the capability in Apra Harbor, Guam to support a transient nuclear-powered aircraft carrier.
3. *Army.* Develop facilities and infrastructure on Guam to support relocating approximately 600 military personnel and their 900 dependents to establish and operate an Army AMDTF.

The proposed action for the Marine Corps relocation includes personnel from the units being relocated and the associated base support personnel that must also be present at an installation to support the military mission.

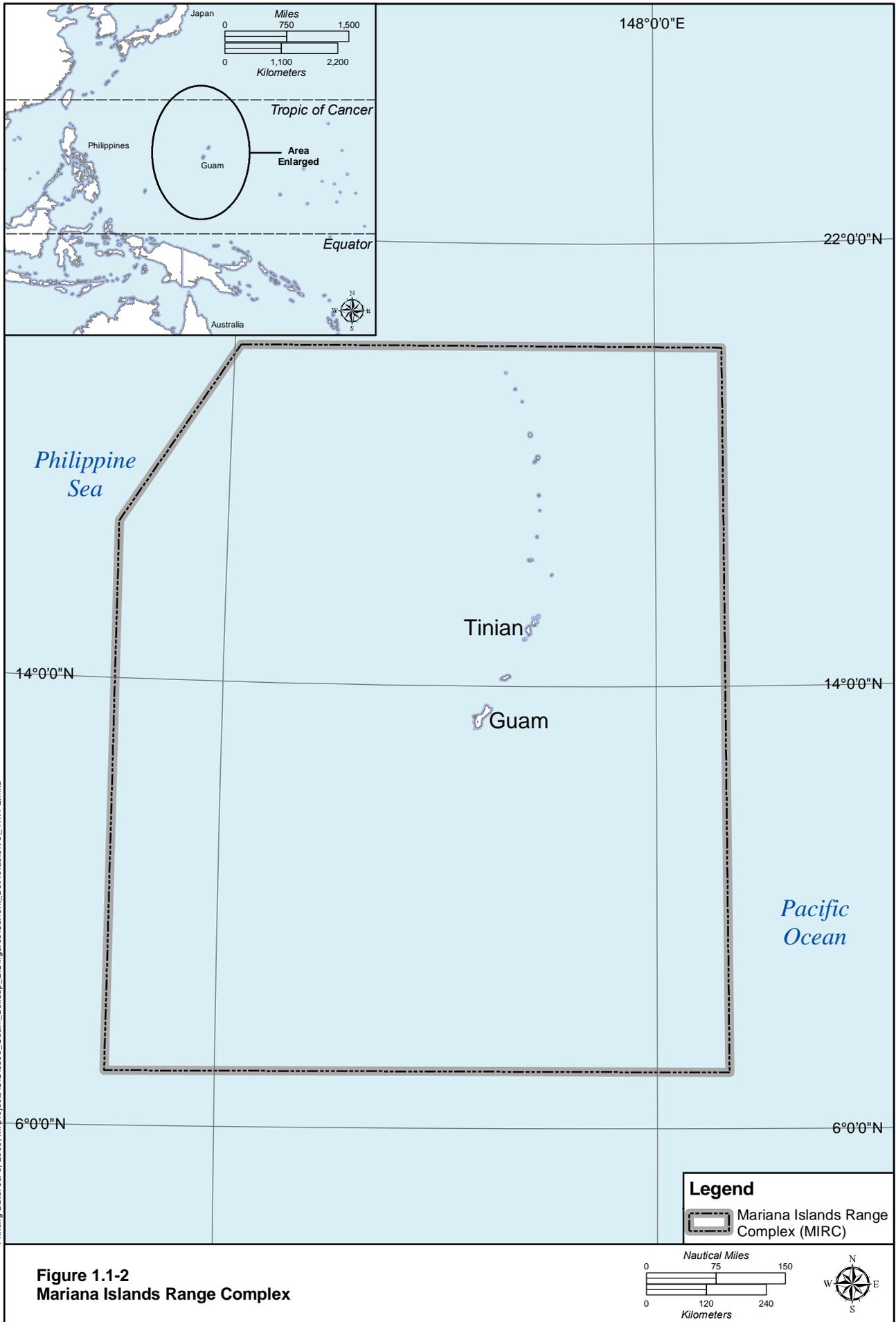
The project locations addressed in this EIS/OEIS are Guam, a territory of the U.S., and Tinian, a part of the CNMI, a commonwealth of the U.S., both are governed under Article II of the U.S. Constitution. Both Guam and the nearby island of Tinian have existing military training uses that are geographically part of the Mariana Islands archipelago (Figure 1.1-1). They are located within the Mariana Islands Range

Complex (MIRC), an area used by the Department of Defense (DoD) for readiness training (Figure 1.2-1). Under an independent action, upgrades and changes to the MIRC are being analyzed in a separate EIS/OEIS. The Guam and CNMI Military Relocation EIS/OEIS is based upon the assumption that the MIRC EIS preferred alternative represents “existing” or baseline conditions of training in the MIRC through 2015. Further discussion on the military activities within the MIRC and the relationship between the MIRC EIS/OEIS and this EIS/OEIS are provided in Section 1.2.5 below.



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**Figure 1.1-1  
Guam Location Map**



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**Figure 1.1-2  
Mariana Islands Range Complex**

## 1.2 EXISTING MILITARY IN THE MARIANAS

The Air Force and Navy have an established military presence in the Marianas and manage existing military facilities and lands under DoD jurisdiction on Guam. The CNMI is currently used for training for all military services that reside on Guam or transit through the Marianas. The Army also has facilities in the CNMI, on Saipan. Figure 1.2-1 and 1.2-2 show the military facilities for Guam and the CNMI, respectively.

The U.S. Coast Guard (USCG) controls a portion of Victor Wharf, and the adjacent shoreside property is used by USCG-Sector Guam.

The Navy is also the executive agent for DoD lands in Guam and the CNMI including the military leased areas in the CNMI. An overview of the existing military facilities and the MIRC is discussed below.

### 1.2.1 Navy

The Navy in Guam supports naval activities to maintain operational readiness—maintaining the ability of units to respond to regional threats and to protect interests of the U.S. and its allies. The Naval Base Guam at Apra Harbor is the Navy's operations center and is located on the southwest coast of Guam around Apra Harbor, including the Orote Peninsula. It serves as the forward deployment base and logistics hub, including main munitions storage and distribution center for sea, land, and air forces operating in Asia and the Western Pacific. Navy-controlled lands at Apra Harbor have land uses ranging from industrial to recreational. Other lands on Guam are used for communications facilities (Naval Communication Annex, also known as Naval Computer and Telecommunications Station [NCTS], Finegayan [communications receivers], and Barrigada [communications transmitters]); family housing/community support (Apra Heights, Nimitz Hill, and NCTS Finegayan), two petroleum, oil and lubricant storage areas (Defense Logistics Agency [DLA] and Defense Fuels also known as Sasa Valley and Tenjo Vista fuels farms); munitions storage facilities (Naval Munitions Site [NMS] also known as Naval Magazine Apra Heights); the Naval Hospital; a DoD Education Activity high school (adjacent to the Naval Hospital); a Military Operations on Urban Terrain (MOUT) training range; and Navy golf course at Barrigada. In 1998 there were 3,946 active duty Navy personnel stationed on Guam. As of 2007, there were 3,879 active duty Navy personnel stationed on Guam.

### **Chapter 1:**

- 1.1 *Introduction*
- 1.2 *Existing Military In The Marianas*
- 1.3 *Purpose and Need*
- 1.4 *Global Perspective Background*
- 1.5 *Decisions To Be Made*
- 1.6 *Site Specific Analysis vs. Analysis of Long-term Projects*
- 1.7 *Summary of Action Alternatives*
- 1.8 *National Environmental Policy Act and Executive Order 12114 Compliance*
- 1.9 *Agency Coordination*
- 1.10 *Sustainability*
- 1.11 *Documents Incorporated by Reference*



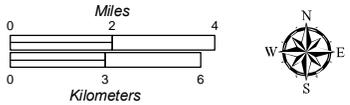


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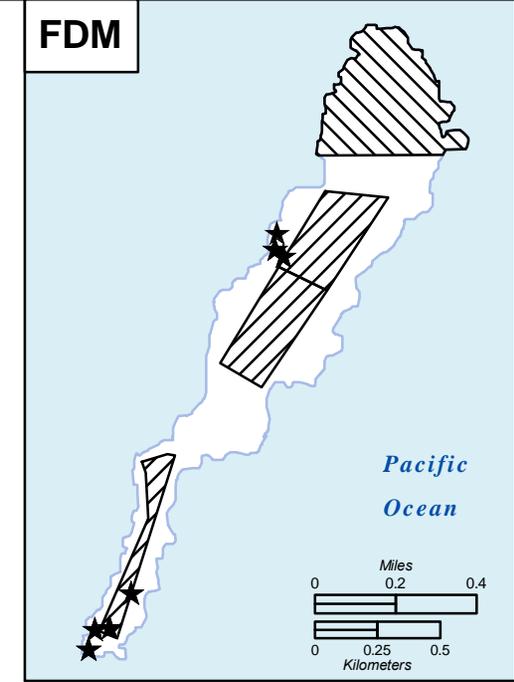
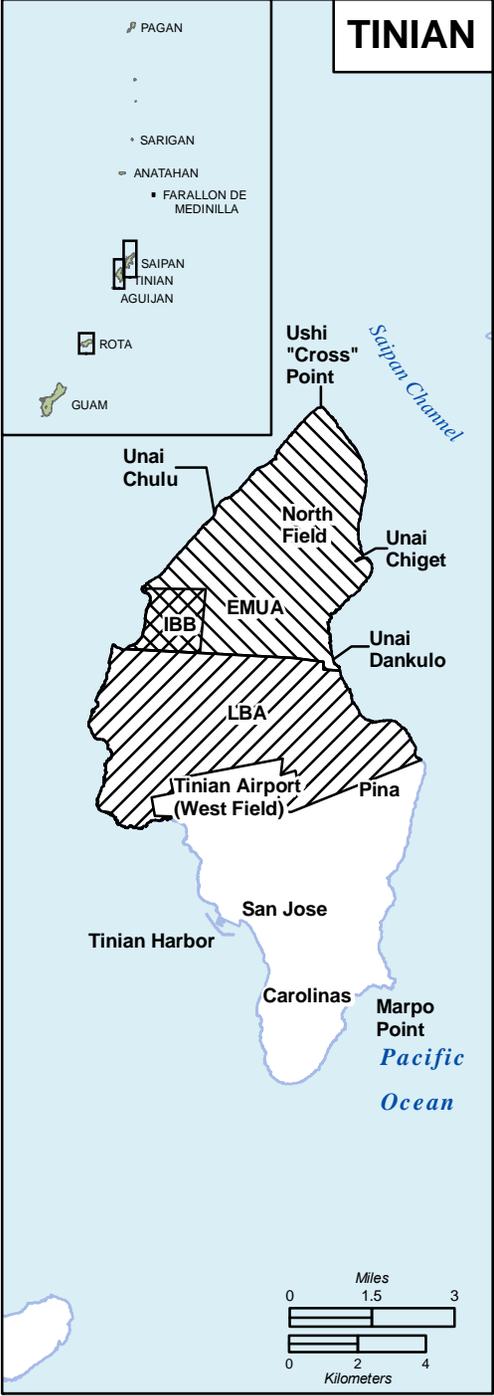
**Figure 1.2-1  
Military Locations on Guam**

**Legend**

- Military Installation
- Route Number
- Communication Facilities
- IBD ESQD Arc
- SDZ



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### Figure 1.2-2 Military Locations in the CNMI

**Legend**

- Tinian
  - IBB (International Broadcasting Bureau)
  - LBA (Leaseback Area)
  - EMUA (Exclusive Military Use Area)
- FDM
  - Special Use Area - No Live Fire
  - Impact Area
- ★ Shore Bombardment Target

### 1.2.2 Air Force

Andersen Air Force Base (AFB) is the most forward U.S. sovereign AFB in the Pacific. Its role is to employ, deploy, integrate, and enable air and space forces from its location on the northern part of Guam. It serves as an important main operating base for combat and mobility contingency forces deploying or assigned in the Pacific and Indian Ocean areas. Andersen AFB is home to the 36<sup>th</sup> Wing, the Air Mobility Command 734<sup>th</sup> Air Mobility Support Squadron, Navy Helicopter Sea Combat Squadron Twenty-Five, and several tenant organizations. Andersen AFB airfield has two parallel runways approximately 11,000 feet (ft) (3,350 meters [m]) long. To the northwest of the airfield operations area is the Munitions Storage Area (MSA) which provides land for current and projected Air Force ordnance storage requirements on Guam. Explosive Safety Quantity Distance arcs from the existing magazines impact much of the central portion of the base. To the northwest of the MSA, the Air Force manages the abandoned World War II era Northwest Field for training and expeditionary air field operations. Beyond Andersen AFB boundaries, the Air Force manages Andersen South for urban training and Barrigada (Air Force) and Mount Santa Rosa for communications. About 3,562 acres (ac) (1,443 hectares [ha]) in Northwest Field are the primary maneuver training areas available at Andersen AFB for field exercises and helicopter operations. In 1998 there were 2,119 active duty Air Force personnel stationed on Guam. As of 2007, there were 1,596 active duty Air Force personnel stationed on Guam.



### 1.2.3 Army

The Army trains the Guam Army National Guard, Army Reserves, and also supports training of allied personnel. It leases 24 ac (9.72 ha) of unimproved Navy land at Barrigada for Guam Army National Guard operations and 15 ac (6.1 ha) of land in Dededo. Headquarter facilities for the Guam Army National Guard is located adjacent to Navy land at Barrigada. Navy Barrigada is 1,418 ac (574 ha), with 250 ac (101 ha) available for development. In 1998, there were 178 active duty Army personnel stationed on Guam, and as of 2007 there were 632 active duty Army personnel stationed on Guam.



### 1.2.4 Marianas-Installation Management Transition

The 2005 Base Closure and Realignment Act recommendations included a directive to realign DoD installation management functions on Guam to the Commander, Naval Forces, Marianas. The strategic imperative driving the realignment is twofold: the Joint Region Marianas (JRM) provides installation support to the military missions; and it identifies significant savings through consolidation. Installation management functions were duplicated in the Navy's regional model for installation management. The realignment reduces duplication of overhead costs and would deliver common DoD levels of service more efficiently.

The transfer of installation management functions during the Initial Operational Capability began on January 31, 2009. As installation support functions were transferred and personnel were integrated into the Joint Region organizational structure, the Joint Region Commander (JRC) assumed responsibility and authority for those functions. As the JRC assumed authority and responsibility for functions, the supported component echelons above the installation relinquished authority to the supporting component,

but retained resourcing responsibility and oversight until Total Obligation Authority and real property transfer at Full Operational Capability on October 1, 2009.

The resulting organization created by this realignment is the JRM. The Navy and Air Force maintain their distinct missions and retain operational command, but regional installation support is managed by the Navy including:

- Planning, programming, budgeting, and execution
- Delivery of installation support – policies, procedures, and contracts

The JRC is responsible for environmental permitting (Navy 2009a) as of October 1, 2009. In addition, the JRC will ensure regulatory requirements are adhered to and will manage, maintain, and renew all required permits.

### 1.2.5 Mariana Islands Range Complex (MIRC)

A range complex is a compilation of training ranges within a defined geographic region. The MIRC consists of existing DoD and Service properties used for training, international air and sea space, and certain private properties within the geographical boundaries in Micronesia. Under an independent action, upgrades and changes to the MIRC are being analyzed in a separate EIS/OEIS. The Guam and CNMI Military Relocation EIS/OEIS is based upon the assumption that the MIRC EIS preferred alternative represents “existing” or baseline conditions of training in the MIRC through 2015.

The geographic expanse of the MIRC is depicted in Figure 1.1-2. It covers approximately 501,873 square nautical miles (nm<sup>2</sup>) (1,721,376 square kilometers [km<sup>2</sup>]) of open-ocean and coastal areas. The MIRC consists of three primary components: (1) ocean surface and subsurface areas, (2) Special Use Airspace (SUA), and (3) land training areas. The ocean surface and subsurface areas of the range complex extend from the south of Guam to north of Pagan (part of the CNMI), and from the Pacific Ocean east of the Marianas to the middle of the Philippine Sea to the west. The range complex includes land ranges and training areas/facilities on Guam and in the CNMI. The range complex includes approximately 63,000 nm<sup>2</sup> (216,084 km<sup>2</sup>) of SUA's and Air Traffic Control Assigned Airspaces including Warning Area 517 and Restricted Area 7201 over Farallon de Medinilla (FDM). CNMI training locations include areas on Guam, Tinian, Saipan, FDM, and Rota.

The complex is available for use by all branches of the Armed Services. Although the Marine Corps has not had a permanent presence in the Marianas, it has trained in the MIRC on a transient basis. The following provides a general description of the Marine Corps' current utilization of the MIRC. Marine Corps training within the MIRC would increase in frequency and intensity upon relocation of the Marines from Okinawa to Guam.

In order to understand the context for the proposed training needed to support the relocation of Marines, it is necessary to understand the existing training and training infrastructure of the Marianas. DoD training ranges in the Marianas are available for use by all branches of the Armed Services, including the Guam Army National Guard and Army Reserves (such ranges are referred to as joint use ranges). Although the Marine Corps does not have a permanent presence in the Marianas, it does train in the MIRC. The Marine Corps presently conducts the following training on a transient basis.

*Guam.* Training is conducted throughout the island at various facilities.

- Assault Support: Assault support comprises those actions required to airlift personnel, supplies, or equipment into or within a battle area. The Marine Corps provides helicopter assault support for command and control, troop lift/logistics, reconnaissance, search and rescue, medical evacuation,

reconnaissance team insert/extraction, and helicopter coordination and control functions. During combat conditions, assault support provides the mobility to focus and sustain combat power at decisive places and times and the capability to take advantage of fleeting battlespace opportunities. There are three levels of assault support: tactical, strategic, and operational. Polaris Point Field, Orote Point airfield, Navy and Air Force Barrigada, NCTS, NMS, Andersen Air Force Base South, Northwest field, Andersen Main Cantonment and Navy main base all provide temporary sites from which assault support training can occur. From these temporary sites, the Marine Expeditionary Unit commander provides assault support to forces training within the MIRC.

- MOUT: MOUT is the use of advanced offensive close quarter battle techniques in an urban terrain. During combat, MOUT includes seizing and securing buildings or areas to neutralize enemy forces for the long-term. MOUT training is accomplished in an area built to resemble a city or town with streets, buildings, and vehicles. The training involves clearing buildings room by room, stairwell by stairwell, and keeping them clear while avoiding impacts to the civilian population. MOUT training is extensive, manpower intensive, and requires close fire maneuver coordination. Limited live and non-live fire MOUT training is conducted at the following locations, all of which are inadequate, abandoned buildings in need of repair:
  - Orote Point Close Quarter Combat facility: a small one story building used to train forces in hand-to-hand combat with an enemy in close range. Weapons use is limited to 9-mm pistol live fire.
  - NMS breacher house: concrete structure used to train forces in maintaining mobility in areas with man-made obstacles. Specifically, Marines are trained in forced entry, including in the use of small explosive charges. A nearby clearing is used for helicopter raid/assault training in conjunction with training in forced entry. No live fire weapons are authorized at this training site.
- Barrigada and Andersen South: These training areas contain former family housing units that are abandoned and used for training in an urban setting with simulated munitions only.
- Direct Fire: Direct fire is the use of small arms weapons for the purpose of defense and security. Direct fire training ranges are strictly controlled and regulated by specific individual weapons qualification standards. Orote Point Known-Distance range, Andersen Combat Arms Training and Maintenance range, and NCTS small arms ranges support small arms and machine gun training up to 7.62-mm and sniper training out to a distance of 500 yards. The Known-Distance range is a long, flat cleared area and occasionally used for training other than marksmanship.
- Exercise Command, Control and Communication: provides primary communications training for command, control, and intelligence and critical interoperability and situation awareness information. Various facilities and infrastructure at Andersen AFB and Naval base are used for this type of training.
- Protect and Secure Area of Operations (Protect the Force): Force protection operations increase physical security of military personnel in the region to reduce their vulnerability to attacks. In combat environments, force protection includes offensive and defensive measures such as moving forces and building barriers, detection and assessment of threats, delay or denial of access of the adversary to their target, appropriate response threats and attack, and mitigation of effects of

attack. In the region, Northwest Field, NMS, Navy Main Base, Andersen South are the sites for these training activities.

- **Amphibious Warfare:** Amphibious warfare is the utilization of naval firepower, logistics, and strategy to project military power ashore. There is limited ability to train for amphibious warfare in the Marianas. Certain warfare activities are accomplished within the region using limited virtual simulated scenarios for naval gunfire and close air support. Simulated opposed landings are also capable in the Marianas. The amphibious vehicles and transient ships involved in amphibious warfare training in the region are Navy assets; they support the Marine Air Ground Task Force (MAGTF) training events. Navy individual and crew training include operating the amphibious vehicles; training on weapon systems; and command, control and logistics training. Small unit training operations lead to certification of a Marine Expeditionary Unit as special operations capable. This training includes non-live fire shore assaults, boat raids, airfield or port seizures, and reconnaissance. Larger-scale, non-live fire exercises are carried out by MAGTF or elements of MAGTFs embarked with Expeditionary Strike Groups. Amphibious training capabilities are a training deficit in the MIRC.

*Tinian.* An island located approximately 100 miles (mi) (160 km) northeast of Guam, Tinian has two airfields (North Field and West Field) (see Figure 1.2-2). North Field is a large abandoned World War II era airfield that is still usable as a contingency landing field and supports short field C-130 airplanes and helicopter operations. Training on Tinian is conducted on two parcels within the Military Lease Area (MLA): the Exclusive Military Use Area (EMUA) encompassing 7,574 ac (3,065 ha) on the northern third of Tinian, and the Leaseback Area (LBA) encompassing 7,779 ac (3,848 ha) and the middle third of Tinian. The MLA supports small unit-level through large field exercises and expeditionary warfare training. There are no active live-fire ranges in the EMUA or LBA, except sniper small arms into bullet traps. Tinian is capable of supporting Marine Expeditionary Unit (MEU) aviation events such as ground element training and air element training, simulated evacuations of noncombatants, airfield seizure training, expeditionary airfield training, and special warfare activities.

*Saipan.* An island located 14 mi (23 km) north of Tinian (see Figure 1.2-2). This is the location of the Saipan Army Reserve Center. The Reserve Center location cannot support field maneuvers. On the east side of northern Saipan, the Army Reserve conducts land navigation training. This training is performed on non-DoD land. Navy-leased land (approximately 100 ac [40.47 ha]) includes a wharf area.

*FDM.* An island 195 mi (314 km) north of Guam, leased from the CNMI with a total land area of 182 ac (73.65 ha). FDM is an un-instrumented range used for live and inert bombing, missile strikes, and strafing. These activities require a Forward Arming and Refueling Point at Tinian for some aircraft. Restricted airspace R-7201 overlies FDM (see Figure 1.1-2 and Figure 1.2-2).

*Rota.* An island located approximately 35 mi (56 km) northeast of Guam (see Figure 1.2-2), Rota has a civilian airfield with a single 6,000 ft by 150 ft (1,828.8 m by 42.67 m) runway that has been used in the past to support military operations. Certain types of special warfare training including hostage rescue, non-combatant evacuation operations, and MOUT are conducted on Rota with local law enforcement, on non-DoD lands. Naval Special Warfare (NSW) boats are re-fueled at the commercial pier. The airfield is lighted and has a beacon and radio navigational aid but no control tower.

#### 1.2.5.1 Training Operations Covered by the MIRC EIS/OEIS

Development of the MIRC EIS/OEIS is an independent effort due to the requirement for periodic programmatic review of ongoing and future training requirements as part of the Navy's tactical theater

assessment and planning program. This program reviews ongoing DoD training contained within the MIRC. The review effort was not triggered by the proposed actions under analysis in this EIS/OEIS.

The MIRC EIS/OEIS is assessing the potential impacts of continuing and proposed military training activities on existing ranges within the complex. The assessment will include increased training frequency and improvements to existing ranges based on all anticipated joint military service training requirements between the years 2010 and 2015. The focus of the MIRC EIS/OEIS is on the achievement of the readiness activities of all the military services. The MIRC EIS/OEIS proposes to:

- Maintain current types of operations
- Increase the frequency of operational training
- Expand warfare missions (subsurface only)
- Accommodate force structure changes (i.e., changes in weapons systems, new classes of homeported ships)
- Implement enhancements to enable each range to meet foreseeable needs

#### 1.2.5.2 Training Operations Covered by the Guam and CNMI Military Relocation EIS/OEIS

The Guam and CNMI Military Relocation EIS/OEIS examines potential impacts from activities associated with the Marine Corps relocation of units to Guam, including training activities and infrastructure changes on and off DoD lands. As discussed above, the Marine Corps already utilizes the MIRC and would continue to do so consistent with any changes and improvements resulting from the MIRC EIS/OEIS. Since the MIRC EIS/OEIS is covering DoD-wide training on existing DoD land and training areas in the region, there will be overlap between the two EIS/OEISs in the area of land usage. As these two documents are being developed on similar schedules, they are being closely coordinated to ensure consistency.

The Guam and CNMI Military Relocation EIS/OEIS training analysis is based on the assumption that the MIRC EIS preferred alternative represents “existing conditions” of training in the MIRC through 2015, the baseline of activity before the proposed relocation. The Guam and CNMI Military Relocation EIS/OEIS then covers the additional, projected training requirements from the relocation that were not anticipated during the development of the MIRC EIS/OEIS preferred alternative. Volumes 2 and 3 analyze these additional requirements and propose changes to the MIRC that would support the readiness of the relocated Marine units.

## 1.3 PURPOSE AND NEED

### 1.3.1 Overarching Purpose and Need

The overarching purpose for the proposed actions is to locate U.S. military forces to meet international agreement and treaty requirements and to fulfill U.S. national security policy requirements to provide mutual defense, deter aggression, and dissuade coercion in the Western Pacific Region. The need for the proposed actions is to meet the following criteria based on U.S. policy, international agreements, and treaties:

- Position U.S. forces to defend the homeland including the U.S. Pacific territories
- Location within a timely response range
- Maintain regional stability, peace and security
- Maintain flexibility to respond to regional threats
- Provide powerful U.S. presence in the Pacific region
- Increase aircraft carrier presence in the Western Pacific
- Defend U.S., Japan, and other allies' interests
- Provide capabilities that enhance global mobility to meet contingencies around the world
- Have a strong local command and control structure

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#### *1.2 Existing Military In The Marianas*

#### *1.3 Purpose and Need*

#### *1.4 Global Perspective Background*

#### *1.5 Decisions To Be Made*

#### *1.6 Site Specific Analysis vs. Analysis of Long-term Projects*

#### *1.7 Summary of Action Alternatives*

#### *1.8 National Environmental Policy Act and Executive Order 12114 Compliance*

#### *1.9 Agency Coordination*

#### *1.10 Sustainability*

#### *1.11 Documents Incorporated by Reference*

## 1.4 GLOBAL PERSPECTIVE BACKGROUND

The U.S. maintains military capabilities in the Western Pacific to support U.S. and regional security; economic and political interests; and to fulfill treaty and alliance agreements. These forces must facilitate projection of power to ensure peace and dissuade instability. They must have a strong, local command and control structure; must be readily and rapidly deployable in the face of threats and contingencies; must be manned, equipped, trained, and sustained by a modern logistics infrastructure; and must be capable of operating with allies and other foreign forces throughout the Pacific region. Also, these forces may be called upon to defend Japan and U.S. allies (as outlined in treaties and treaty-like alliances). These international treaties, alliances, and commitments require the U.S. to maintain strategic forces, assets, and infrastructure in the region to respond to threats and contingencies.

In the Western Pacific Region, there are five of the seven worldwide, longstanding U.S. mutual defence treaties that contain alliance requirements. They are:

- U.S.– Philippines (1952)
- ANZUS (Australia, New Zealand, U.S. [1952])
- U.S.– Korea (1954)
- Southeast Asia Collective Defense (U.S., France, Australia, New Zealand, Thailand, Philippines [1955])
- U.S.–Japan (1960)

For instance, the U.S.–Japan (1960) treaty, known as the *Treaty of Mutual Cooperation and Security* (Mutual Security Treaty), contains general provisions on the further development of international cooperation and on improved future economic cooperation. Both parties assumed an obligation to maintain and develop their capacities to resist armed attack and assist each other in the event of an armed attack on either party in territories under Japanese administration. This provision is carefully crafted to be consistent with Japan's Constitution that limits its military capabilities to defensive only capabilities. U.S. treaty commitments with the other nations listed above also require a timely response to incidents and a consistent U.S. presence of force as a deterrent in the Pacific region.

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### 1.4.1 Evolving Global Security Environment

#### Integrated Global Presence and Basing Strategy and Quadrennial Defense Review (QDR)

The DoD Global Posture Review published in May 2005, also known as the Integrated Global Presence and Basing Strategy (IGPBS), intended to transform U.S. forces to:

- **Improve Flexibility to Contend with Uncertainty:** The (then) existing U.S. force posture was established during the Cold War, when the U.S. thought threats would come from the European continent. However, current threats require forward deployment in non-European areas. The goal of the realigned forces is to have those forces positioned forward on a continual basis, with access and facilities that enable them to reach any potential crisis quickly.
- **Strengthen Allied Roles and Build New Partnerships:** Changes to the U.S. global posture aim to help our allies and friends modernize their own forces, strategies, and doctrines. The U.S. needs to tailor the military's overseas "footprint" to suit local conditions, reduce friction with host nations, and respect local sensitivities. A critical precept in global posture planning is that the U.S. will place forces only where those forces are wanted and welcomed by the host government.
- **Create the Capacity to Act both within and across the Region:** Security challenges are global in nature and relationships must address those challenges accordingly (e.g., Japan's involvement in Operation ENDURING FREEDOM (Iraq), or the North Atlantic Treaty Organization's involvement through the International Security Assistance Force in Afghanistan). To ensure peace and security in the Western Pacific Region, the U.S. must improve its ability to project power from one region to another and to manage forces on a global basis.
- **Develop Rapidly Deployable Capabilities:** The current state of threats indicates a global fight. Consequently, U.S. forces need to be able to move smoothly into, through, and out of host nations. This puts a premium on establishing flexible legal and support arrangements with our allies and partners. It also strengthens the demand for capabilities that provide an increasingly global reach, the worldwide disposition of key prepositioned materials and equipment, and improvements to global en route infrastructure and strategic lift.
- **Focus on Effective Military Capabilities:** The key to effective capabilities is to push forces forward to be closer to potential conflict areas with smaller permanently stationed forces whose composition is tailored to meet potential threats.

In practice, the IGPBS intends to reduce U.S. overseas forces from the numbers and locations of bases left over from the Cold War to new locations that are optimized to support current allies and confront new potential threats. These locations would be used in the event of a crisis to give U.S. forces access to the region. They would also allow U.S. forces to train with local allies and participate in cooperative activities, such as disaster relief or peacekeeping, which can improve military-to-military ties. U.S. forces would also rely heavily on off-shore prepositioning and sea basing to provide logistical support. Maritime prepositioning uses a fleet of cargo ships preloaded with supplies and equipment located near potential trouble spots. Prepositioning this material reduces the time required for a military unit and its equipment to deploy to a combat area.

The IGPBS and subsequent QDR (DoD 2006) concept strives to base the forces in locations that support flexibility and speed of response to anywhere in an unpredictable environment. In coordination for such a shift of forces and infrastructure, the DoD, during the development of the QDR, consulted with the Department of State, the National Security Council, and had 45 briefings to Congressional staffers and members of Congress. Further, there were visits to the government leadership in over 20 foreign countries that could be affected by the moves. For Asia, the QDR and IGPBS advocate consolidating existing South Korea bases and adjusting troop dispositions in Japan to reduce frictions with local populations. Reliance on air and naval capability would increase in the Pacific given the vast distances between allies in the region.

## **1.4.2 Marine Corps**

Based on the QDR recommendations for global repositioning and operational realignments in the Pacific region, DoD began to identify suitable locations to relocate the Marine Corps from Okinawa that met: 1) treaty and alliance requirements; 2) response times to potential areas of conflict; and 3) freedom of action (use of base without restrictions).

### **1.4.2.1 Treaty and Alliance Requirements**

The relocation of nearly half of the total Marine Corps units from Okinawa must meet treaty, international cooperative defense agreements, and other alliance requirements with Japan and U.S. allies in the Western Pacific, which include the Philippines, Australia, New Zealand, Korea, Japan, and Thailand.

The Mutual Security Treaty with Japan is the most relevant to the proposed action. Under the Mutual Security Treaty, both parties assumed an obligation to maintain and develop their capacities to resist armed attack and assist each other in the event of an armed attack on either party in territories under Japanese administration. The Agreed Minutes to the Treaty specify that the Japanese government must be consulted prior to major changes in U.S. force deployment in Japan and prior to the use of Japanese bases for combat operations, other than in defense of Japan itself.

### **Defense Policy Review Initiative (DPRI)**

In a parallel initiative with the development of the IGPBS that began in December 2002, the U.S. was coordinating with Japan changes in positioning force posture in Japan and the options on how best coordinate those changes with other force realignments in the Pacific. Over a three and one-half year period, the U.S. engaged with the Government of Japan in a series of sustained security consultations under the auspices of the U.S.-Japan Security Consultative Committee (SCC), the pre-eminent treaty oversight body, composed of the U.S. Secretary of State and Secretary of Defense and the Japanese Minister of Foreign Affairs and Minister of Defense. These talks, which came to be known as the Defense Policy Review Initiative (DPRI), were aimed at evolving the U.S.-Japan Security Alliance to reflect today's rapidly changing global security environment. The DPRI, which served as the primary venue for accomplishing IGPBS objectives regarding Japan, focused on alliance transformation at the strategic and operational levels, with particular attention to the posture of U.S. and Japanese forces in Japan, as well as transforming capabilities in the Western Pacific around the U.S. and Japanese alliance. The DPRI was also designed to relieve stresses in the relationship with Japan while strengthening deterrence and global flexibility. Both governments prioritized reductions in the U.S. presence in Okinawa that could ameliorate longstanding frustrations among the local population and improve the local political support for the stable and enduring presence of the remaining U.S. forces. The Governments of Japan and the U.S., balancing the need to maintain the deterrent effect of forward-deployed U.S. forces with the recognized the strong desire of Okinawa residents to have the U.S. presence reduced rapidly, examined and identified

appropriate financial and other measures to enable the realization of several interconnected changes to achieve these objectives. These included relocation of Marine aviation capabilities from Marine Corps Air Station Futenma to a new facility, relocation of Marines and dependents from Okinawa to Guam, and consolidation of remaining Marine forces in Okinawa into less land area, enabling the return of valuable real estate. During the DPRI discussions, the U.S. and Japan also developed several other significant initiatives, such as the consolidation of carrier jet aircraft with Marine aircraft in Iwakuni, Japan, deployment of U.S. missile defense capabilities to Japan, and co-location of Japan's Air Defense Headquarters with the U.S. Fifth Air Force Headquarters at Yokota Air Base in Tokyo, Japan.

#### Alliance Transformation and Realignment Agreement (ATARA)

On October 29, 2005, the SCC released a document, *U.S.-Japan Alliance: Transformation and Realignment for the Future*, commonly referred to as the Alliance Transformation and Realignment Agreement (ATARA). In developing the ATARA, the U.S. and Japan confirmed several basic concepts relevant to bilateral defense cooperation, the defense of Japan, and responses to situations in areas surrounding Japan. These concepts include the following: (1) bilateral defense cooperation remains vital to the security of Japan as well as to peace and stability of the region; (2) the U.S. will maintain forward-deployed forces, and augment them as needed for the defense of Japan and to deter and respond to situations in areas surrounding Japan; (3) the U.S. will provide all necessary support for the defense of Japan; (4) U.S. and Japanese operations in the defense of Japan, and responses to situations in areas surrounding Japan, must be consistent to ensure appropriate responses when situations in areas surrounding Japan threaten to develop into armed attacks against Japan, or when an armed attack against Japan may occur; and (5) U.S. strike capabilities and the nuclear deterrence provided by the U.S. remain an essential complement to Japan's defense capabilities and preparedness in ensuring the defense of Japan and contributing to the region's peace and security.

In the ATARA, the SCC also approved the aforementioned recommendations for realignment of U.S. Forces in Japan and the Japan Self-Defense Forces directing their respective staffs "...to finalize these specific and interrelated initiatives and develop plans, including concrete implementation schedules, no later than March 2006." At the May 1, 2006, SCC meeting, the two nations recognized that the realignment initiatives described in the SCC document *U.S.-Japan Roadmap for Realignment Implementation* (the "Roadmap") would lead to a new phase in alliance cooperation. The Roadmap outlined details of different realignment initiatives, including the relocation of the Marines and the cost sharing arrangements with the Japanese government.

The Mutual Security Agreement and follow-on U.S.-Japan agreements require the U.S. to respond quickly to areas of potential conflict in the Asia-Pacific region. Consistent with these obligations, the ATARA and Roadmap initiatives require relocating approximately 8,000 III Marine Expeditionary Force personnel and 9,000 dependents from Okinawa to Guam with a target completion date of 2014. As a result of the proposed action, there would be a work force on Guam of approximately 1,700 personnel supporting the Marines.

Moving these forces to Guam would place them on the furthest forward element of sovereign U.S. territory in the Pacific capable of supporting such a presence, thereby maximizing their freedom of action while minimizing the increase in their response time relative to their previous stationing in Okinawa. Under the ATARA and Roadmap, Japan has agreed to a cost-sharing arrangement with the U.S. that would assist in funding up to \$6.09 billion of the facilities construction costs for the relocation of the Marines from Okinawa to Guam. This cost-sharing agreement acknowledges that the Marine Corps forces on Guam would continue to support U.S. commitments to provide for the defense and security of Japan.

These international commitments for funding, and locations of the repositioned forces were re-affirmed on February 17, 2009 in the document titled: *Agreement Between the Government of the U.S. and the Government of Japan Concerning the Implementation of the Relocation of the III Marine Expeditionary Force Personnel and Their Dependents from Okinawa to Guam* (Guam International Agreement), signed by the U.S. Secretary of State and the Japanese Foreign Minister. The Agreement was approved by the Japanese Diet on May 13, 2009 and transmitted to the U.S. Congress in accordance with each party's respective legal procedures.

#### 1.4.2.2 Response Time

Basing locations in the Pacific region were analyzed to determine those that would provide sufficient response times to potential areas of conflict. As part of its determination on how to meet the requirements to meet U.S. security interest in the Asia-Pacific region, including treaty commitments to Japan and other countries in the region, the U.S. analyzed basing locations in the Pacific region that would provide sufficient response times to potential areas of conflict. The U.S. locations in the Pacific Region considered for the military relocation were Hawaii, Alaska, California, and Guam. Non-U.S. locations considered included Korea, the Philippines, Singapore, Thailand, and Australia, because they are allies to the U.S. and are well situated for strategic force deployment for permanent basing opportunities.

One of DoD's highest priorities, highlighted in the QDR, is maintaining the readiness and sustainability of U.S. forces. In general terms, readiness is the overall ability of forces to arrive on time where needed, and be sufficiently trained, equipped, and supported to effectively carry out assigned missions. Forces must be placed and maintained so that they can be utilized in a timely fashion. The desired distance from the potential threat can vary based on unit type and need, as well as mode of transport. Traditionally, forces were deployed in a slow steady buildup over time. This planning methodology was known as the time-phased force deployment process. Now, however, crises manifest themselves quickly in a variety of locations. Forces must be placed and maintained such that they can provide a rapid and timely response. Therefore, it is critical to locate forces so that the amount of time required to reach a crisis location is kept to a minimum. Figure 1.4-1 illustrates the distances that must be spanned to deploy forces to various locations in the Pacific region.

Table 1.4-1 shows representative response times for deploying forces by air and sea from Hawaii, Alaska, California, and Guam to Okinawa, and Taiwan. As the table shows, forward-positioned forces on Guam provide significantly reduced response times to Pacific locations compared to forces positioned in Hawaii, Alaska, or California.

**Table 1.4-1. Representative Response Times to Southeast Asia by Air and Sea**

	<i>Hawaii</i>	<i>Alaska</i>	<i>California</i>	<i>Guam</i>
<b>Air Deployment<sup>1</sup></b>				
Okinawa	9 hours	8.5 hours	12.6 hours	2.5 hours
Taiwan	9.7 hours	9 hours	13 hours	3.3 hours
<b>Sea Deployment<sup>2</sup></b>				
Okinawa	8.5 days	N/A <sup>3</sup>	15 days	3.8 days
Taiwan	9.6 days	N/A <sup>3</sup>	16 days	5 days

Notes:<sup>1</sup> Air deployment times are based on C-17 speed of 450 knots (517.8 miles per hour [mph]).

<sup>2</sup> Sea deployment times are based on ship speed of 20 knots (23 mph).

<sup>3</sup> There are no seaports in Alaska currently capable of carrier strike group deployment.

Table 1.4-2 shows representative response times for deploying forces by air and sea from the Philippines, Korea, Thailand, and Australia to Okinawa and Taiwan, respectively. As the table shows, forward-positioned forces in Korea would provide the lowest representative response times to Okinawa and

Taiwan when compared with the Philippines, Australia, and Thailand. However, when compared to the U.S. locations, response times from Guam are similar to the response times from Korea and the other Pacific region countries. Although forward-positioned forces in Korea have the lowest response times in the region, their mission is to maintain stability on the Korean peninsula and they have historically have not been available to provide a readily deployable force to other locations in the region. Moreover, at the time of the DPRI negotiations, the U.S. was in separate negotiations to reduce presence in Korea.

**Table 1.4-2. Representative Response Times to Okinawa and Taiwan within the Western Pacific Region by Air and Sea**

	<i>Philippines</i>	<i>Korea</i>	<i>Thailand</i>	<i>Australia</i>
Air Deployment <sup>1</sup>				
Okinawa	1.9 hours	1.7 hours	3.6 hours	5.8 hours
Taiwan	1.6 hours	2.0 hours	2.7 hours	5.8 hours
Sea Deployment <sup>2</sup>				
Okinawa	1.8 days	1.6 days	3.4 days	5.5 days
Taiwan	1.1 days	1.9 days	2.5 days	5.4 days

Notes: <sup>1</sup> Air deployment times are based on C-17 speed of 450 knots (517.8 mph).

<sup>2</sup> Sea deployment times are based on ship speed of 20 knots (23 mph).

#### 1.4.2.3 Freedom of Action

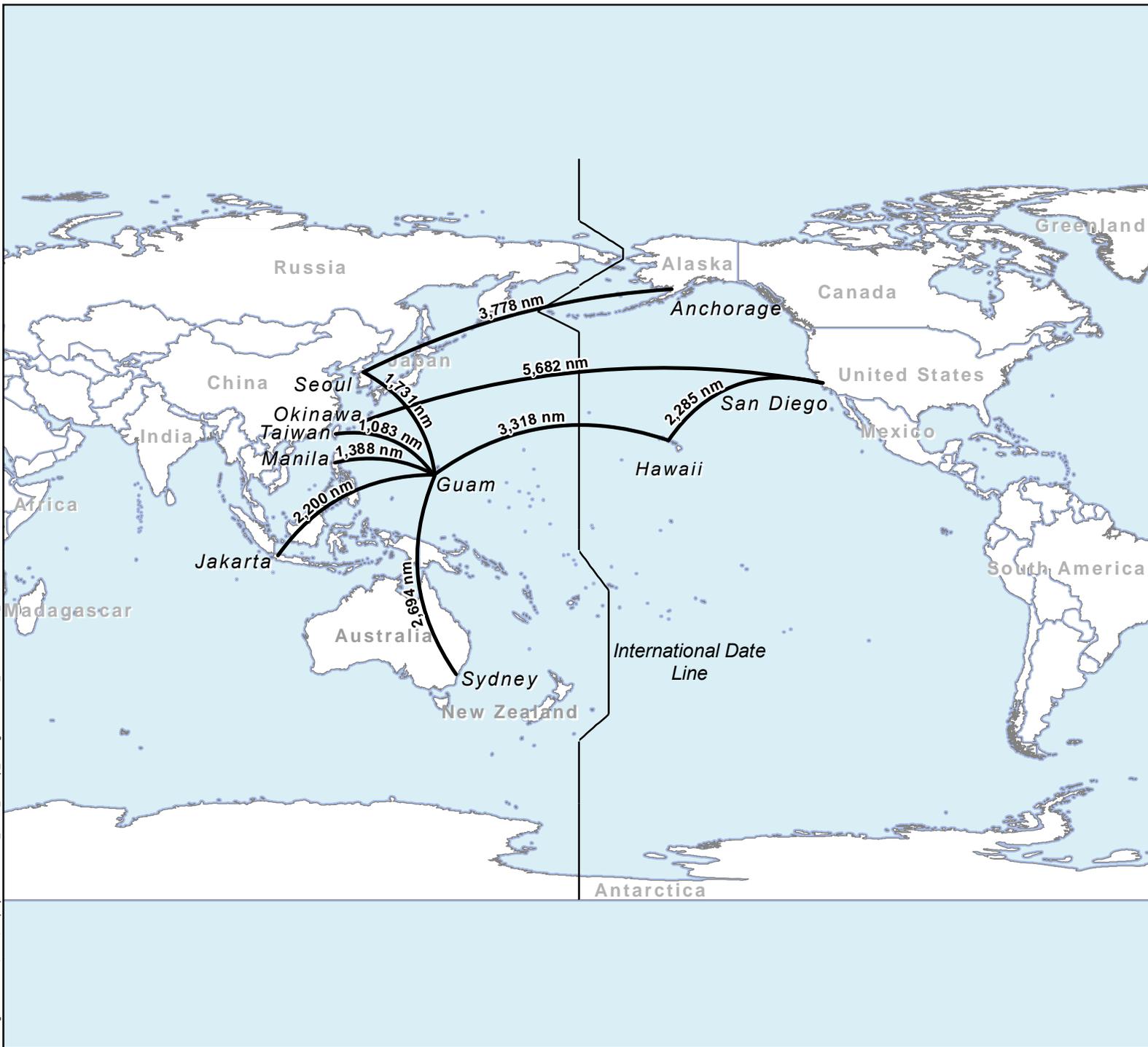
Freedom of action is the ability of the U.S. to use bases and training facilities freely and without restriction at a particular locale, as well as affording the U.S. the ability to engage in rapid force posture movements and contingency response from those locations. Freedom of action is variable based upon the location of the action, with the most flexibility being available at facilities and bases located on sovereign U.S. soil. Guam, Hawaii, Alaska, and California are preferred over foreign countries because they provide the most flexibility for the troops during times of maximum threat.

However, to ensure the most strategic location for basing, during the IGPBS process, U.S. representatives consulted with representatives of the Philippines, Thailand, Australia, Korea, and Singapore, which are allies to the U.S. in the Pacific region and are well situated for strategic force deployment, to ascertain their willingness to host U.S. forces. Additionally, a permanent basing, rather than a temporary basing, location was sought because it would provide the greatest regional stability for the placement of military assets. Further, permanent basing, consistent with the host nation laws and policies, is much more likely to be developed to support the U.S. military's specific operational requirements.

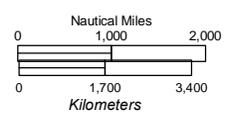
These countries, while amenable to various degrees of temporary basing or cooperative security agreements, were unwilling to allow permanent basing of U.S. forces on their soil. For instance, the Philippines and Thailand had only recently divested their countries of U.S. forces and were unwilling to allow the U.S. forces to return permanently. The Australian government was also unwilling to permit an increase of U.S. forces within its borders, with the exception of forces assigned to the Joint Combined Training Center. Singapore also declined additional military presence.

A critical precept in the QDR was to tailor the military's overseas "footprint" to increase freedom of action, reduce friction with host nations, and respect local sensitivities. The military's goal is to locate forces where those forces are wanted and welcomed by the host country. Because these countries within the region have indicated their unwillingness and inability to host more U.S. forces on their lands, the U.S. military shifted its focus to basing on U.S. sovereign soil.

**Figure 1.4-1**  
Travel Distances within  
the Pacific Region



Source: Navy 2009



Printing Date: Jul 14, 2009, M:\projects\GIS\8806\_Guam\_Buildup\_EIS\figures\Current\_Deliverable\Vol\_1\1.4-1.mxd

#### 1.4.2.4 Summary of Global Background for Proposed Marine Relocation

Table 1.4-Table 1.4-3 summarizes the alternatives analysis, and shows that Guam is the only location ranked favorably under the three criteria. Overall, Guam, Hawaii, Alaska, and California pose no limitation on freedom of action and have available infrastructure. However, California, Alaska, and Hawaii all create significant strains on rapid response time, interoperability, and the U.S. ability to uphold treaties and protect other interests in the Asia-Pacific region. Commitments under those treaties require that certain forces be within range to project power, to deter aggression, and dissuade coercion in the Western Pacific. In addition, Japan's clear willingness to fund the development of facilities to support the relocation of the Marines to Guam, as reaffirmed by the Japanese Diet in its recent ratification of the Guam International Agreement, reflected Japan's recognition of the continuing linkages between those forces and U.S. commitments to Japan under the Mutual Security Treaty. Also, Guam's distance to many of the likely contingency areas in the region is comparable to distances from the other potential allied countries in the Pacific region considered for permanent basing, and is close enough to threats to employ rapid response capabilities and to implement the requirements of treaties. Finally, in contrast to Guam, which is U.S. sovereign soil that meets the freedom of action operational requirement for permanent basing, no consulted allied countries in the Pacific region were willing to host a large additional contingent of U.S. forces on a permanent basis. In sum, the fundamental requirement to support the treaties and alliances that ensure peace and stability in the region, and the pressing need to reduce friction on Okinawa make Guam the only location for the realignment of forces that meets all criteria.

**Table 1.4-3. Global Alternatives Analysis Summary**

<i>Alternative Site</i>	<i>Criteria</i>		
	<i>Alliance and Treaty Requirements</i>	<i>Response Time to Southeast Asia</i>	<i>Freedom of Action</i>
Okinawa (current) <sup>1</sup>		+	-
Hawaii	-	-	+
West Coast U.S (including Alaska)	-	-	+
Marianas (Guam)	+	+	+
Philippines	-	+	-
Thailand	-	+	-
Australia	-	+	-
Singapore	-	+	-
Korea	-	+	-

Notes: + = positive response to criteria; - = negative response to criteria

<sup>1</sup>Scoring is specific to the Marine Corps relocation and is based upon the host nation's international agreements with the U.S. expressing the desire for this action.

#### 1.4.2.5 Potential Locations for Marine Corps Basing and Training in the CNMI

The CNMI was also reviewed as a potential location for the Marine Corps basing in response to comments received during public scoping. The following considerations were taken into account during that review. Direct access to a deep water port for Navy ships is crucial to logistics and operational support of the Marine Corps. The relocation would also require significant utilities infrastructure, an airfield with aviation maintenance support facilities, and access to medical and quality of life facilities. Tinian possesses the most available DoD property for exclusive military use within the CNMI. It has been used for training and construction of a base would reduce existing training capabilities, requiring replication of these capabilities elsewhere in the region. Tinian also only has limited infrastructure to support basing and no deep water port. Therefore, Tinian remained a focal point for training but was

eliminated as a basing site. Saipan has some infrastructure but its deep water port capacity was not sufficient to meet the Navy's needs. It also has no existing DoD property to support basing. The remaining islands within the CNMI have even less infrastructure and capability to support relocation and training. Therefore, none of the locations within the CNMI were considered suitable for basing; and accordingly they were not considered reasonable alternatives.

In contrast, DoD has many facilities on Guam and owns 40,000 (ac) (16,187 ha); approximately 29% of the land mass. The DoD maintains global mobility capabilities at Andersen AFB with Air Force Air Mobility Command capabilities to support onward deployments for Marines and other forces proposed to be relocated to Guam. The runway at Andersen AFB can accommodate tactical or strategic aircraft, including all strategic lift and strategic bomber/strike aircraft. Similarly, the Naval Base on Guam is capable of accommodating the embarkation and deployment of Marines and other forces by naval shipping. Medical and quality of life (QOL) facilities are also available on Guam.

Although inadequate for basing, Tinian provided the best opportunities for training groups of 200 Marines or larger due to greater land availability. It provides reliable access and maximum opportunity to realistically train with their weapons and equipment while minimizing "down time" lost when travelling to training locations. It is about 100 mi (160 km) away from Guam. The northern two-thirds of Tinian are leased to the DoD. Company and battalion level non-live fire training areas already exist and are utilized on these lease parcels. The land, however, could be developed to accommodate live fire ranges.

### 1.4.3 Navy

The employment of aircraft carriers and their associated escort ships, collectively referred to as a carrier strike group (CSG), are integral to supporting U.S. interests and meeting treaty and alliance requirements, both globally and regionally. The aircraft carrier's mission is to:

- Provide a credible, sustainable, independent presence and conventional deterrence in peacetime
- Operate as the cornerstone of joint/allied maritime expeditionary forces in times of a crisis
- Operate and support aircraft attacks on enemies, protect friendly forces, and engage in sustained independent operations in war (Navy 2009b)

The Navy's proposed action is based upon treaty and alliance requirements, such as those noted below in Section 1.4.3.1 and the QDR. One of the QDR conceptual policy initiatives is that the U.S. should strive to position strike forces, which include aircraft carrier and air wing capabilities, in forward locations that support flexibility and speed of response to anywhere in an unpredictable environment. The Pentagon's strategic QDR of 2006 stated the following:

*"The Fleet will have a greater presence in the Pacific Ocean consistent with the global shift of trade and transport. Accordingly, the Navy plans to adjust its force posture and basing to provide at least six operationally available and sustainable carriers and 60% of its submarines in the Pacific to support engagement presence and deterrence".*

This guidance reflected a need to supplement current ship deployments and the aircraft carrier base (homeport) in the Pacific. The policy initiative of the QDR was to provide a near continuous presence of multiple CSGs in the Western Pacific and/or Indian Ocean. Accordingly, the Navy began to identify how to meet: 1) treaty and alliance requirements, as well as the QDR; 2) freedom of action (use of a base without restrictions, including implementation of force protection measures to deter/avoid terrorist attacks); and 3) response times to potential areas of conflict. Starting in 2005, the Navy began exercising

this concept of operations by developing a series of multi-CSG exercises commonly known as “Valiant Shield” in the Mariana Islands. Traditional thinking had been, in order to assure continuous military presence in an area, a ship or forces needed to have a forward homeport or base from which to operate. The Navy, however, validated the concept of continuous rotation of strike groups to increase presence in the region as desired by the QDR. To support the continual rotational presence, a new concept was developed, a transient capable port that would provide maintenance and logistics support for aircraft carriers close to the area of responsibility (AOR). The proposed transient port capability in Guam, as discussed below, fulfills the operational requirement for continuous strike capability without the financial, political, and environmental issues associated with a forward homeport.

The Navy currently bases (homeports) six aircraft carriers in the Pacific AOR: three in San Diego, California; two in Washington State; and one in Yokosuka, Japan. A homeport provides the full suite of support services to the ship and air wing and the dependent families of personnel assigned to the CSG. These services include full depot-level maintenance, QOL support services for dependents, and other related services. When ships are deployed they visit other harbors. The length of stay, reasons for stay, and other factors determine whether the visit is characterized as a “port” visit or “transient” visit. The length of stay and purpose of a visit are dictated by military mission requirements. Port visits are brief and may be determined by international political concerns, operational requirements, and other factors. Port visits require minimal or no shoreside support and do not necessarily require a berth. When port visits are made to locations without an available berth (anchorage), this further limits time and capability for ship maintenance and crew rest. Because a port visit is brief and independent of shoreside utility support, the aircraft carrier has the ability to get underway with minimal delay. This ability to mobilize quickly is an important force protection consideration, allowing CSG port visits to take place in foreign locations.

In contrast to port visits, the Navy proposes to develop a transient berthing capability which provides the ship and carrier air wing operational support requirements, including emergent repair and maintenance capabilities, and crew QOL. There would be no dependent QOL support nor full depot maintenance as this support is provided at the ship’s homeport. To accomplish a transient capability, a berth is required with full “hotel services” for the ship and the ability to ensure QOL and safety for the crew and ship for a duration of stay longer than is normal for a port visit. These longer stays with a ship relying on shoreside utilities increase force protection concerns; however, the advantage of a transient port capability is that a ship can be re-supplied or maintained without returning to its homeport. Development of a transient capable port close to the AOR increases aircraft carrier presence, as required by the QDR, by reducing the non-availability that occurs when a carrier must perform a long transit to its homeport. The creation of a transient capable port comes without the expense, political or environmental concerns raised by creation of a forward homeport. It also maintains adequate response times to potential conflicts.

#### 1.4.3.1 Treaty and Alliance Requirements

Five of the seven U.S. Mutual Defense Treaties are with countries in the Western Pacific: Philippines, Australia/New Zealand (joint treaty), Korea, Japan, and Thailand. The Pacific Fleet’s AOR extends from the west coast of the contiguous U.S. to the eastern shore of Africa. The AOR includes the world’s five largest foreign armed forces: People’s Republic of China, Russia, India, North Korea and Korea. More than half of the world’s population lives within the AOR. In addition, more than 80% of the population within the Fleet’s AOR lives within 500 mi (805 km) of the oceans and more than 70% of the world’s natural disasters occur in this region.

When the Navy examined potential locations to support a greater carrier presence in the Pacific, it was mindful of the critical precept of the IGPBS to place visiting U.S. forces only where those U.S. forces are

wanted and welcomed by the host government. Accordingly, as discussed in Section 1.4.2.3 above, because these countries within the region have indicated their hesitancy and inability to host more U.S. forces on their lands, the U.S. military shifted its focus to basing on U.S. sovereign soil.

#### 1.4.3.2 Freedom of Action and Force Protection

In the context of creating a transient-capable port, as discussed above, a crucial factor is freedom of action. Freedom of action is the ability of the U.S. to use ports, training facilities, and bases (including the ability to re-supply and conduct mid-level maintenance) freely and without restriction at a particular locale, as well as affording the U.S. the ability to engage in force protection, rapid force posture movements, and contingency response. U.S. relations in the Pacific and Indian Ocean regions are based upon multiple bilateral treaties and international law. Within this legal framework, U.S. forces and its Pacific allies have mutual defense commitments, however, access and level of support varies for like operations throughout the region. In short, U.S. forces responding to contingencies still have greater freedom of action when responding from U.S. territory.

The reliance on shoreside utility support for a transient-capable port reduces the aircraft carrier's ability to get underway quickly. Compared to port visits, the longer berthing times and the delay in getting underway are important considerations for force protection. The CSG concentrates a large contingent of military personnel (greater than 7,000) along with hundreds of millions of dollars of military assets when it is in a transient port, so force protection is critical. In assessing possible locations for transient capable ports, the unique requirements for emergent repairs, full shoreside utility support, and the increased force protection and security requirements that accompany the longer duration of visits make U.S. sovereign locations for the transient capable port preferable.

Force protection concerns increase with length of stay. Given the criticality of the CSG, the Navy determined that it must have maximum flexibility to protect the CSG. While force protection concerns are met in foreign ports, accomplishment of this requirement is more feasible in U.S. territory. Using these criteria, force protection can be more easily met in Guam, Hawaii, Washington, and California and are, therefore, preferred over sites in other countries because they provide the most flexibility in the combined requirements of force protection and freedom of action.

#### 1.4.3.3 Response Times

To meet the QDR's stated policy initiatives, a comparative analysis of the potential response times from existing homeports and traditional port visit locations was conducted. The response times in Tables 1.4-1 and 1.4-2 show the challenge of siting a transient-capable port to ensure that aircraft carriers can still rapidly respond to a crisis in the Western Pacific while providing for the critical freedom of action and force protection requirements this asset requires. Ports in the region that were a home port or have previously accommodated U.S. aircraft carriers for port visits were considered as potential locations for a transient port. U.S. port locations considered were Hawaii, Guam, Washington, and California. Hawaii is located approximately 3,300 nm (6,160 km) northeast of Guam in the opposite direction of Western Pacific/Indian Ocean AOR. Hawaii is also outside of the AOR for Western Pacific operations. Transit times from the AOR to the West Coast are even longer. The transit time nearly doubles from Guam to Hawaii and again from Hawaii to California. Hawaii and California would significantly strain the capability to rapidly respond to a crisis in the Western Pacific or Indian Ocean. Accordingly, these locations were eliminated from further consideration. Non-U.S. ports in the Western Pacific that have had port visits are located in Australia, Singapore, Hong Kong, and Japan. Australia, Singapore, Hong Kong, Japan, and Guam are much closer to potential crises areas and the response times would be significantly

shorter. Therefore, they were retained as potential locations for extended aircraft carrier transient capabilities.

Utilization of a location in the Western Pacific would satisfy the QDR given that maintenance and supplies would be obtained closer to the site of operations, in effect, increasing the availability and presence of carriers in the Pacific due to the reduction in transits to other locations outside of the Western Pacific AOR. The greater availability and presence enable quick responses to potential crises due to shorter travel times and distances to U.S. allies and potential hot spots within the region.

#### 1.4.3.4 Summary of Global Background for Proposed Transient-Capable Port

Overall, Guam, Hawaii, California, and Washington pose no limitation on freedom of action, and all have some available infrastructure to support an aircraft carrier visit. None however, except for California and Washington, which are presently aircraft carrier homeport locations, have an aircraft carrier transient-capable pier. California, Washington, and Hawaii all create significant strains on rapid response time and the U.S. ability to uphold treaty obligations. Those treaty obligations require that certain forces be within range to project power, to deter aggression, and dissuade coercion in the Western Pacific. The aircraft carrier homeport in Japan is within the desired range; however, this pier is a dedicated homeported nuclear powered aircraft carrier pier and there is no additional capability to meet the needs of a transient nuclear powered aircraft carrier berth as specified by the QDR. Guam is close enough to many of the likely contingency areas in the region and potential threats to ensure rapid response, comply with treaty obligations, and assure the deterrent presence that U.S. forces bring to a region. Development of transient port capability on Guam, because of its proximity to the Western Pacific/Indian Ocean AOR, enables multiple CSGs to remain in the Western Pacific/Indian Ocean AOR for as long as possible. This transient port capability meets the defense and national security policy initiatives of the QDR. Finally, because Guam is a U.S. sovereign territory, the combined requirements of freedom of action and force protection can be met while meeting the required operational flexibility.

Guam is a suitable base for the following additional reasons:

- Guam maintains adequate infrastructure for shoreside utilities.
- Naval Base Guam already possesses emergent nuclear repair, radiation response, and radioactive waste management capability.
- Guam has an existing logistics support network through the Defense Logistics Agency that is co-located on Naval Base Guam. While in port, the aircraft carrier continues to support the on-board military personnel while continuing its daily operations and maintenance of the ship and its aircraft. Food and other supplies need to be reliably available for the ship.
- Guam provides adequate quality of life amenities. One of the primary reasons for the extended transient port visits is to provide for QOL for sailors and airmen deployed for extended periods of time to the Western Pacific associated with enhanced rotational presence. Studies have shown that extended deployments at sea may have detrimental effects on individual readiness unless adequate shoreside QOL amenities are available for rest and relaxation when the ship is in port. Morale and QOL of individual Sailors is important to maintain a combat ready unit and Guam provides adequate QOL amenities.
- Guam provides existing transient aircraft capabilities at Andersen AFB for visiting air wings.

In sum, the fundamental requirements to support the treaties and alliances, which ensure peace and stability in the region, and Guam's unique geography and port infrastructure, make it the only location to

create a transient-capable aircraft carrier port in order to increase aircraft carrier presence in the Western Pacific.

#### **1.4.4 Army**

On December 16, 2002, National Security Presidential Directive-23 directed the DoD to establish a capability to protect the U.S. homeland, forces, and its allies from ballistic missile attacks starting in 2004. The ballistic missile defense program develops the capability to defend territories and forces of the U.S. and its allies against all classes and ranges of ballistic missile threats. To protect the territory of Guam and the U.S. forces on Guam from such threats from nations not supportive of the U.S., an AMDTF is proposed to be sited on Guam. Weapons emplacement siting criteria, such as operational threats and requirements, and the analysis of siting alternatives are classified. This information is in a Classified Appendix to this public EIS/OEIS.

## 1.5 DECISIONS TO BE MADE

The Navy will issue a Record of Decision (ROD) explaining whether and how to implement the proposed action regarding:

### 1. Marines Relocation:

- Location of the administrative buildings, training areas, housing, aircraft and maintenance facilities, and air/sea embarkation areas
- Construction and operation of facilities
- Proposed training and operation of training ranges
- Development of QOL facilities, such as military exchanges and commissaries, and athletic facilities
- Acquisition of land for the proposed actions
- Location, construction and operation of utilities and roads related to the proposed actions

### 2. Aircraft Carrier Transient Capable Wharf:

- Location of the transient capable, deep-draft aircraft carrier wharf
- Construction and operation of new and refurbished infrastructure and facilities

A summary of environmental impact mitigation measures will also be included in the ROD.

Similarly, the Army will issue a ROD also based on the NEPA process documents. The ROD will state the decision as to whether and how to implement the proposed action regarding:

### 1. Army AMDTF

- Location of the housing, administrative buildings, and facilities to support operations for the Army AMDTF
- Construction and operation of the facilities
- Training of military personnel

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## 1.6 SITE SPECIFIC ANALYSIS VS. ANALYSIS OF LONG-TERM PROJECTS

This EIS/OEIS addresses the potential direct, indirect, and cumulative short-term and long-term impacts of the proposed guidance that recommends integration of the environmental process at the earliest possible time to ensure that planning and decisions reflect environmental stewardship. In accordance with CEQ 1501.1(a), the Navy is integrating the NEPA process into early planning to ensure appropriate consideration of NEPA's policies and to eliminate delay.

The majority of activities analyzed are site specific; however, some activities, such as the utilities section, contain long-term plans for actions that would be implemented at a point in the future. Some long-term plans have not been finalized since it is anticipated that they would be implemented through Special Purpose Entities (SPE) in coordination with the U.S. and the Government of Japan. Pursuant to the Realignment Roadmap Agreement, the Government of Japan has agreed to provide up to \$740 million in loans for a SPE to provide utilities support for the 3<sup>rd</sup> Marine Expeditionary Force (III MEF) forces that would be realigning from Okinawa to Guam. For example, an SPE utility entity or entities would be private ventures that provide long term solutions to the underlying utility needs to support the realignment efforts. Private entities might develop, construct, and manage a power plant or a wastewater treatment plant. The U.S. government would then agree to purchase utilities from that plant as a fee that provides payback to the SPE on its investment. Given that these SPEs have yet to be formed, these long-term solutions are not currently defined in detail; therefore, they are presented as “conceptual” alternatives and are addressed as long-term alternatives in this EIS/OEIS.

Certain long-term alternatives, such as of power generation, are analyzed programmatically. The potential environmental effects associated with the long-term programmatic projects have been analyzed based on available information, and presented here to adequately describe the scope of the entire project. Additional NEPA documentation and resource surveys would be completed, as required, in the future when project specifics and funding become available for these long-term projects. The short-term utilities projects are site specific, and have been identified to meet the immediate utilities demands estimated for the proposed actions on Guam. These are identified as “interim” alternatives and basic alternatives (those which would satisfy near term and long-term needs) are evaluated completely in Volume 6 of this EIS/OEIS (Related Actions).

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## 1.7 SUMMARY OF ACTION ALTERNATIVES

Chapter 3 of this volume provides a more detailed summary of the alternatives and contains figures that depict where projects and training ranges would be located.

### 1.7.1 Marine Corps

The facilities and operational and training requirements of the Marine Corps units relocating to Guam were analyzed. The requirements were grouped into components that represent core capabilities and support functions of the overall Marine Corps mission. The functions have distinct facility and operational requirements and were used to develop the range of potential alternatives. After analyzing potential alternatives, four alternatives for development of the Main Cantonment (Alternatives 1, 2, 3, and 8) were retained and carried forward for consideration. These alternatives involve various configurations of the Main Cantonment at NCTS Finegayan and development of housing and QOL functions at Finegayan, Navy Barrigada, and/or Air Force Barrigada.

Independent of the alternatives for the Main Cantonment, the proposed action also includes waterfront alternatives in Apra Harbor and airfield alternatives at Andersen AFB (including ammunition storage). There are also proposed alternatives for a training range complex and for an access road to the NMS.

Guam cannot support all live-fire ranges needed for the training of the relocated Marines. Accordingly, the Marine Corps Relocation proposed action includes the development of some live fire ranges on Tinian in CNMI. Volume 3 analyzes the environmental effects of this portion of the proposed actions and alternatives.

### 1.7.2 Navy

The analysis and selection of reasonable alternatives for a new deep-draft wharf for transient carrier visits were based on consideration of the following criteria:

- Practicability (with subcriteria)
  - Meets security/force protection requirements
  - Meets operational/navigational characteristics
  - Available and capable of being implemented after taking into consideration cost, existing technology, and logistics in light of the overall project purpose
- Avoids environmental impacts to the extent practicable
- Minimizes unavoidable environmental impacts

Volume 4 contains the full analysis of the alternatives and their environmental effects. The two alternatives carried forward are Polaris Point (Preferred) and former SRF. They are geographically very similar (see Figure 3.4-1). The existing Outer Apra Harbor Channel would be widened to 600 ft (183 m) with minor adjustments to centerline and navigational aids. A new ship turning basin would be

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established that would require dredging to -49.5 ft (-15.1 m) Mean Lower Low Water plus 2 ft (.6 m) over dredge. The turning basin would be located near the wharf and north of the Inner Apra Harbor entrance channel. The turning basins are largely, but not exactly the same. The proposed wharf designs, dredge depths, dredge methods, and dredged material management would be the same; however, there are differences in the volume of dredged material. The shoreside utility and operational support requirements would be the same. Shoreside facilities include utilities to meet 100% of aircraft carrier requirements. A new Port Operations support building and various utility buildings would be constructed on a staging area at the wharf. There would be an area established for Morale, Welfare, and Recreation activities and vehicle parking.

### **1.7.3 Army**

The siting options and analyses, including the alternatives considered and dismissed, for headquarters (HQ), operations, bachelor quarters, and family housing would be as described for the Marine Corps portion of the proposed action (see Volume 2). Requirements for these facilities are addressed in the Marine Corps Main Cantonment component as the Army and Marine Corps would be sharing these facilities. The alternatives are co-location of support facilities with the Marine Corps facilities at NCTS Finegayan; locating the Army AMDTF support facilities at Navy Barrigada; and a combination of co-location of HQ facilities with the Marine Corps facilities at NCTS Finegayan and placement of housing facilities at Navy Barrigada and Air Force Barrigada.

Eight new climate-controlled, earth-covered magazines (ECMs) are also proposed within MSA 1 at Andersen AFB to store Army missiles and provide safe stowage of the system launchers during inclement weather. An important operational component of ammunition storage is the associated explosive safety hazard arcs, called the Explosive Safety Quantity Distance (ESQD) arcs. These arcs define safety areas that surround explosive hazard sites and establish the minimum permissible distance between the hazard of the explosive and any inhabited building, public assembly area, and/or the boundary of DoD lands. Existing munitions storage facilities at the MSA generate ESQD arcs that encompass much of the land in central Andersen AFB. The new ECMs would not require expansion of the existing ESQD arcs around MSA 1.

The weapons emplacement sites would include approximately 16 ac (6.5 ha) of developed land that would accommodate Terminal High Altitude Area Defense, Patriot Missile, and Surface-Launched Advanced Medium-Range Air-to-Air Missile operations. The missile system components are mobile, but the emplacement sites would be fixed. Weapons emplacement sites would include bermed fuel storage areas and crew billeting for shift use.

Weapons platform siting is classified and is assessed in a Classified Appendix to this public EIS/OEIS.

## 1.8 NATIONAL ENVIRONMENTAL POLICY ACT AND EXECUTIVE ORDER 12114 COMPLIANCE

The proposed federal actions are subject to NEPA. This document was prepared (1) to inform the Navy and the Army of the anticipated environmental consequences of the proposed actions and alternatives (including the no-action alternative); (2) to inform the public of potential environmental impacts associated with the proposed actions and alternatives; and (3) to help the Navy and the Army decide whether or not to approve the proposed development and construction of facilities and infrastructure, and the implementation of the training operations as proposed. A description of the NEPA process and timeline is summarized in Figure 1.8-1 and described below.

### 1.8.1 Scope of NEPA and EO 12114

Proposed actions or impacts occurring within 12 nm (22.2 km) are subject to compliance with NEPA. Actions with the potential to significantly harm the environment beyond U.S. territorial waters (i.e., beyond 12 nm [22.2 km]) must be analyzed using the procedures set forth in EO 12114 and associated implementing regulations. An impact statement prepared under EO 12114 is identified as Overseas Environmental Impact Statement (OEIS).

### 1.8.2 Scope of NEPA and EO 12114

At the initiation of the environmental planning process, the action proponent chose to ensure that alternatives, whether inside and outside the territorial seas, would be analyzed in the same document. This inclusive approach required compliance with both EO 12114 and NEPA regulations. The Federal Register "Notice of Intent" identified this document as an EIS/OEIS and it was similarly identified at the public scoping meetings.

The proposed actions were more fully developed through public scoping and subsequent refinement of requirements by the action proponent. Ultimately, as discussed in Volume 3, only routine vessel and aircraft transits activities between Guam and Tinian are proposed to occur outside the geographic scope of NEPA. The character of these activities has been studied and determined not to have the potential to significantly harm the global commons. Therefore, only NEPA requirements are applicable to the proposed actions since no activities trigger coverage by EO 12114. The document through this draft remains labeled as an EIS/OEIS. It will, however re-titled as an EIS and developed solely under NEPA, if no additional information to the contrary is revealed during the public comment process.

### 1.8.3 Notice of Intent (NOI) and Public Scoping Period

NEPA regulations require an early and open process for determining the scope of issues that will be addressed prior to implementation of proposed actions. The Notice of Intent (NOI) to prepare an EIS/OEIS was published in the *Federal Register* on March 7, 2007 (72 Federal Register 10186) (Navy 2007a), and public scoping meetings were held on April 17 and 18, 2007 on Guam, and April 19 and 20, 2007 on Saipan and Tinian, respectively. Approximately 130 notices regarding the public scoping period

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were mailed on March 24, 2007 to elected officials, federal, state, and local government agencies, non-governmental organization representatives, and other entities possibly interested in the EIS/OEIS.

During the scoping period, the public provided comments on a variety of important topics such as access to DoD facilities, social and environmental effects, economics, Chamorro interests, safety, infrastructure, and transportation. All topics identified during the scoping period were considered in the development of the scope of the environmental impact analyses. Specific topics that were identified in the 990 comments received are addressed in the specific resource impact sections of this EIS/OEIS. Table 1.8-1 shows which chapters of the Draft EIS/OEIS address the public comments.

**Table 1.8-1. Public Comments Received during the Scoping Process  
Grouped by Subject Matter and Chapter**

<i>Topics</i>	
<p>1. Access (Ch. 8, 9)</p> <ul style="list-style-type: none"> <li>• DoD facilities</li> <li>• Recreation areas</li> <li>• Apra Harbor</li> </ul> <p>2. Social (Ch. 16, 18)</p> <ul style="list-style-type: none"> <li>• Population increase and associated effects</li> <li>• Effects on educational facilities</li> <li>• Effects on public health and social services</li> <li>• Respect for local values/people</li> <li>• Socioeconomics/QOL</li> <li>• Mental health and substance abuse</li> <li>• Income levels and welfare system</li> <li>• Libraries</li> </ul> <p>3. Economics (Ch. 16)</p> <ul style="list-style-type: none"> <li>• Labor-related issues</li> <li>• Small business opportunities</li> <li>• Effects on tourism</li> <li>• Military purchasing of goods locally</li> <li>• Competitive pricing (on base vs. off base)</li> <li>• Availability and cost of civilian housing</li> <li>• Improve economy</li> <li>• Use of local labor vs. bringing in off-island laborers/companies</li> </ul> <p>4. Chamorro Interests (Ch. 12, 16)</p> <ul style="list-style-type: none"> <li>• Self government</li> <li>• Cultural, historical, and archaeological</li> <li>• Ancestral lands and access</li> <li>• Cultural, historic, and transition education</li> <li>• Historic properties</li> <li>• Minoritization of Chamorros/ demographic changes</li> </ul> <p>5. Law Enforcement (Ch. 16, 18)</p> <ul style="list-style-type: none"> <li>• Crime/prostitution</li> <li>• Violence against women and children</li> <li>• Overloading local police/law enforcement resources</li> <li>• Overloading local emergency response/paramedic resources</li> <li>• Overall safety</li> </ul>	<p>6. Infrastructure/Transportation (Ch. 3, 4 in Volume 6)</p> <ul style="list-style-type: none"> <li>• Increase in traffic/roads/highways</li> <li>• Utility requirements</li> <li>• Potable water/groundwater recharge</li> <li>• Solid waste/recycling</li> <li>• Sanitary sewer system</li> </ul> <p>7. Noise (Ch. 6, 7)</p> <ul style="list-style-type: none"> <li>• Airspace management</li> <li>• Training (artillery ranges, helicopters)</li> </ul> <p>8. Land Use Planning (Ch. 8)</p> <p>9. Marine Resources (Ch. 11)</p> <ul style="list-style-type: none"> <li>• Fish habitat, coral reefs, and marine mammals</li> <li>• Effects on local fisherman and the fishing industry</li> </ul> <p>10. Ecological (Ch. 10, 11)</p> <ul style="list-style-type: none"> <li>• Endangered species</li> <li>• Invasive species</li> <li>• Native species</li> <li>• Natural resources</li> </ul> <p>11. Air Quality (5)</p> <p>12. Surface Water (Ch. 4, 11)</p> <ul style="list-style-type: none"> <li>• Dredging and disposal requirements for Apra Harbor</li> <li>• Sewer outfalls</li> </ul> <p>13. Cumulative Impacts (Ch. 4 in Volume 7)</p> <p>14. Hazardous materials/hazardous wastes (Ch. 17)</p> <p>15. Proposed actions – not enough information disclosed (Ch. 2 in Volumes 2-6)</p> <p>16. International safety (N/A)</p> <p>17. Support for relocation (N/A)</p> <p>18. NEPA process (Ch. 1 in Volume 1)</p> <p>19. Radiation (Ch. 18)</p> <p>20. Overloading of regulating agencies (Ch. 16)</p> <ul style="list-style-type: none"> <li>• Construction (All Resources)</li> </ul>

*Note:* Topics are addressed in various chapters of the EIS, as noted in the parentheses. Resource-specific chapter numbers in Volume 6 are different than those in Volumes 2-5.

*Source:* NAVFAC Pacific 2007.

#### **1.8.4 Draft and Final EIS/OEIS**

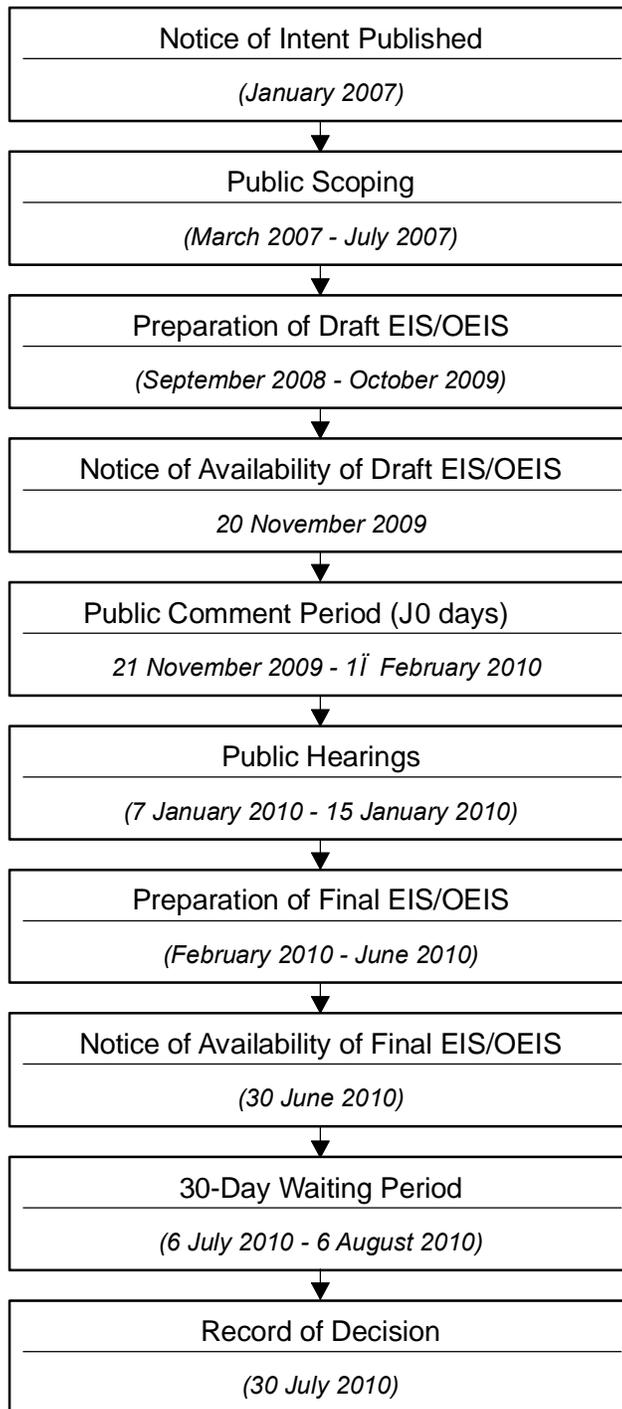
The notice of availability of the Draft EIS/OEIS for public review and the Notice of Public Hearing was published in the Federal Register on November 20, 2009 and in local newspapers. It was also made available on the EIS/OEIS website ([www.guambuildupeis.us](http://www.guambuildupeis.us)). The Draft EIS/OEIS was provided via compact discs to regulatory agencies and other stakeholders, and individuals who requested a copy during the scoping period. A minimum 45-day public comment period will immediately follow Federal Register publication of the notice of availability for the Draft EIS/OEIS. The projected schedule is in Figure 1.8-1.

Public hearings will be scheduled to occur a few weeks after the Draft EIS is released. Public hearings will provide an opportunity for interested parties to comment on the content of the Draft EIS/OEIS. All comments received during the review period and at the public hearings will be considered and appropriate changes incorporated into the Final EIS/OEIS.

A Final EIS/OEIS will be prepared incorporating responses to comments and any additional evaluations that may be warranted. The Final EIS/OEIS will identify the preferred alternatives and will be circulated in the same manner as the Draft EIS/OEIS, but to an expanded list of recipients based on requests received during the Draft EIS/OEIS comment period.

#### **1.8.5 Record of Decision (ROD)**

After issuance of the Final EIS/OEIS, a minimum of 30 days must pass before the lead agency can make a decision on its proposed actions. This provides time for the agency decision-maker to consider the purpose and need, weigh the alternatives, balance their objectives, and make a decision. The ROD can then be signed reflecting the DoD Executive Agent's final decision on the proposed actions, the rationale behind that decision, and commitments to monitoring and mitigation. The ROD will be published in the Federal Register, distributed to agencies and interested parties, and posted on the EIS/OEIS website.



**Figure 1.8-1**  
**EIS/OEIS Process and Projected Schedule**

## 1.9 AGENCY COORDINATION

### 1.9.1 Lead Agency

The Navy is the lead agency (40 CFR 1501.5) for preparation of this EIS/OEIS. The Office of the Secretary of Defense directed the Navy to establish a Joint Guam Program Office (JGPO) (Deputy Secretary of Defense 2006), that serves as the NEPA proponent of the proposed actions. JGPO responsibilities are as follows:

- Ensure the most efficient use of resources consistent with critical timelines
- Provide program oversight and management
- Develop strategic policy
- Synchronize and coordinate efforts
- Serve as liaison to internal and external organizations

### 1.9.2 Cooperating Agencies

A number of federal agencies were invited to be cooperating agencies (40 CFR 1501.6) in the preparation of this EIS/OEIS. These agencies have either jurisdiction or technical expertise for any component of the proposed actions or potentially affected resource. A list of agencies invited to participate as cooperating agencies and the associated correspondence is included in Appendix B. The list of cooperating agencies is shown below:

- Federal Aviation Administration
- Federal Highways Administration
- Department of Agriculture
- U.S. Air Force
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency (USEPA) Region 9
- U.S. Fish and Wildlife Service
- U.S. Office of Insular Affairs

Federal Highways Administration has prepared the transportation modeling, analysis for non-military proposed road projects and environmental impact analysis that appears and has been integrated into Volumes 2 and 6 of this Draft EIS/OEIS. Federal Highways Administration is using this Draft EIS/OEIS in compliance with the required evaluation, pursuant to NEPA, of their proposed roadway improvements on Guam. Federal Highways Administration will continue this collaborative effort with the Navy through the Final EIS/OEIS and will subsequently issue their own ROD to conclude their NEPA process.

### 1.9.3 Agency Consultations

To ensure avoidance, minimization, and mitigation of potential conflict with the objectives and requirements of federal, state, regional, or local plans, policies, or legal requirements from the proposed actions, the Navy has had and continues to conduct extensive dialogs with the regulatory agencies. In

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addition, the Navy has been holding meetings with the CEQ to provide regular updates and receive inputs on the EIS/OEIS. A summary of these efforts and the environmental compliance requirements are presented in Volume 8.

#### **1.9.4 Agency Partnering**

In addition to consultations with federal cooperating agencies, the Navy has held a number of regulatory agency briefings and meetings, including those held between June and August 2007 with local, federal, regional, and territorial (Guam and CNMI) agency partners. In February 2008, the Navy initiated a partnering strategy to continue the integration among military and civilian, federal, regional, and territorial agencies throughout the EIS/OEIS process.

The distribution list for the on-going partnering meetings now contains approximately 260 contacts. Due to the size and varied interests of the participants, the following working groups were established to focus on narrow ranges of issues: natural resources, cultural resources, regulatory compliance, and NEPA. The working groups formulate and address issues related to public scoping comments, baseline data for EIS/OEIS resource areas, working impact analysis findings, and potential mitigation measures. This effort has supplemented the traditional NEPA process and has resulted in identification and coordination of issues and concerns much earlier than usually occurs in the NEPA process.

The Navy has also engaged in a collaborative effort in preparing this Draft EIS/OEIS with the federal cooperating agencies and territorial agency partners. An early version of this document was shared with the management and technical staffs of these agencies in July 2009. Review comments were received by the Navy and appropriate sections were augmented based upon the advice of these agency partners. Subsequent meetings between these agencies and the Navy occurred in September and October 2009 to ensure understanding of the agency partners concerns and to continue to focus the information provided in this Draft EIS/OEIS.

#### **1.9.5 Guam and CNMI Local Government and Public Outreach and Involvement**

The Guam Civilian Military Task Force (CMTF) was established in 2006 to develop an integrated comprehensive master plan that would accommodate the expansion of military personnel, operations, assets and missions, and to maximize opportunities resulting from this expansion for the benefit of all the people of Guam. The Guam CMTF is comprised of the following subcommittees: health and social services, public safety, education, labor, ports and customs, economic development, infrastructure, housing, social and cultural, natural resources, and environment. Although subcommittee membership is limited to Guam agencies, JGPO and other DoD representatives participate in the subcommittees' monthly meetings. This has been an effective mechanism to develop mutually beneficial and agreeable solutions to issues.

Within the CNMI, the Tinian Mayor's office has also set up a CMTF. The Tinian CMTF is comprised of The Mayor's Office of Tinian, Department of Land and Natural Resources, Department of Environmental Quality, Historic Preservation Office, Department of Public Works, and Chamber of Commerce. Approximately monthly, JGPO meets with the Tinian CMTF to address issues of concern, provide updated information on the relocation, and assist in maximizing opportunities for the people of the CNMI.

To ensure local leaders are kept apprised of planning and decision making, recurrent meetings have been held between JGPO (forward) leadership and the Office of the Guam Governor, Guam legislature, and village mayors. JGPO's subject matter experts participate and meet with representatives of Guam's Consolidated Commission on Utilities, Department of Public Works, Land Use Commission, and University of Guam on a variety of issues of local concern and interest to ensure local involvement in

decision-making. A series of village meetings between May 2008 and January 2009 have also been conducted to allow the public an opportunity to better understand the relocation planning.

As the logistics hub of Micronesia, Guam's development has created Micronesian regional interest and concern. To address this and to ensure Micronesian leadership is apprised of planning and decision making, JGPO (forward) has participated in the Micronesian Chief Executive Summits which bring together the Governors and Presidents of Guam, CNMI, Palau, Federated States of Micronesia, and the Marshall Islands. Environmental issues are a priority for the Micronesian Islands and JGPO environmental representation at the summits has been well received. Other Micronesian forums have afforded an opportunity for JGPO to provide outreach, such as the Micronesian Port Users meeting in Palau.

In order to ensure that the best and most innovative solutions are used for the build-up, JGPO hosted three "Industry Forums". The Guam Industry Forum brought together industry from over 15 countries with over 3,300 participants along with participants from the Governments of Guam, Japan and the U.S. Some of the issues discussed and presented were acquisition integrity, acquisition strategy, small business opportunities, bio-security, workforce housing and logistics solutions, ports, roads and utilities, leadership in energy and environmental design, and information technology.

As health and public safety issues are at the forefront of local concerns, JGPO took it upon itself to host a Public Safety Forum in June 2008. This forum brought together representatives from the local and federal governments to discuss a wide range of public health and safety issues such as military justice issues, H2-B visa process, workforce support to include worker protection, housing and security, and healthcare. Breakout sessions for future resources covered the areas of fire, courts, police, and criminal investigations. This forum was the first opportunity that local agencies had to express their concerns to their federal counterparts.

## 1.10 SUSTAINABILITY

### 1.10.1 Overview

A significant consideration of the master planning for the Guam and CNMI military relocation is the sustainability achieved by the siting, design, systems, and operational functions of the program. The need for pursuing sustainable features and practices is based on federal laws, regulations, and Navy policies. One widely used definition of sustainability is meeting the needs of the present without compromising the ability of future generations to meet their own needs. There are at least three elements of sustainability: environmental, social, and economic. A successful sustainability approach would include a plan that identifies target goals for each of these elements that are considered and also implemented during the siting, design, construction, procurement, and operational phases of the program.

For the proposed actions, a separate and parallel master planning process is underway that would address the sustainability program elements. Sustainability would be initially addressed at a master plan concept level with the major effort focusing on water, power, and transportation resource areas. To assess and quantify the results of potential sustainability design guidelines and practices, the project planners would utilize the Sustainable Systems Integration Model, a proprietary, multisystem planning, environmental, and economic evaluation tool. This model would be used in conjunction with the stated goal of achieving the U.S. Green Building Council's Leadership in Energy and Environmental Design Silver certification, as established by the Navy. In addition, the operations and design of the proposed actions would consider the recommendations of the EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*. A sustainability charrette was conducted on Guam in January 2009. A charrette brings together a group of people who are led through a short, focused study to intensively brainstorm on specific issues. It produces a highly charged and creative atmosphere that harnesses the talents and energies of all participants. Their diverse ideas and viewpoints contribute to developing creative results that explore a wide range of possibilities. As a broad stakeholders' effort, this charrette included the project planners from the Navy, including the JGPO, Naval Facilities Engineering Command, and the Marine Corps; Government of Guam agencies including Guam Environmental Protection Agency (GEPA), Department of Land Management and Bureau of Statistics and Planning; and the Guam Contractors Association (Makio and Architects, and Kobet Architects). Participants identified specific elements to be included in the conceptual sustainability effort for this program. Their efforts focused on water, power, and transportation.

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## 1.10.2 Sustainability Focus Areas and Strategies

### 1.10.2.1 Potable Water

Sustainability goals for potable water include:

- *Water Conservation.* Identify and specify appropriate minimum water demand fixtures and devices.
- *Irrigation.* Minimize use of irrigation systems and water. Identify areas requiring irrigation such as recreation fields and other special use areas.
- *Grey Water Use.* Evaluate options for use of grey water for irrigation.
- *Rainwater Harvesting.* Investigate harvesting, storage and distribution systems.
- *Stormwater Quality, Infiltration and Groundwater Recharge.* Prepare a Low Impact Development manual for the program.

### 1.10.2.2 Power

The Navy has developed a 5-year energy plan that can be used by Naval Facilities Engineering Command Marianas when managing the Navy's utilities to attain compliance with the Navy's energy goals. These goals include energy conservation, measured as the decrease in the energy use intensity (million British thermal units per square foot) for buildings, and a percentage of energy that is expected to be produced from renewable energy sources in the future. The Navy Energy Program Goals outlined in USEPA 2005, National Defense Authorization Act 2007, Energy and Independence Security Act of 2007, and EO 13423 requires:

- *Energy Intensity.* Reduce energy usage by 3% annually or 30% by 2015 relative to 2003.
- *Renewable Energy.* Increase renewable electricity use 1.5% per year for a total of 25% of consumption from renewable sources by 2025 with 50% of the required renewable energy coming from new renewable sources that were acquired after January 1, 1999.
- *Water.* Reduce water consumption 2% per year (16% by 2015) relative to 2007.
- *Sustainable Buildings.* About 2% per year of existing facilities (15% by 2015) are expected to meet the Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding. The Memorandum of Understanding includes reducing the energy demand 20% below 2003 standards, reducing indoor water use by at least 20% below the baseline for the facility, and reducing outdoor water use for landscaping by 50% with respect to conventional vegetation.
- *New Facility Design.* Design all new facilities with 30% more energy efficiency than American Society of Heating, Refrigerating and Air-Conditioning Engineers Standard 90.1-2004.
- *New Facility Construction.* Construct new facilities to Leadership in Energy and Environmental Design Silver.
- *Metering.* Install remote readable electricity meters on 25% per year (all by 2012) of facilities consuming more than \$35,000 per year of electricity. Meter additional facilities and utilities as practical based on business case analysis.
- *Energy Efficient Products.* Purchase energy efficient products (USEPA ENERGY STAR, and Federal Energy Management Program).
- *Leases and Services Contracts.* Include energy and water program requirements in leases and services contracts.

- *Minimizing Energy Demand.* Identify and evaluate systems and elements that would minimize energy demand.
- *Onsite Energy Generation.* Evaluate options such as photovoltaic and solar water heating systems.

#### 1.10.2.3 Transportation

Sustainability goals for transportation include:

- *Bicycle and Pedestrian Oriented Site Planning.* Design the site to encourage non-motor vehicle traffic.
- *Intra-site Shuttle.* Include a low energy usage shuttle system for the site, addressing location- and time-based transportation requirements.
- *Integrate Site Transportation (Military Facility) with Off-site (Community or Public) Transportation.* Design transportation on military facilities to conveniently connect with off-site high-capacity (non-individual motor vehicle) systems such as an off-site shuttle.

#### 1.10.2.4 Solid Waste

Consistent with DoD policy and legal requirements, the Guam construction projects would reduce construction waste by 50%. The new base facilities would produce a comprehensive recycling program that includes the procurement of materials and products with recycled content.

## 1.11 DOCUMENTS INCORPORATED BY REFERENCE

Several concomitant actions are related to the proposed actions. These actions are covered in separate NEPA documents being prepared while this EIS/OEIS is being developed. Table 1.11-1 clarifies the subjects of these documents. In addition, there are a number of planning and environmental studies that provide important information directly related to the preparation of this EIS/OEIS that are incorporated by reference, per CEQ regulations (40 CFR 1502.21). These studies are cited, as appropriate, in later sections of this EIS/OEIS and are included in the references section of each volume of this EIS/OEIS.

### **Chapter 1:**

- 1.1 Introduction*
- 1.2 Existing Military In The Marianas*
- 1.3 Purpose and Need*
- 1.4 Global Perspective Background*
- 1.5 Decisions To Be Made*
- 1.6 Site Specific Analysis vs. Analysis of Long-term Projects*
- 1.7 Summary of Action Alternatives*
- 1.8 National Environmental Policy Act and Executive Order 12114 Compliance*
- 1.9 Agency Coordination*
- 1.10 Sustainability*
- 1.11 Documents Incorporated by Reference*

**Table 1.11-1. Documents to Be Incorporated by Reference**

<i>Proposed Action Proponent</i>	<i>Proposed Action</i>	<i>Relevance to Military Relocation EIS/OEIS</i>
MIRC/DoD	<ul style="list-style-type: none"> <li>• Periodic update of EIS/OEIS for joint training and Marianas training range activities/facilities.</li> <li>• Does not propose new ranges, but may propose improvements to ranges and increased use.</li> </ul>	<ul style="list-style-type: none"> <li>• MIRC EIS/OEIS establishes baseline “existing conditions” of training ranges/facilities for the military relocation EIS/OEIS.</li> <li>• This EIS/OEIS covers new training requirements and proposes new ranges and facilities not covered by the MIRC EIS/OEIS because either: 1) the need for improvements to existing ranges was not identified in time, or 2) the proposed training activity requires changes to MIRC facilities, operations, training capacities or expansion of MIRC property.</li> <li>• The MIRC would incorporate the added training capabilities in the next periodic update of the MIRC.</li> <li>• Where portions of the MIRC EIS/OEIS are incorporated, they will be specifically identified and referenced to assist the reader.</li> </ul>
Ocean Dredged Material Disposal Site Designation (ODMDS) EIS/EPA	<ul style="list-style-type: none"> <li>• EPA proposes to designate an ODMDS more than 9 nm from Apra Harbor.</li> </ul>	<ul style="list-style-type: none"> <li>• ODMDS designation provides an additional dredged material management option for all dredging projects on Guam, including the proposed military relocation projects and Port Authority of Guam projects.</li> <li>• Dredged material must meet strict laboratory testing standards to qualify as suitable for ocean disposal.</li> <li>• Beneficial reuse of dredged material will continue to be the preferred management option.</li> </ul>

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## CHAPTER 2.

# OVERVIEW OF PROPOSED ACTIONS AND ALTERNATIVES

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### 2.1 OVERVIEW

#### 2.1.1 Introduction

As described in Chapter 1, the proposed actions consist of: (1) (a) developing and constructing facilities and infrastructure to support the relocation of approximately 8,600 Marines and their dependents from Okinawa (Japan) to Guam, (b) developing and constructing facilities and infrastructure to support training and operations on Guam and Tinian (Commonwealth of Northern Mariana Islands [CNMI]); (2) constructing a new deep-draft wharf with shoreside infrastructure improvements to create the capability in Apra Harbor, Guam to support a transient nuclear-powered aircraft carrier; and (3) developing facilities and infrastructure on Guam to support relocating approximately 600 military personnel, their dependents to establish and operate an Army Air and Missile Defense Task Force (AMDTF).

The proposed actions are a complex, multi-service project involving components of the United States (U.S.) Marine Corps, Navy, and Army. Facilities construction and improvements would be necessary to accommodate the three major elements of the proposed actions. On Guam, the proposed actions would entail increased training and operations, increased ship and personnel berthing frequency, and the establishment of aviation maintenance operations and facilities. Training could take the form of communications/control, combat skills, aviation, amphibious vehicle maneuvers, and weapons firing activities. Thus, required construction would include the facilities and infrastructure for maintaining a presence on Guam, and the creation of new training ranges to accommodate the training needs of a larger population of military personnel. These training facilities would be located on Guam and on Tinian in the CNMI. In summary, implementation of the proposed action or other alternatives would include the following major components:

- Temporary increase in population associated with the construction-related work force
- Permanent increase in number of military and civilian personnel and dependents on Guam with a transient presence during training on Tinian
- Increase in number and type of major equipment to support military personnel and operations (e.g., aircraft, ships, amphibious watercraft)
- Increase in number and type of training activities
- Construction of new facilities
- Improvements to existing facilities
- Improvements to infrastructure (including roads, utilities, etc.)
- Acquisition or long-term leasing of additional land (required for three of the Marine Corps Relocation – Guam proposed actions and alternatives)

#### ***Chapter 2:***

##### *2.1 Overview*

##### *2.2 Marine Corps Relocation – Guam*

##### *2.3 Marine Corps Relocation – Training on Tinian*

##### *2.4 Aircraft Carrier Berthing*

##### *2.5 Army AMDTF*

##### *2.6 Related Actions – Utilities and Roadway Projects (Guam)*

##### *2.7 Construction*

**Finegayan (NCTS and South)**

**Vol. 2; Vol. 5; Vol. 6**

- Main Cantonment  
(includes quality of life facilities, family housing)
- Small Arms Firing Range (improve/expand existing)
- Army AMDTF Facilities
- Utilities: Power (Potts Junction), Potable Water, Wastewater

**Naval Base Guam**

**Vol. 2; Vol. 4; Vol. 6**

- Wharf Improvements/Waterfront Embarkation
- LCAC/AAV Laydown
- Military Working Dog Kennel Relocation
- Apra Medical/Dental Clinic
- USCG Relocation (minus Headquarters)
- Aviation Training
- Aircraft Carrier Wharf and Fairway
- Utilities: Solid Waste

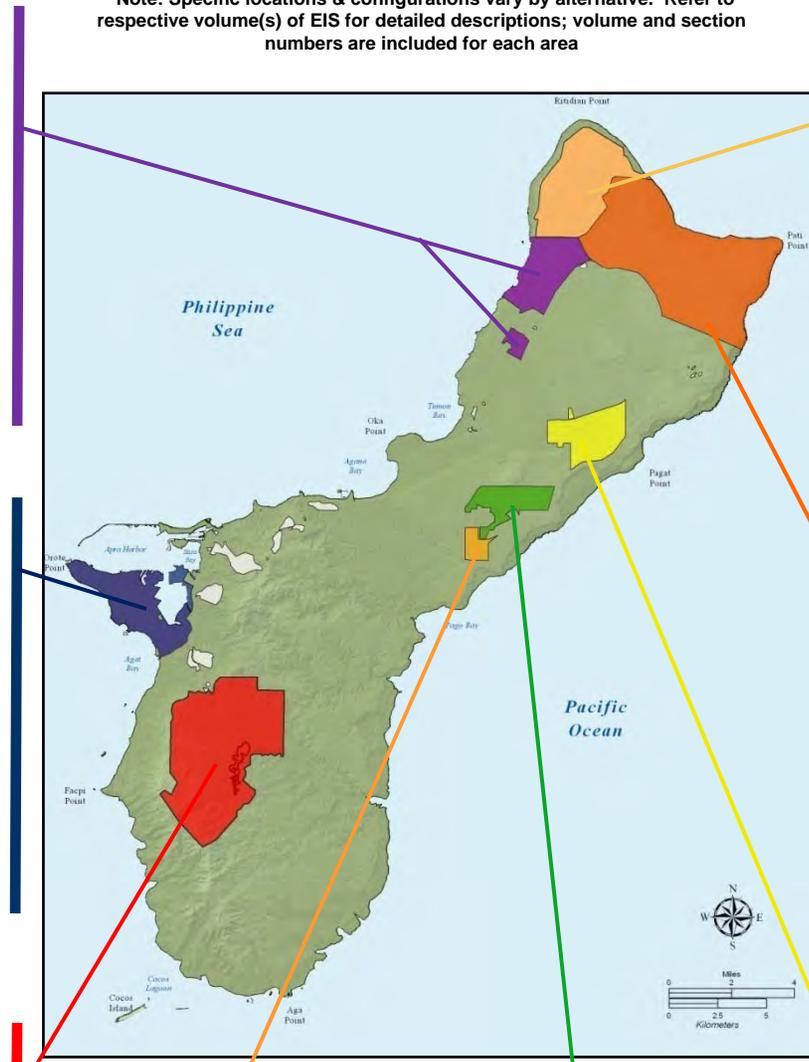
**Naval Munitions Site**

**Vol. 2; Vol. 6**

- New Munitions Storage
- Company-level Maneuver Training  
(new access road)
- Aviation Training
- Utilities: Solid Waste

**Figure 2.1-1 Overview of Projects on Guam (DoD Lands)**

**\*Note: Specific locations & configurations vary by alternative. Refer to respective volume(s) of EIS for detailed descriptions; volume and section numbers are included for each area**



**Andersen AFB NWF**

**Vol. 2**

- Aviation Landing Practice (training)

**Andersen AFB**

**Vol. 2; Vol. 5; Vol. 6**

- Airfield Operations (North Ramp)
- Air Embarkation-Joint with Air Force  
(South Ramp)
- North Gate
- New Munitions Storage
- Aviation Landing Practice
- FACSAC (Navy)
- Army AMDTF Ammunition Storage
- Utilities: Water, Wastewater, Solid Waste

**Andersen South**

**Vol. 2; Vol. 6**

- Non-firing Training (urban combat, driver/convoy)
- Firing Range Complex
- Aviation Training
- Utilities: Water

**Air Force Barrigada**

**Vol. 2; Vol. 5**

- Main Cantonment (housing)

**Navy Barrigada**

**Vol. 2; Vol. 5**

- Main Cantonment (housing)
- Army AMDTF Facilities

**Figure 2.1-2 Overview of Projects on Guam (Non-DoD Lands)**

\*Note: Specific locations & configurations vary by alternative. Refer to respective volume(s) of EIS for detailed descriptions; volume and section numbers are included for each area

**Former FAA**

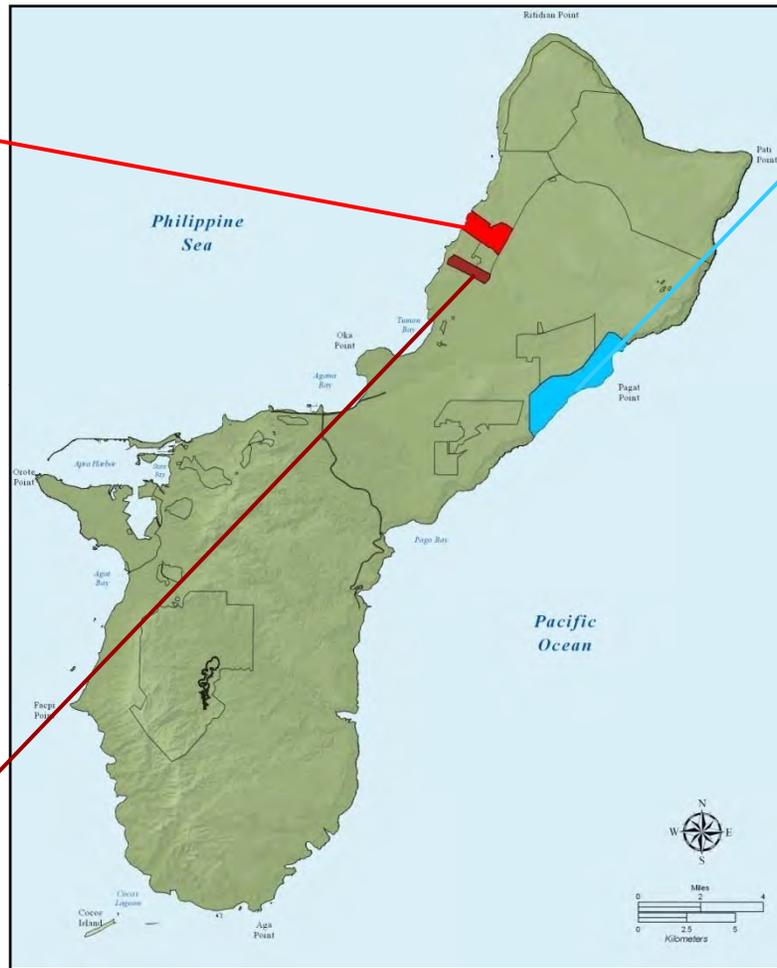
**Vol. 2**

- Main Cantonment (includes quality of life facilities, family housing)

**Route 15 Area**

**Vol. 2**

- Firing Range Complex



**Non-DoD Other Areas**

**Vol. 2; Vol. 6**

- Firebreak Access Roads into NMS
- Utilities: Power, Water, Wastewater, Solid Waste
- Haul Road Network (improves existing roadways)

**Harmon Area**

**Vol. 2**

- Family Housing (includes quality of life facilities)

### 2.1.2 Proposed Project Locations

Figure 2.1-1 shows an overview of proposed action project locations on Department of Defense (DoD) land in Guam. The figure outlines project locations at Finegayan, Apra Harbor Naval Complex, Naval Munitions Site (NMS), Air Force Barrigada, Andersen Air Force Base (AFB), Andersen South, and Navy Barrigada. Non-DoD land potentially involved with the proposed action includes the former Federal Aviation Administration (FAA) parcel, the Harmon Area, and the Route 15 Area. Figure 2.1-2 shows an overview of the proposed action project locations on non-DoD lands.

### 2.1.3 Proposed Personnel Changes

Even though Guam currently hosts a significant permanent Navy and Air Force population, the proposed actions would increase the population by approximately an additional 8,600 Marine Corps and 630 Army personnel, and their combined 9,950 dependents, on Guam (Table 2.1-1). The proposed action for the Marine Corps relocation includes personnel from the units being relocated and the associated base support personnel that must also be present at an installation to support the military mission. The Navy's proposed action does not require any additional permanent support personnel. The visiting (transient) population would increase due to the Marine Corps relocation (2,000 personnel) and the Navy's transient berthing for an aircraft carrier which is usually accompanied by a carrier strike group (CSG) (7,222 CSG personnel, including the aircraft carrier and support ships). Navy personnel (both military and civilian) would be housed on their ships or, on occasion, in existing facilities. Table 2.1-1 portrays the maximum potential loading due to permanent and transient personnel. However, given the transient cycle of both the Navy and the Marine Corps, the projected average daily loading is 2,178, much less than the potential total transient loading for both services (9,222 personnel).

**Table 2.1-1. Summary of Direct Military Population Changes on Guam**

<i>Service</i>	<i>Permanent Military Personnel</i>	<i>Dependents</i>	<i>Transient Military Personnel</i>	<i>DoD Civilian Workforce (from off island)</i>	<i>Subtotals by Service</i>
Marines	8,552	9,000	2,000	1,710	21,262
Navy*	0	0	7,222*	0	7,222*
Army	630	950	0	126	1,706
<b>Subtotals by Population Type</b>	<b>9,182</b>	<b>9,950</b>	<b>9,222*</b>	<b>1,836</b>	<b>Total Proposed Action Population = 30,190*</b>

Note: \* = Up to 7,222 personnel on the aircraft carrier with its CSG could be in port at a given time, currently planned for a cumulative total of up to 63 visit days per year with an anticipated length of 21 days or less per visit. Marine Corps vessels would be berthed at Apra Harbor when in port. These vessels could include up to 6,213 personnel. However, this group would not be in port at the same time as the CSG, so the larger of the two personnel numbers is used in this table for conservative analysis purposes.

Source: Navy 2006.

Uniformed military personnel would be supported by civilian personnel some of whom would likely be newly relocated to Guam and some would be current Guam residents. For purposes of this analysis it was assumed that of the DoD civilian workforce: 75% would be coming from off island and 25% would be current Guam residents. It is also assumed that 25% will live on base (because they are military dependents) and 75% will live off base.

Table 2.1-2 presents the estimated annual population increase from off-island that would result from the proposed actions. The population numbers are larger than the numbers presented in Table 2.1-1 because

they additionally include: (1) the dependents of off-island DoD Civilian workforce and; (2) the off-island population increase related to indirect and induced jobs. The estimates were derived as follows:

- The estimated numbers of active duty military, their dependents, and civilian military workers associated with the proposed action were provided by DoD and were based on the characteristics of personnel at other military installations.
- The estimated number of off-island construction workers who would be working on DoD projects was based on planned construction spending and a conversion factor (gathered from sources familiar with Guam construction projects) that translates construction spending into an estimated number of construction workers.
- The estimated number of indirect and induced full time equivalent (FTE) workers was generated using an economic model of the employment that would result from project-related expenditures in the Guam economy for military construction and base operations.
- Estimates of the number of dependents for construction workers, indirect and induced workers, and civilian military workers were based on data from the U.S Census and sources familiar with Guam construction projects.

Project-related construction work is expected to begin in 2010 and reach its peak in 2014. It is also assumed in this analysis that most of the Marines and their families would arrive on Guam in 2014. Since the peak in construction activities and expenditures would coincide with the arrival of Marines and their families, 2014 represents the peak year for population increase. At this peak, the total increase in Guam residents from off-island would be an estimated 79,178 people.

After the 2014 peak, project-related construction expenditures and the associated influx of construction workers would decline rapidly because 2014 is the last year that any new construction begins. By the time construction is completed and military operational spending reaches a steady state, the off-island population increase is projected to level off to an estimated 33,608 persons, approximately 58% below the peak level.

Approximately 1 week per month, 200 to 400 Marine personnel would travel to Tinian to train at the proposed ranges.

**Table 2.1-2. Estimated Total Population Increase on Guam from Off-Island (Direct, Indirect, and Induced)**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Direct DoD Population<sup>1</sup></b>											
Active Duty Marine Corps	510	1,570	1,570	1,570	10,552	10,552	10,552	10,552	10,552	10,552	10,552
Marine Corps Dependents	537	1,231	1,231	1,231	9,000	9,000	9,000	9,000	9,000	9,000	9,000
Active Duty Navy <sup>2</sup>	0	0	0	0	0	0	0	0	0	0	0
Navy Dependents	0	0	0	0	0	0	0	0	0	0	0
Active Duty Army	0	50	50	50	50	630	630	630	630	630	630
Army Dependents	0	0	0	0	0	950	950	950	950	950	950
Civilian Military Workers	102	244	244	244	1,720	1,836	1,836	1,836	1,836	1,836	1,836
Civilian Military Worker Dependents	97	232	232	232	1,634	1,745	1,745	1,745	1,745	1,745	1,745
Off-Island Construction Workers (DoD Projects) <sup>3</sup>	3,238	8,202	14,217	17,834	18,374	12,140	3,785	0	0	0	0
Dependents of Off-Island Construction Workers (DoD Projects)	1,162	2,583	3,800	3,964	4,721	2,832	1,047	0	0	0	0
<b>Direct DoD Subtotal</b>	<b>5,646</b>	<b>14,112</b>	<b>21,344</b>	<b>25,125</b>	<b>46,052</b>	<b>39,685</b>	<b>29,545</b>	<b>24,713</b>	<b>24,713</b>	<b>24,713</b>	<b>24,713</b>
<b>Indirect and Induced Population</b>											
Off-Island Workers for Indirect/Induced Jobs <sup>3</sup>	2,766	7,038	11,773	14,077	16,988	12,940	6,346	4,346	4,346	4,482	4,482
Dependents of Off-Island Workers for Indirect/Induced Jobs	2,627	6,685	11,184	13,373	16,138	12,293	6,028	4,372	4,372	4,413	4,413
<b>Indirect/Induced Subtotal</b>	<b>5,393</b>	<b>13,723</b>	<b>22,957</b>	<b>27,450</b>	<b>33,126</b>	<b>25,233</b>	<b>12,374</b>	<b>8,718</b>	<b>8,718</b>	<b>8,895</b>	<b>8,895</b>
<b>Total Population</b>	<b><u>11,038</u></b>	<b><u>27,835</u></b>	<b><u>44,301</u></b>	<b><u>52,575</u></b>	<b><u>79,178</u></b>	<b><u>64,918</u></b>	<b><u>41,919</u></b>	<b><u>33,431</u></b>	<b><u>33,431</u></b>	<b><u>33,608</u></b>	<b><u>33,608</u></b>

Note<sup>1</sup> DoD population includes military personnel, DoD civilian workers, and dependents from off-island.

<sup>2</sup>The Navy rows do not include increases from the transient presence of aircraft carrier crew with its carrier strike group (CSG).

<sup>3</sup> Population figures do not include Guam residents who obtain employment as a result of the proposed actions.

#### 2.1.4 Organization of the Remaining Chapter

The following sections summarize the proposed actions. The following lists the sections, along with the appropriate volume of the Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) that contains detailed descriptions of the proposed action and alternatives:

- Section 2.2 Marine Corps Relocation – Guam (see Volume 2 for details)
- Section 2.3 Marine Corps Relocation – Training on Tinian (see Volume 3 for details)
- Section 2.4 Aircraft Carrier Berthing (see Volume 4 for details)
- Section 2.5 Army AMDTF (see Volume 5 for details)
- Section 2.6 Related Actions – Utilities and Roadway Projects (see Volume 6 for details)
- Section 2.7 Construction

## 2.2 MARINE CORPS RELOCATION – GUAM

The Marine Corps proposed action would require construction and utilization of new facilities, infrastructure, and training assets to supplement the existing military assets on and around Guam. It would also increase operational activities, increase ship berthing, and require the establishment of aviation maintenance operations and facilities. Marine Corps forces would live, train, and work on the island. 3<sup>rd</sup> Marine Expeditionary Force (III MEF) with its elements (discussed below) would be based on Guam and would be a component of the over-arching Marine Forces Pacific for operation and support of U.S. Pacific Command requirements.

The relocating forces would include the following operational elements:

- Command Element, III MEF. III MEF is the Marine Corps' forward-deployed Air-Ground-Logistics-Base Team; it has the ability to deploy rapidly and conduct operations ranging from humanitarian assistance and disaster relief to amphibious assault and High Intensity Combat. Consists primarily of headquarters (HQ) and supporting organizations. Co-location and communications connectivity is a primary facility siting requirement.
- Ground Combat Element (GCE), 3<sup>rd</sup> Marine Division Units. The GCE has the mission of locating, closing with, and destroying the enemy with firing, maneuvering, and close combat. It provides infantry, armor, artillery, reconnaissance, anti-tank, and other combat arms. Consists of Divisional HQ and subordinate organizations. Needs to be sited near Command and other HQ and subordinate operating elements. Ground combat and combat support organizations require proximity to ranges and training areas, as well as traditional base support facilities.
- Air Combat Element (ACE), 1<sup>st</sup> Aircraft Wing and subsidiary units. The ACE operates from a variety of sea- and shore-based facilities to support Marine Air Ground Task Force (MAGTF) expeditionary operations. The focus of the ACE is to support the MAGTF during the assault landing and subsequent operations ashore. Includes the Marine Aircraft Wing (MAW) HQ, expeditionary, and garrison supporting organizations. Unlike the aircraft squadrons, aviation command and general supporting elements can be located convenient to the airfield and higher commands, and do not necessarily need to be located at the airfield.
- Logistics Combat Element (LCE), 3<sup>rd</sup> Marine Logistics Group (MLG). The LCE provides all support functions not organic to the GCE and ACE units. Functions include: communications, combat engineers, motor transport, medical, supply, maintenance, air delivery, and landing support. Consists of MLG HQ and supporting organizations that provide a variety of direct logistics support to the rest of the III MEF. The MLG HQ element would be sited in proximity to Command HQ and other HQs. Indirect and industrial support facilities of the LCE would be located in proximity to mutually supporting activities to maximize efficiency, with efficient access to roads, ports, and airfields.

### **Chapter 2:**

#### 2.1 Overview

#### 2.2 Marine Corps Relocation – Guam

#### 2.3 Marine Corps Relocation – Training on Tinian

#### 2.4 Aircraft Carrier Berthing

#### 2.5 Army AMDTF

#### 2.6 Related Actions – Utilities and Roadway Projects (Guam)

#### 2.7 Construction

- **Base Support.** This refers to all functions that may not be directly related to the military mission but are critical to the operation of the base and the Quality of Life (QOL) for military personnel and their families. Examples would include military exchanges, commissaries, and child development centers. These facilities would be sited throughout the Base.

Transient U.S. DoD and Allies operational forces would likely avail themselves of Guam's increased operational and training capabilities. A visiting Marine Expeditionary Unit, an Expeditionary Strike Group (ESG), and other joint and combined task forces including allied nation forces would likely conduct combined training exercises in Guam and the CNMI.

Typically, a visiting ESG would include three ships carrying amphibious vehicles, equipment, and personnel designed to support amphibious operations and an additional four surface combatant ships that escort the amphibious ships. The visiting ships and units involved in training exercises would berth at Apra Harbor for short periods. The numbers and types of ships and amphibious vehicles would vary with respective training missions. In addition to the ships, there would be as many as four Landing Craft Air Cushion (LCACs), 15 amphibious assault vehicles (AAVs), and eight small reconnaissance boats in Guam at any given time. In addition to training, amphibious ships and their combatant escort ships may embark and disembark personnel and equipment in Guam for operational requirements. All waterfront improvements proposed to support Marine Corps requirements would be available for use by ships visiting Apra Harbor.

The following subsections describe the major activities that would be associated with the proposed Marine Corps relocation on Guam: Airfield, Main Cantonment, Waterfront, and Training.

### **2.2.1 Airfield**

The majority of the proposed ACE Beddown Project Area site is an inactive, previously disturbed area north of the existing Andersen AFB Airfield. This proposed area would accommodate helicopter and other vertical lift aviation assets operations, maintenance, and related training and support functions. The ACE beddown facilities would operate 24 hours per day and seven days per week. Approximately 2,000 people would occupy this space during the day shift and 400 people would be present at night. Traffic would include government owned vehicles, personal vehicles, and shuttle buses from the Main Cantonment area. Air traffic would include helicopter, vertical lift aircraft, fixed wing, and unmanned aircraft arrivals and departures. Air traffic rates are contingent on surge and operational requirements.

The Air Embarkation Project would include the Air Mobility Campus, Organic Marine Corps Cargo, and passenger operations. Air Embarkation/Disembarkation refers to the loading and unloading of passengers or cargo to aircraft. The passenger facilities are comparable to those of a small airport: luggage handling, wait area, and ticket/documentation area. Cargo is staged in the area awaiting loading to aircraft or disbursement to warehouses or individual commands. There are biosecurity searches of cargo and baggage. The site would operate 24 hours per day and 7 days per week. The total project area would be 28 acres (ac) (11.33 hectares [ha]), adjacent to the southeast boundary of the airfield (where land is available for expansion and redevelopment). The existing conditions include paved airfield parking and disturbed unused land adjacent to the airfield. This site would serve as the passenger terminal for Andersen AFB and temporary cargo storage.

Andersen AFB access improvements and the North Gate and Access Road proposed projects, would improve the traffic flow and physical security of vehicles entering and exiting the air base. The proposed 12 feet (ft) (3.66 meters [m])-wide access road is planned to intersect Route 9 approximately 10,561 ft (3,219 m) north of the existing Andersen AFB entry control point and extend into Andersen AFB approximately 6,561.7 ft (2,000 m) until it terminates at 5<sup>th</sup> Avenue. A new entry control point facility is also proposed and would serve both commercial and private vehicles.

Roadway paving, street lighting, and drainage would be improved along the entire length of the alignment. Improvements at the new route intersection would include two dedicated turn lanes and traffic signals with demand left turn signals, via pavement detectors.

### **2.2.2 Main Cantonment**

The Main Cantonment would be the main base of operations for the Marine Corps, and in two alternatives, would also be the main base of operations for the Army AMDTF. Facility requirements for the Main Cantonment Area include a full range of facility types, not unlike a small city: various types of housing, workplaces, recreation areas, education facilities, and health and safety-related functions. The workplace facilities are typical of a military base and include headquarters, maintenance facilities, warehouses, training areas (field and classroom), equipment/vehicle storage, and hazardous materials management and storage areas. Marine Corps command guidance and planning principles employed in designing the Main Cantonment includes:

- Accommodating individual training and as much unit training as possible on Guam
- Encouraging functionality, efficiency, and sustainability in daily operations
- Requiring command and organizational integrity
- Ensuring a high quality of life for troops and families
- Accommodating anti-terrorism/force protection (AT/FP) requirements
- Minimizing potential future encroachment
- Preserving and optimizing existing mission capabilities and joint service requirements

In each of the alternatives, the parcels were subdivided into functional areas based on many factors including: habitat, topography, and constraints. Facilities were sited throughout the proposed installation based on functional efficiency, capacity, AT/FP requirements, sustainability, and many other factors, to optimize functionality and minimize environmental impacts. All proposed facilities are presented as a component of one of the functional groups, as follows:

#### HQ and Administrative Support Functions

- Administrative offices
- Vehicle maintenance
- Electronic/communications support and maintenance
- Security
- Warehousing
- Armory
- Fuel storage
- Recycling center
- Defense Reutilization and Marketing Office
- Hazardous materials (HAZMAT) management and storage/corrosion control

### Base Operations

- Administrative offices
- Military police functions: brig/confinement, police offices, rehabilitation facilities, military dog kennels
- Fire station and alert force facilities
- Base access: gate house, pass and identification, photographic facilities
- Warehousing
- Legal services, dental services, family services, and Morale, Welfare, and Recreation support

### Bachelor's Quarters and Temporary Lodging

- Bachelor Enlisted Quarters (BEQ), club, dining, indoor fitness, and swimming pool
- Bachelor Officer Quarters (BOQ), officer's club
- Temporary lodging facilities

### Family Housing

- Single-family and attached housing facilities of various sizes and types

### Educational Facilities

- Child development/daycare facilities
- Elementary schools
- Middle schools
- High school

### QOL Functions

- Main Community Center: commissary, exchange, post office, theater, bowling alley, vehicle maintenance, hobby shop, medical clinic, religious ministry facilities
- Applied instruction and auditorium facilities
- Fitness centers, swimming pool, youth centers
- Services: restaurant, location exchange, bank, gas station, gate house

## **2.2.3 Waterfront**

Naval Base Guam is an operating military naval base that presently supports surface and subsurface combatants, and logistic support ships including amphibious ships. The Navy's general purpose wharves are on the western side of Inner Apra Harbor. Other wharves are not general purpose and have specific uses, such as submarine berthing or supply ship berthing. Port operations manages traffic and berthing assignments within the harbor. It would continue to assign berthing for ships within the existing wharf areas. Ships are assigned specific berths to accommodate the draft of vessel, operational requirements of the vessel including repairs, and on and off load requirements for the particular ship. The berths and adjacent support structures and lay-down areas would be upgraded to accommodate increased usage, and upgraded to meet new and emerging requirements in support of the Marines' relocation. Dredging would be required to accommodate some of the escort ships. Volume 2 provides detailed information regarding the location and impacts from dredging in Inner Apra Harbor.

Relocation of the Marine Corps to Guam would result in frequent embarkation operations supporting amphibious transportation of Guam-based Marines and other transiting amphibious forces for potential contingency, humanitarian, and exercise operations in the Pacific theater. The Navy's amphibious task forces and the Marine Expeditionary Units are transient forces that traditionally utilize Guam for port visits and training; such task force visits would occur more frequently after relocation. The composition of the amphibious task force would vary with each specific mission. Typically, three ships would carry equipment to support amphibious operations, and additional four combatant ships would serve as escorts.

The amphibious task forces have historically utilized general purpose Navy wharves in Inner Apra Harbor. The proposed increase in amphibious task force visits, the increased utilities requirements, and the change in the class (type) of visiting ships would require a new embarkation area (for loading and unloading of ships) and a new amphibious vehicle laydown area. The four waterfront facility projects proposed to support this action are described below.

#### 2.2.3.1 Embarkation and Support Ship Berthing

The amphibious task force would require an area to load and unload personnel, vehicles, and other cargo. Equipment cleaning and inspections associated with bio-hazard and customs requirements would also occur in this area. These operations are collectively referred to as waterfront embarkation. The ships carrying amphibious vehicles require wharf space and nearby support facilities to manage such operations. Wharves supporting other escort ships and support vessels would not need to be located adjacent to embarkation operations. A summary of amphibious task force facility requirements is as follows:

- Embarkation operations:
  - The amphibious ships would be berthed at Victor Wharf (the wharf traditionally assigned for amphibious shipping in Apra Harbor). A new port operations building would be constructed at the wharf, and a cargo staging and vehicle wash down area would be provided in proximity to but not adjacent to the wharf.
  - The Victor Wharf requires structural/surface repairs and utility upgrades. Proposed utility upgrades and installation include the following systems: telecommunications infrastructure, bilge oily water treatment, potable water, electrical, steam, low pressure compressed air, and sewage collection. New hardware and fenders would be provided.
- Other support vessels including non-amphibious shipping troop transport berthing:
  - Uniform Wharf would be used for troop transport ships such as ferries including High Speed Vessels.
  - All Apra Harbor wharves sustained previous earthquake damage, but Uniform Wharf is in the worst condition and is currently unusable. Extensive structural upgrades to meet seismic standards and utility upgrades are proposed. Proposed utility upgrades or installation include: electrical, water, wastewater, and telecommunications infrastructure.
- Escort (supply ships and combatants) ship berthing:
  - Sierra Wharf would be improved for the escort ships.
  - Dredging would be required from -35 ft to -38 ft (-10.6 to -11.5 m) Mean Lower Low Water for the areas fronting Sierra and Tango Wharves (see dredging discussion below).
  - Structural wharf improvements would be needed to accommodate the new dredged depth and comply with Guam seismic standards. Concrete wharf surfaces would be repaired and new hardware and fenders provided. No changes to wharf design are proposed.

- Utility upgrades are proposed at Sierra Wharf to include the following systems: bilge oily water treatment, potable water, electrical, steam, low pressure compressed air, and sewage collection.
- Dredging at Sierra and Tango Wharves:
  - The EIS/OEIS assumes mechanical dredging, which has been the standard practice for Apra Harbor. Other options include hydraulic dredging, but mechanical is perceived to be the environmentally most conservative due to releases of dredged material into the water column and temporary impacts on water quality.
  - Three dredged material management options would likely be available on Guam in 2010. The existing options are beneficial reuse and upland dewatering site. The U.S. Environmental Protection Agency is pursuing the designation of an ocean dredged material disposal site (ODMDS) approximately 11 to 14 nautical miles (nm) (20.4 to 26 kilometers [km]) from the west coast of Apra Harbor. The designation is anticipated in 2010 and the ODMDS EIS is being prepared concurrent with this EIS/OEIS. An ODMDS would provide Guam a third option for dredged material management.
  - Beneficial reuse is the preferred disposal option for suitable (e.g. chemically, geotechnically) dredged material when practical; several local potential beneficial reuse projects have been identified and represent one possible scenario for use of portions of the dredged material excavated for the proposed action.
  - Based on the sediment chemistry analysis of 58 sediment core samples that were composited into six samples by geographic area, the dredged material at Sierra/Tango Wharves is likely to be suitable for either ocean disposal or upland placement and beneficial reuse in upland placement sites (Naval Facilities Engineering Command [NAVFAC] Pacific 2006). The sampling plan and the compositing of samples were based on standard guidelines used to support U.S. Army Corps of Engineers (USACE) permit applications. The chemical data results are comparable to the results on previous maintenance and construction projects' dredged material. To date, none of the Apra Harbor dredged material from the dredge area or nearby projects has required special handling, remediation, or placement in lined confined disposal facilities. These measures are not anticipated for the Sierra/Tango dredged material (or the Navy's proposed aircraft carrier berthing project described in Section 2.4).
  - The EIS/OEIS impact analysis considers several scenarios: 100% beneficial reuse in association with a proposed Port Authority of Guam expansion program; up to 20% beneficial reuse of dredged material within the proposed military construction projects with remainder disposal at the ODMDS; 100% upland dewatering and placement; and 100% ODMDS placement. There would, most likely, be a combination of disposal methods described in the dredged material disposal plan, which would be prepared for inclusion in the USACE permit applications. The permit application process is administered by the USACE and the applications, including the dredged material disposal plan, are subject to review by other regulatory agencies.
  - Additional laboratory analysis would be required for submittal to USACE to support the dredged material management plan for potential ocean disposal that would include a full suite of bio-effects tests to determine suitability for placement in the approved ocean site. The permit application review process and permit conditions ensure that dredged material is managed in accordance with applicable environmental regulations.

### 2.2.3.2 Amphibious Vehicle Laydown Area

The amphibious vehicle laydown area is required to store, wash down, maintain, and deploy amphibious vehicles, such as landing craft and AAVs. LCACs would also utilize this area. Reconnaissance battalion small boats would be stored and maintained. Amphibious vehicles and the LCACs travel on land and water. The laydown area needs to be close to the water and have ramps to access the harbor for training and operations. Amphibious vehicles produce noise comparable to a diesel powered boat on water. On land, the amphibious vehicle tracks on hard surfaces generate noise. LCACs; however, are powered by gas turbines using two large shrouded propellers at the stern for forward propulsion. These gas turbines are similar to aircraft jet engines. Therefore, the laydown area must also be remote from other operations because of the noise and spray associated with the LCACs. The area is proposed for this project is along Polaris Point's southern coast and east of Alpha Wharf in inner Apra Harbor. This area is within a man-made fill area, requires no demolition, and is undeveloped (vacant) with no land use constraints. It has direct water access to Apra Harbor.

Specific components of the laydown area are identified below.

- Two new concrete ramps, which are similar to recreational boat ramps observed at marinas. There would be paving for amphibious vehicle parking, personal vehicle parking, staging equipment, and amphibious vehicle washing.
- There would be four support buildings for administration, small boat storage, and maintenance.
- A new access road would be provided from Marine Corps Drive.

### 2.2.3.3 Facility Relocation Projects

Two facility relocation projects are necessary to accommodate the Marine Corps waterfront requirements.

#### 1. U.S. Coast Guard (USCG):

- Ship berthing and crew support buildings would be relocated from Victor Wharf to Oscar/Papa Wharves because ships carrying amphibious vessels would require the full length of Victor Wharf.
- USCG HQ and other facilities would remain at Victor Wharf within the USCG lease area.
- The Oscar/Papa Wharves would be refurbished and developed. The existing buildings would be demolished. The wharf face and surface deterioration would be repaired. There would be new wharf hardware and fenders. Proposed utility upgrades or installations include the following systems: bilge oily water treatment, potable water, electrical, fire protection water supply, communication infrastructure, and sewage collection.
- The area is currently leased to the Guam Economic Development and Commerce Authority (EDCA) by the Navy and subleased from Guam to the Guam Shipyard. A reduced footprint is proposed for the shipyard.

#### 2. Military Working Dog Kennel:

- The existing Military Working Dog Kennel with eight dog runs and administrative spaces within the Security Compound at Victor Wharf would be relocated to a relatively quiet inland site at the southern side of Naval Base Guam because noise of embarkation would be incompatible with the existing uses as a military working dog kennel and training location.

#### 2.2.3.4 Medical/Dental Clinic

The Naval Hospital serves all military and dependent personnel. There are clinics at Andersen AFB and Apra Harbor. The proposed Marine Corps population increase requires more medical specialties and an increase in hospital capacity on Guam. The plans for construction of a new hospital were underway prior to the proposed Marine Corps relocation and are not included in this EIS/OEIS. Many outpatient services currently provided at the Naval Hospital would need to be diverted to clinics to free up space for critical care and overnight stays. One new medical/dental clinic is proposed as part of the new the Marine Corps facilities and would be located within the Main Cantonment. In addition, the existing clinic at Apra Harbor would assume more outpatient responsibility from the Naval Hospital. The current medical/dental clinic at Apra Harbor is inadequate from a size, operational, and structural perspective for the proposed new level of service. A new clinic is proposed to accommodate, in part, the increase in on-island military population.

The proposed site is centrally located on the installation on Marine Drive, near existing family and bachelor housing areas. The clinic would include administrative spaces, medical, mental health and dental clinic spaces, urgent care clinic, preventive medicine, ancillary services, and parking for personal and emergency vehicles (approximately 290 spaces). The space allocation and designs are provided by the Bureau of Medicine and Surgery. Apra Branch Health Clinic (medical and dental) would be a single-story concrete facility of 43,091 square feet (ft<sup>2</sup>) (4,003 square meters [m<sup>2</sup>]). The total project area within the perimeter of the facility would be 334,000 ft<sup>2</sup> (31,030 m<sup>2</sup>).

Site improvements include landscaping, sidewalks (with nonslip surface), curbs, and gutters. Subgrade construction would include utility lines and possible storm water management systems (not yet designed). The facilities would be fully equipped with sprinkler and air conditioning systems. All facilities would be designed to Zone 4 seismic requirements, to withstand 170 mile per hour winds, and to include appropriate AT/FP distance setbacks.

#### 2.2.4 Training

A variety of training requirements would have to be fulfilled on a regular basis by Marines as part of the proposed action, including maneuver and non-live fire training, live fire weapons and explosives training, and aviation operations and support. Ammunition storage areas are also part of the proposed action. The following training support and compatible high-use facilities would be required and integrated with the Main Cantonment:

- Audio-visual support, simulators, staff trainers, auditorium
- Physical fitness, swimming, obstacle course, rappelling
- Indoor small arms firing range and gas mask training chamber (effects contained within structure)
- Combat skills training
- Engineer equipment training

Andersen South would have facilities for Military Operations in Urban Terrain (MOUT) (urban warfare) and maneuver training areas. The NMS would also have maneuver training areas.

##### 2.2.4.1 Live Fire Range Complex

The proposed alternatives for the location of the live fire range complex are on the east coast of Guam, east of Andersen South. Range Alternative A includes realignment of Route 15. Range Alternative B is south of Range Alternative A and would not include realignment of Route 15. Both alternatives would

also include a proposal for Special Use Airspace (SUA) from 0 to 3,000 ft (914 m) above ground level (AGL) for the Surface Danger Zones (SDZs) of the machine gun range over parts of Andersen South and off the east coast of Guam. Weapons and explosives live fire training activities training would be the same at either location and would include:

- Small arms range complex: Multiple ranges would be in the complex. The proposed Known-Distance (KD) range would provide for 50 firing points, but the range area would be sized for future expansion up to 80 firing points. The KD range would be 160-yards (yd) (146-m) wide and 500 yd (457 m) from the farthest firing line to the target line. The proposed pistol range would provide for 25 firing points and would be expandable to 30 firing points with a 150-ft (46-m) square-bay range for multi-purpose use. The proposed Unknown Distance range would contain 16 lanes, expandable to 24 lanes in future for training with 5.56 millimeter (mm) weapons. The proposed Square Bay Range would be 100 m (328 ft) in length with 25 firing points, expandable in future to 50 firing points for training with 9 mm and 5.56 mm weapons.
- Machine Gun Multi-Purpose Range: The range would have eight stationary firing lanes, expandable to 12, and two moving target lanes. Lanes would be approximately 3,820 ft (1 km) long. The firing line is 492 ft (150 m) wide and the target line at its farthest extent is 984 ft (300 m) wide. The firing line is raised to include a vehicle firing platform extending 130 ft (40 m) deep. Projectiles authorized for this range include 7.62 mm, .50 caliber, and MK19 40 mm Training Projectile (TP). There would be a restricted area to 3,000 ft (914 m) AGL if this range is located near Route 15.
- Hand Grenade Range: An approximately 1 to 2 ac (0.4 to 0.8 ha) area would be cleared and developed as a hand grenade training range complex for the M67 (6.5 ounce Comp B) fragmentation hand grenade and the M69 inert practice grenade.
- Demolition Range: A pit of dirt or sand, approximately 100 ft (30 m) in diameter, would be excavated where explosives would be rigged, primed, and detonated. Training personnel would be sheltered in a bunker or defilade position approximately 985 ft (300 m) from the point of detonation. Up to 20 pounds of explosives could be used.

Some demolition activities would also occur at the Northwest Field Red Horse existing demolitions pit or at NMS.

#### 2.2.4.2 Naval Munitions Site Access Road Alternatives

The access road alternatives are located outside NMS property and would require acquisition of a right-of-way extending approximately 300 ft (91 m) from the road centerline. The access road alternatives are as follows:

- NMS Access Road Alternative A: This existing hiking trail is 0.4 mi (0.6 km) long, would cover 0.8 ac (0.3 ha) at a 16-ft (5-m) width, and includes no stream crossings. Under Alternative A, the trail would be improved.
- NMS Access Road Alternative B: Under this alternative, the road would not be improved and would be used by foot traffic.

Alternative A would include clearing of vegetation for the road shoulder for a total estimated width of disturbance of 50 ft (15 m). Locked, unmanned gates would be placed at the beginning of the access road and at the entrance to the NMS.

### 2.2.4.3 Ammunition Storage

Only existing munitions storage areas were considered to be candidate sites for the proposed ammunition storage facilities under the proposed action. This narrowed the candidate sites to the NMS and the Andersen AFB Munitions Storage Areas (MSAs). Within these two areas, the primary factors in selecting alternative munitions storage configurations were as follows:

- Operational: the earth-covered magazines (ECMs) should be sited as close together as safety setback distances allow, to minimize logistical and maintenance requirements and total area encumbered by Explosive Safety Quantity Distance (ESQD) arcs.
- Biological: the amount of habitat disturbed should be minimized (e.g., siting ECMs on previously cleared or paved areas or areas of lesser habitat value, and avoiding removal of mature trees) and the ECMs should be sited to avoid sensitive essential habitat for threatened and endangered species.
- Safety: ECMs must be sited in accordance with all regulatory guidance to ensure the safe working environment for munitions and other base personnel (i.e., the direction that the igloos are oriented in relation to each other, safety setback distances between ECMs, and explosive safety arcs within and outside of munitions storage area).

### 2.2.4.4 Aviation Training

Aviation operations and support would occur at multiple locations on Guam as described below.

#### North Ramp Andersen AFB and Northwest Field

- Marine Air Control Group (MACG) Training: The MACG is part of the ACE of the MAGTF. MACG training involves coordination of air command and control and air defense within the MAW. Tactical Air Operations Center (TAOC) training is also part of this training. TAOC training involves establishment of operating air traffic control radar and radar frequency emitters and facilities consisting of shelters, a portable tower, and electrical power sources in about 48 hours, and dismantling them in approximately the same time.
- Improved Airfield Training: Certain aviation training requires improved airfields. Field Carrier Landing Practices (FCLP) training requires a lighted pad sized for a large amphibious deck ship for day/night use and with night vision goggles. Familiarization and instrument flight (FAM) requires an improved airfield with Aircraft Rescue and Fire Fighting for autorotation and simulated engine-out approaches. FCLP and FAM training would occur at an improved airfield. FCLP training involves landing on a simulated aircraft carrier. FCLP operations are almost circular patterns often conducted with several aircraft at low altitude. Approximately three training operations are conducted with each FAM sortie and five training operations with each FCLP sortie. Both are conducted during day and night.
- Landing Zones (LZ): Both improved and unimproved LZs are required to support training in Confined Area Landing (CAL), External Loads (EXT), and Helicopter Insertion Extraction (HIE). CAL training requires a different closely located LZs. EXT training requires access to pre-positioned external loads for practice, and access is needed for ground helicopter support team personnel. External loads cannot be carried across public roads or populated areas. EXT training operations would involve one pass for LZ orientation, followed by an approach of the LZ, hovering at approximately 30 ft (9 m) AGL for approximately one minute while the helicopter support team attaches a load (e.g., concrete block, items in a cargo net, or a vehicle), departure from the LZ vicinity with the load in tow, flying with the load in an arc,

then returning to the LZ with the load, and hovering for approximately 30 seconds while the helicopter support team retrieves the load/equipment, and then departing the LZ vicinity. HIE activities include fast rope, rappelling, and parachute operations. HIE training operations would involve one pass for LZ orientation, followed by an approach of the LZ, hovering at approximately 30 ft (9 m) AGL for approximately 1 minute for the HIE event, and then departing the LZ. During each sortie, approximately three HIE operations would be conducted at one or more closely located LZs.

#### Andersen South and the NMS

- Landing Zone: Training similar to the LZ training occurring at North Ramp Andersen AFB and Northwest Field.

#### 2.2.4.5 Development of Future Training Ranges

All Marine units, to include those relocating from Okinawa to Guam, are required to complete core competency MAGTF training to ensure that forward-deployed Marines sustain operational readiness in core competencies to meet all readiness requirements and are able to support operational requirements assigned by the Combatant Commander. This level of training, which is beyond individual live fire qualification and requalification training, would be conducted on training ranges being constructed in Guam and Tinian and would involve integration of ground, aviation, and logistics elements under a common command element in preparation for large scale combat operations. The training ranges currently planned for Guam and Tinian only replicate existing individual-skills training capabilities on Okinawa and do not provide for all requisite collective, combined arms, live and maneuver training the Marine Corps forces must meet to sustain core competencies. As with Marine Corps forces currently in Okinawa who must now travel to mainland Japan, other partner nations, and the United States to accomplish this requisite core competency training, the Marine Corps forces relocating from Okinawa to Guam would also have to use alternate locations to accomplish requisite core competency training.

The Marine Corps ultimately desires to conduct core competency training in areas that limit the time Marines must travel to train and thereby reduce operational non-availability. There is an ongoing need to reassess current training locations and to develop additional training capacity for higher level integrated core competency training in the Western Pacific. As part of the DoD continuing efforts to address these existing training issues as well as the training needs of other services in the Western Pacific, DoD is evaluating all DoD training needs in the Western Pacific as part of 2010 Quadrennial Defense Review (QDR). As part this effort, the QDR will specifically evaluate the need for additional Marine Corps training facilities in the CNMI to address the higher level combined arms, live fire, and maneuver training needs of Marine Corps forces in the area.

It is anticipated that the QDR will result in recommendations to address the Marine Corps' need for in-theatre training, and provide the Combatant Commander with operational ready forces with minimum down time by limiting the amount of time Marines need to travel to accomplish their core competency training. To the extent that these recommendations result in proposals subject to the National Environmental Policy Act (NEPA), the DoD will conduct additional NEPA/Executive Order 12114 analysis as necessary prior to implementation. Such proposals, and any associated NEPA/Executive Order 12114 analysis, are separate and distinct from the ongoing proposed relocation of Marine Corps forces from Okinawa to Guam and have independent utility from the proposed relocation. Further, such actions that may develop out of the QDR review process are not connected to the relocation of Marine Corps forces from Okinawa to Guam.

## 2.3 MARINE CORPS RELOCATION – TRAINING ON TINIAN

Under the proposed action, the Marine Corps would construct facilities and infrastructure to conduct training on Tinian (CNMI) to support the training and operations of Marine Corps units relocating to Guam. DoD currently leases, for military purposes, approximately two-thirds of the northern portion of Tinian. Elements of the proposed training consist of the following:

1. *Firing Ranges*: a Rifle KD Range, Automated Combat Pistol Range, Platoon Battle Course, and Field Firing Range are proposed on Tinian
2. *Airspace Management*: Airspace use overlying the proposed firing range would continue as currently managed by the FAA. Establishment of SUA is not required or proposed for the firing ranges.

Training would be required for Marine forces relocating from Okinawa to Guam pursuant to the Roadmap Agreement with Japan. Individual and crew weapons qualification and familiarization training ranges, maneuver areas, and aviation training including LZs are proposed for Guam as discussed previously in Section 2.2.4 of this Volume. The concept for Tinian is to provide the next stage in the training progression, and includes development of ranges for tactical employment of the basic weapons skills developed on Guam.

### 2.3.1 Proposed Firing Ranges

The proposed action consists of introducing live fire weapons ranges into the Tinian Military Leaseback Area. This would require the modification of the existing Lease-back agreements with the CNMI. The specific set of ranges proposed to meet the purpose and need include:

- Rifle KD Range (5.56 mm, 1,000 yd [914 m]). A Rifle KD Range, designed for training rifle marksmanship and target engagement techniques, would be constructed. This range would supplement the KD range on Guam (see Section 2.2.4) by providing the additional distance required of up to 1,000 yd (914 m). Fifty firing points would be constructed, with a range width of 100 yd (91 m), and a length of 1,000 yd (914 m). The total distance of ground disturbing activities is approximately 1,050 yd (960 m) by 100 yd (91 m), or 22 ac (9 ha). The surface danger zone (SDZ) for this range is 2.17 miles (mi) (3,500 m) horizontally, with a vertical hazard distance of 388 yd (355 m).
- Automated Combat Pistol/Military Police Firearms Qualification Course. This range would be designed to meet training and qualification requirements with combat pistols and revolvers and used to train and test personnel on the skills necessary to identify, engage, and hit stationary infantry targets. This range would supplement the Pistol KD Qualification Course located on Guam. The range would be suitable for 9 mm and .45 caliber weapons. Up to 25 firing points would be constructed, with a maximum range distance of 50 yd (46 m). Total ground disturbance would take place over an area of approximately 55 yd (50 m) by 50 yd (46 m) wide, or 0.6 ac (0.24 ha). The SDZ for this range would extend 1.12 mi (1.8 km) horizontally, with a vertical hazard of 109 yd (100 m).

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- **Platoon Battle Course.** The Platoon Battle Course would provide the capacity for small units of up to approximately 40 personnel to train in tactical scenarios, engaging targets at varying distances and angles while moving. There is no such range on Guam because the required range footprint and SDZ exceeds available land areas. Weapons that would be used on this range are those found at the platoon level. These are 5.56 mm carbines and rifles and Squad Automatic Weapons. The range footprint would be approximately 1,312 yd (1,200 m) long and 656 yd (600 m) wide, encompassing approximately 178 ac (72 ha). Within that footprint, target pits, access ways, and back stops would be constructed. For operation of the targets and safety management of the range, a range control tower would be located at the initial firing line. The SDZ would extend 2.17 mi (3.5 km) horizontally, with a vertical hazard distance of 388 yards (355 m).
- **Automated Field Firing Range.** This range would be designed for training target engagement techniques with the rifle, including identifying, engaging, and hitting stationary infantry targets. This would be a scored range for use with the 5.56 mm rifle but would also be suitable for the M4 Carbine and Squad Weapons System. The proposed range would be approximately 219 yd (200 m) wide by 547 yd (500 m) long, or approximately 25 ac (10 ha). The length of the SDZ is approximately 2.17 mi (3.5 km) long from the firing line and 388 yd (355 m) vertically.

### **2.3.2 Supporting Activities**

Supporting activities include: security fencing around the Range Training Area (RTA), range maintenance (grading for line of sight, creation of earthen berms, sifting of impact berms to remove used rounds for recycling), bivouac activities (i.e., setting up camp), emergency services support, and range access via roadways. No permanent facilities for supporting activities are proposed for the Tinian ranges. All training would be considered “expeditionary”, in that the Marines would bring all necessary equipment to the ranges, would bivouac onsite, and would remove all equipment following completion of the training activities. No utilities systems would be required. Water and power would be provided by alternate means such as mobile water tanks and generators. Supporting activities would be accomplished without construction of permanent facilities.

### **2.3.3 Range Training Area Management**

The RTA on Tinian would be managed in accordance with Marine Corps Order 3550.10 (*Policies and Procedures for Range Training Area Management*) and U.S. Pacific Fleet directives contained in the Mariana Islands Range Complex and the U.S. Defense Representative (Commander Navy Region Marianas) training instructions that address safe, efficient, effective, and environmentally sustainable use of the range area. These policies include security and safety procedures and environmental management.

### **2.3.4 Range Operations**

It is estimated that civilian use of, and access to and through, the RTA would be affected approximately 12 to 16 weeks per year. The limit of the restrictions would depend on the training uses scheduled. The transport of 200-400 Marines to Tinian from Guam for the proposed one week per month company-level training exercises would be via air or surface ferry transport. Ranges would primarily be used during daylight hours; however, some training is required during nighttime hours, typically between the hours of 7:00 p.m. and 6:00 a.m.

The estimated sorties associated with the notional airlift requirements are provided in Table 2.3-1. The rotary-wing sorties would be between Andersen AFB North Field on Guam to either the bivouac area, North Field or Tinian Airport (West Field) on Tinian. The fixed-winged sorties (C-17s) would be between Andersen AFB and the Tinian Airport (West Field). Tinian Airport (West Field) has the runway requirements for these aircraft. The fixed-winged sorties (C-130s) could use both North Field as an expeditionary field and the Tinian Airport (West Field). If equipment is moved by barge, a single barge would be able to carry the equipment necessary to support the estimated 200 to 400 Marines training evolution. Based on past practices and other range operations, elements of RTA management such as range security, range maintenance, vehicle maintenance, emergency services (fire fighting and medical), personnel support for range users (including transportation services and food services), and environmental services may be accomplished on a contract basis.

**Table 2.3-1. Estimated Sorties Associated with the Notional Airlift Requirements**

<i>Aircraft Type</i>	<i>Capacity (Marines Transported) per Sortie</i>	<i>Sorties for Airlift of 200 Marines</i>	<i>Sorties for Airlift of 400 Marines</i>
CH-53D	37	6	11
CH-53E	55	4	8
MV-22	20	10	20
C-130	76	3	6
C-17	102	2	4

### 2.3.5 Airspace

FAA Order JO 7400.2G, Procedures for Handling Airspace Matters (FAA 2008), and Marine Corps Order P3550.10, Policies and Procedures for Range and Training Area Management (Marine Corps 2005), do not require the establishment of restricted areas over small arms ranges. Airspace would continue to be managed by the FAA using established policies. Establishment of restricted area airspace for training on Tinian is not part of the proposed action evaluated in this EIS/OEIS.

## 2.4 AIRCRAFT CARRIER BERTHING

### 2.4.1 Operation

The Pentagon's strategic QDR of 2006 supports an increased Navy presence in the Pacific. To meet this objective, on average six aircraft carriers, including air wings and escort ships, will be homeported in the Pacific. The mission of the aircraft carrier includes:

- Providing a credible, sustainable, independent forward presence and conventional deterrence in peacetime
- Operating as the cornerstone of joint/allied maritime expeditionary forces in times of crisis
- Operating and supporting aircraft attacks on enemies, protecting friendly forces and engaging in sustained independent operations in war

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Five of the six aircraft carriers are homeported on the west coast of the contiguous U.S. Rather than traveling long distances to U.S. homeport bases to refresh forces and conduct emergent repairs, the Navy proposes increased numbers and durations of aircraft carrier visits to Guam, the closest U.S. sovereign soil to the CSG operational areas in the Western Pacific. These visits would facilitate a greater transient presence in the Western Pacific. The increased presence in Guam may include up to 63 days total per year as operational requirements dictate. A new deep-draft wharf at Apra Harbor is proposed to support the transient aircraft carrier capability

Currently, Apra Harbor supports an average of two CSG port calls for an average of up to 7 days in duration per year, though actual port visits and durations are subject to change based upon Fleet operational requirements. Previous nuclear powered aircraft carrier berthing has been at Kilo Wharf. The longer transient visits, however, would interfere with existing ammunition operations at Kilo Wharf. It is the only DoD ammunition wharf in the Western Pacific and serves 12 to 14 ammunition ships in the area of operations.

### 2.4.2 Wharf Locations

An assessment of existing Navy wharves revealed the need for new construction. The Navy proposes to construct a deep-draft wharf and supporting infrastructure in Outer Apra Harbor to berth transient aircraft carriers and provide full service shoreside utilities. While berthed, the ships would be resupplied using the current logistics infrastructure. The ships do not require housing for crew or additional training facilities, but do require utilities and limited temporary shoreside facilities for Sailor liberty support services.

No new facilities are proposed to support the aircraft carrier escort ships. They would be accommodated at Inner Apra Harbor wharves on a space available basis. The Inner Apra Harbor wharf improvements proposed under the Marine Corps action would also benefit the CSG escort ships.

### **2.4.3 Wharf Design**

Several structural design and alignment options were developed for Polaris Point and former SRF alternatives. General site compatibility, constructability, costs, and seismic performance were evaluated in a feasibility study that represents a 20-30% level of design (NAVFAC Pacific 2008). The evaluation of seismicity, storm surge, wave analysis, bathymetry, and construction costs favored a vertical steel pile wharf over a concrete caisson and sheet pile bulkhead design. The vertical steel pile wharf design is assessed in the EIS/OEIS impact analysis. If during the development of the 100% level of design, a different design is proposed, additional consultation with a regulatory agency including the USACE would be initiated. All designs are described further in Volume 4.

### **2.4.4 Dredging**

The dredging methods and dredged material management options are as described for the proposed dredging at Sierra Wharf under the Marine Corps action (Section 2.2.3.1). The EIS/OEIS assumes mechanical dredging, which has been the standard practice for construction and maintenance dredging in Apra Harbor. Other options include hydraulic dredging, but mechanical is perceived to be the environmentally most conservative due to releases of dredged material into the water column and temporary impacts to water quality.

Based on the sediment chemistry analysis of 14 sediment core samples that were composited into three samples by geographic area (i.e., turning basin, Polaris Point and former SRF), the dredged material from wharf alternatives and turning basin areas is likely to be suitable for ocean disposal or upland placement in dewatering sites (NAVFAC Pacific 2006). Beneficial reuse is the preferred dredged material management alternative and several potential local reuse opportunities have been identified and are discussed in this EIS/OEIS. Beneficial reuse remains an important option and is a priority. The material could be retained for Navy use (e.g., landfill cover, fill of berms in new military ranges, wharf stabilization, etc.), removed by the Government of Guam (GovGuam) (including the Port Authority of Guam), or sold to another party. Options for beneficial reuse of dredged material would be examined on a case-by-case basis.

## 2.5 ARMY AMDTF

### 2.5.1 Background

On December 16, 2002, National Security Presidential Directive-23 directed the DoD to establish a capability to protect the U.S. homeland, forces, and its allies from ballistic missile attacks starting in 2004.

The ballistic missile defense program develops the capability to defend territories and forces of the U.S. and its allies against all classes and ranges of ballistic missile threats. The proposed action is comprised of developing facilities and infrastructure on Guam to support relocating approximately 630 military personnel and their 950 dependents to establish and operate an AMDTF. The proposed Army AMDTF would be placed on Guam to defend U.S. interests on Guam from any threat of ballistic missiles. Its defensive umbrella would ensure that local military assets are protected and remain available to meet their military missions.

The proposed Army AMDTF on Guam contains the following three missile components:

- The Terminal High Altitude Area Defense (THAAD) system is a long-range, land-based theater defense weapon which acts as the upper tier of defense against ballistic missiles. This system is designed to intercept missiles during late mid-course or final stage flight. The THAAD flies at high altitudes and provides broad area coverage against threats to critical assets such as population centers, industrial resources, and military forces.
- Patriot Missiles target short-range ballistic missiles which threaten the THAAD or other civilian or military assets on Guam. This weapons system is a point defense option with limited range designed to strike ballistic missiles, aircraft, unmanned aerial vehicles, and cruise missiles just before impact. This system utilizes hit-to-kill technology.
- A Surface-Launched Advanced Medium-Range Air-to-Air Missile (SLAMRAAM) engages targets to beyond line-of-sight and defends against the air threat from unmanned aerial vehicles and cruise missiles.

The Army AMDTF is a ground force and would not be accompanied by aircraft or ships. Components would include command and control, missile field teams, maintenance, and logistics/supplies support. The proposed mode of operation relies on inter-service agreements for all other support facilities.

#### 2.5.1.1 Administration/HQ and Maintenance

During a typical notional work week, operations at the administration/HQ and maintenance facilities would occur 12 hours per day and 5 days per week. Each day, personnel would first report to the administration/HQ facilities for daily briefings and other activities before reporting to the emplacement site location.

Maintenance activities, including vehicle services (oil changes and lubrications, brake jobs) and any engine maintenance repairs that are needed would be conducted. Other repair activities would include air conditioning repair, generator repair, communication equipment repair and testing, and radar system

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repairs (may require radiating to validate repair). Painting would only be done for minor repairs. Other activities would include storage of petroleum, oils and lubricant products, battery storage, fuel dispensing, and welding.

#### 2.5.1.2 Weapons Emplacement Sites

Planned preventive maintenance would require a minimum continuous period of 45 minutes daily Monday-Friday. Personnel would be on-site after initially reporting to administration/HQ and the system would be active based on need. Each THAAD and Patriot Missile facility would be maintained by approximately 25 personnel at any given time.

#### 2.5.1.3 Training

Two major categories of training would be required: individual/crew and collective. Individual/crew training would include basic rifle marksmanship and crew-served weapons training. Training ranges on Guam and in the CNMI are considered joint use (i.e., available to all U.S. forces). Consequently, the Army would utilize ranges within the Mariana Islands Range Complex (MIRC) for this type of training. Collective training would be required for the AMDTF. Regular crew training on all aspects leading up to and through a launch would be required for THADD, Patriot, and SLAMRAAM weapons systems. These training exercises would be conducted at the Army facilities and no training-specific facilities would be required. No live-fire missile launch training exercises would occur on Guam or in the CNMI.

### 2.5.2 Proposed Action

The Army AMDTF proposed action for the development of facilities and infrastructure consists of five main elements:

1. Administration/HQ and maintenance facilities
2. Munitions storage
3. Family housing and associated QOL and BEQ/BOQ facilities
4. SUA (a restricted area) due to potential radar operation hazards to military and civilian aircraft.
5. Weapons emplacement sites

The administration/HQ and maintenance facilities would comprise approximately 28 ac (11 ha) of developed land that includes a battalion HQ, company facilities, and tactical vehicle maintenance facilities. The siting options and analyses, including the alternatives considered and dismissed for HQ, operations, bachelor quarters, and family housing would be as described for the Marine Corps portion of the proposed action (see Section 2.2). Requirements for the facilities are addressed in the Marine Corps Main Cantonment component as the Army and Marine Corps would be sharing these facilities. The AMDTF support facility alternatives are: co-location of support facilities with the Marine Corps facilities at Naval Computer Telecommunications Station (NCTS) Finegayan; locating the Army AMDTF support facilities at Navy Barrigada; and a combination of co-location of HQ facilities with the Marine Corps facilities at NCTS Finegayan and placement of housing facilities at Navy Barrigada, Air Force Barrigada, and a portion of Andersen South.

Eight new climate-controlled, earth-covered magazines (ECMs) and Modular Storage Magazines (MSMs) are proposed on Andersen AFB approximately 1 mi (1.6 km) north of the junction of Route 9 and Route 3A. An important operational component of ammunition storage is the associated explosive safety hazard arc, called the ESQD arc. These arcs establish planning areas that surround explosive hazard sites and define the minimum permissible distance between the hazard of the explosive and any

inhabited building, public assembly area, and/or the boundary of DoD lands. Existing munitions storage facilities generate an ESQD arc that encompasses much of the land in central Andersen AFB. The new magazines would require expansion of the existing ESQD arc. The arc could be up to 1,250 feet (381 m) from each magazine.

During THAAD radar operation, there is a potential hazard to military and civilian aircraft. Therefore, proposed SUA would be located along and off the northwest coast of Guam. The SUA would consist of a proposed Restricted Area (R-7205) to accommodate hazards associated with THAAD radar operations. Planned preventive maintenance would require a minimum continuous period of 45 minutes daily Monday-Friday. Training and certification periods would be processed to the FAA for approval to use the R-7205 airspace. The FAA would issue a Notice to Airmen prior to scheduled use of the airspace.

The Weapons Emplacement Sites would be constructed to accommodate THAAD and Patriot launcher operations. Associated facilities would include hardstands, readiness buildings, missile and launcher facilities, and inclement weather storage. The Avenger/SLAMRAAM operations are mobile units. Weapon platform siting is classified and is assessed in Classified Appendix L to this Draft EIS/OEIS. This classified information will be reviewed by regulatory agency personnel with the appropriate security clearance.

## 2.6 RELATED ACTIONS – UTILITIES AND ROADWAY PROJECTS (GUAM)

The proposed military buildup on Guam associated with the relocation of the Marines, the Navy aircraft carrier berthing, and Army AMDTF would increase demands on power, potable water, and wastewater utilities. The proposed actions would also affect the remaining life of the solid waste facilities currently on Guam. For purposes of this EIS/OEIS, utilities actions are considered “related actions”, to be implemented as a result of the proposed actions. To meet the estimated future demand resulting from the proposed actions, interim, basic, and long-term alternatives for certain utilities were developed and are presented in Volume 6. The four utilities evaluated are listed below:

- Power
- Potable Water
- Wastewater
- Solid Waste

The alternatives presented may be either interim alternatives to meet immediate needs; basic alternatives to meet both immediate and long term needs; and long term alternatives that would meet needs beyond the temporary surge of the proposed relocation. In addition, while interim and basic alternatives are addressed with known or project-specific information, long term alternatives are dealt with more generally at programmatic level. The proposed interim utility alternatives presented in Volume 6 bridge the gap between existing conditions and final long-term utility solutions. This approach anticipates that long-term alternatives may not be implemented in time to accommodate the Marine Corps relocation schedule. However, interim alternatives and basic alternatives would be readily available for pursuit upon signature of the Record of Decision (ROD).

Some long-term solutions have not been finalized since it is anticipated that that special purpose entities will be formed to operate, manage, upgrade or develop utility plants and associated infrastructure such as collection or distribution systems. The precise manner in which these private business entities would operate is not known but the Navy anticipates they will receive financing from the Government of Japan (GOJ) under the agreement reached between the U.S. and Japan regarding relocation of Marines from Okinawa to Guam. The Navy will not exercise any authority or control over the SPEs but is committed to facilitate discussions between GOJ, the Special Purpose Entities (SPE) and Guam to focus SPE efforts on addressing utility impacts associated with the short-term construction work force and long term population growth. For example, private entities would develop, construct, and manage a power plant. The U.S. government would then agree to purchase utilities from that plant as a fee that provides payback to the SPE on its investment. Given that these SPEs have yet to be formed, these long-term solutions are not currently defined in detail. Therefore, they are presented as “conceptual” alternatives and are addressed as long-term alternatives. Long-term utility alternatives would require further NEPA-tiered and/or supplemental documentation; tiered NEPA documents would be procedurally related to the large-scale proposals to implement long-term solutions.

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Volume 6 evaluates the related action pertaining to utilities and roadway improvements on Guam. The Guam Road Network (GRN) is comprised of the non-military roadway system on the island of Guam. Construction of the GRN is required to provide mission-critical transportation infrastructure as part of the planned construction, training, and operations associated with the Marines, Navy, and Army proposed actions. Improvements to the roadway network are needed to allow efficient and safe access to military lands for construction of facilities and to accommodate both military-related and projected organic (ongoing) traffic growth on Guam. Without improved roads and bridges, the movement of people, materials, equipment, and waste associated with construction and operations would result in congestion. Additionally, the resultant wear and tear on existing roads could severely limit the construction schedule if these roadway and bridge projects are not implemented. Proposed improvements to the GRN would result in roadway strengthening, bridge replacement, increasing roadway capacity, roadway realignment (Route 15), providing new access, and enhancing roadway safety in response to construction for military buildup and growth.

## 2.7 CONSTRUCTION

This subsection discusses the construction aspects of the proposed actions and alternatives. Based on the estimates of the project planners, the proposed actions would result in approximately \$12 billion, in 2008 dollars, worth of construction occurring on Guam between 2010 and 2016. Although the desired completion date for Marine relocation is by 2014, the construction would likely continue to 2016.

The physical environment is primarily affected during the construction phase due to the actual physical aspects of construction. Construction would typically include (1) demolition, site clearing and grubbing, and grading; (2) horizontal layouts including placing infrastructures and roadways; and (3) vertical building including building of facilities, structures, housing, and related uses such as parks, training areas, and landscaping. Construction activities are typically short-term and in most cases would be completed in a 1- to 2-year period. However, because construction would likely occur in different geographical areas concurrently, the impacts, especially when considering commonly used facilities, such as roads, utilities, landfill locations, ports, and workers' housing, would have individual as well as a cumulative impact. See Volume 7, Potential Mitigation, Preferred Alternatives' Impacts, and Cumulative Impacts, for more information.

### 2.7.1 Overview

#### 2.7.1.1 Military Construction Funding

Military construction funding would be used for a significant portion of the construction for the proposed actions. The Congressional Armed Services Committees specify military construction funding by state/territory, installation, and project in the actual statutory language. Once the funds are appropriated, they can be spent over a five year period. This form of funding provides much greater flexibility than operations and maintenance funding that must be obligated (spent) for the year appropriated. This flexibility provides the opportunity to control the construction award/construction rate to adaptively manage the impacts of the construction on Guam. Volume 7, Chapter 2 discusses the control of the construction rate as a mitigation measure.

#### 2.7.1.2 Value and Schedule

The proposed actions would be constructed over a six year period: 2010 - 2016.

Construction values have been calculated for each year, for each DoD component, and for the related actions direct and indirect impacts. The schedule and values are summarized in Table 2.7-1.

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**Table 2.7-1. Unconstrained Construction Values**

<i>Year</i>	<i>Marine Corps</i>	<i>Navy</i>	<i>Army</i>	<i>Related Actions</i>	<i>Totals</i>
2010	\$424,780,371	\$0	\$0	\$99,666,667	\$524,447,038
2011	\$1,022,986,846	\$61,320,000	\$0	\$217,666,667	\$1,301,973,512
2012	\$1,647,695,494	\$81,760,000	\$0	\$483,560,000	\$2,213,015,494
2013	\$2,108,773,907	\$81,760,000	\$0	\$532,293,333	\$2,722,827,241
2014	\$2,034,326,311	\$61,320,000	\$241,581,604	\$468,293,333	\$2,805,521,248
2015	\$1,409,617,662	\$0	\$241,581,604	\$202,400,000	\$1,853,599,266
2016	\$523,758,878	\$0	\$0	\$54,000,000	\$577,758,878
Total	\$9,171,939,469	\$286,160,000	\$483,163,208	\$2,057,880,000	\$11,999,142,677

Note: The above are in 2008 dollars.

Source: NAVFAC Pacific 2009.

### 2.7.1.3 Locations

The primary locations of Marine Corps, Navy, and Army, utilities and road widening construction are identified in Table 2.7-2, Table 2.7-3, Table 2.7-4, Table 2.7-5, and Table 2.7-6.

**Table 2.7-2. Primary Locations of Marine Corps Construction**

<i>Facility</i>	<i>Location</i>	<i>Alternative</i>
Main Cantonment	Finegayan (NCTS & South)	Alternatives 1, 2, 3, & 8
	NCTS (Potts Junction)	
	Former FAA	Alternatives 1, 2, & 8
	Harmon Annex	Alternative 1
	Air Force Barrigada	Alternatives 3 & 8
	Navy Barrigada	Alternative 3
Marine Corps Airfield North Ramp	Andersen AFB	Alternatives 1, 2, 3, & 8
Training Facility	Andersen South	Alternatives 1, 2, 3, & 8
Munitions Storage	Fena NMS	Alternatives 1, 2, 3, & 8
Munitions Storage Area 1 Storage	Andersen AFB	Alternatives 1, 2, 3, & 8
Air Embarkation	Andersen AFB	Alternatives 1, 2, 3, & 8
Victor Wharf Embarkation	Naval Base Guam	Alternatives 1, 2, 3, & 8

**Table 2.7-3. Primary Locations of Navy Construction**

<i>Facility</i>	<i>Location</i>	<i>Alternative</i>
Aircraft Carrier Wharf Apra Harbor	Naval Base Guam	Alternatives 1 & 2

**Table 2.7-4. Primary Locations of Army Construction**

<i>Facility</i>	<i>Location</i>	<i>Alternative</i>
Army Missile Defense	Finegayan	Alternatives 1 and 3
	Navy Barrigada	Alternative 2
Munitions Storage	Andersen AFB	Alternatives 1, 2, & 3

**Table 2.7-5. Primary Locations of Utilities Construction**

<i>Facility</i>	<i>Location</i>	<i>Alternative</i>
Recondition Power Stations with transmission and distribution upgrades	Central & Northern Guam	Interim Alternatives 1, 2, & 3
New Power Plant at Cabras/Piti	Southern Guam	Long-Term Alternative 1
New Power Plant at Potts Junction	Northern Guam	Long-Term Alternative 2
Power Provided by the Guam Power Authority	TBD by the Guam Power Authority	Long-Term Alternative 3
Up to 22 New Water Supply Wells, Refurbish Some Existing Wells, water line improvements, ground level water tank	Northern, Central & Southern Guam	Basic Alternative 1
Up to 31 New Water Supply Wells, Refurbish Some Existing Wells, water line improvements, ground level water tanks	Northern, Central & Southern Guam	Basic Alternative 2
Development of Lost River	Southern Guam	Long-Term Alternative 1
Desalination	Northern and Central Guam	Long-Term Alternative 2
Dredging of Fena Reservoir	Southern Guam	Long-Term Alternative 3
Refurbish NDWWTP Primary Treatment and Upgrade to Secondary Treatment	Northern and Central Guam	Basic Alternative 1a
Refurbish Primary and Upgrade to Secondary Treatment at NDWWTP and include a New Sewer from Barrigada to NDWWTP	Northern and Central Guam	Basic Alternative 1b
New Stand-Alone DoD Only Primary/Secondary Treatment Plant on DoD Property With New Outfall and Collection System.	Northern & Central Guam	Long-Term Alternative 1
Utilize Existing Navy Landfill Until New Layon Landfill is Open	Southern Guam	Basic Alternative 1

**Table 2.7-6. Primary Locations of Roadway Widening Project Construction**

<i>Facility</i>	<i>Location</i>	<i>Alternative</i>
Route 3	Route 1 to Route 9 – North	Alternatives 1, 2, 3, & 8
Route 9	Route 3 to Andersen AFB – North	Alternatives 1, 2, 3, & 8
Route 8	Route 33 (east) to Route 1 – Central	Alternatives 1, 2, 3, & 8
Route 16	Route 10A to Sabana Barrigada – Central	Alternative 2
Route 8A	Route 16 to Air Force Barrigada – Central	Alternative 2
Route 25	Route 16 to Route 26	Alternatives 1, 2, 3 & 8
Route 26	Route 1 to Route 15	Alternatives 1, 2, 3 & 8
Route 28	Route 1 to Route 3	Alternatives 1, 2, 3 & 8

Dredging would be performed at two Apra Harbor locations:

- Sierra Wharf, Inner Apra Harbor - 508,877 cubic yards (389,064 cubic meters [m<sup>3</sup>]) of dredged material, including 2 ft of overdredge
- Aircraft Carrier Wharf , Outer Apra Harbor - 479,000 – 608,000 cubic yards (366,221 – 464,849 m<sup>3</sup>)

Five potential associated dredged material upland placement sites are located in the vicinity of Inner Apra Harbor. One or more would be selected for use during the dredging work.

- Polaris Point
- Public Works Center
- Field 3
- Field 4
- Field 5

Beneficial reuse of dredged material for use in local construction or other rehabilitation projects would be investigated. A proposed new EPA designated ocean dredged material disposal site would also be possibly used to receive suitable dredged material from Apra Harbor.

#### 2.7.1.4 Construction Requirements

The major construction categories would include demolition, clearing and grubbing, grading, structural concrete foundations, building envelope (structural, walls, roofs and insulation), finishes, and subsystems (electrical, plumbing and electrical).

Demolition would generate a significant volume of material. Asbestos, lead-based paint, and other materials would be assessed and appropriately handled and disposed of primarily on-island.

There is a recycling requirement for the proposed action. Discrete items such as doors, windows, cabinets, plumbing, and lighting fixtures can be re-used if removed for reuse. Metal components of rough-in systems, such as conduit and wire, pipe, and duct work can be recycled. Concrete can be crushed for re-use in new Portland cement and asphaltic concrete, and as aggregate base below footings, slabs, parking areas, and roads. The presence of paint on most of the existing concrete would affect how the concrete is prepared for use in re-use methods. The alkali content and presence of rebar in existing concrete would be addressed as a part of re-use plans. Emissions from a concrete crushing reuse facility would be controlled according to applicable statutes and regulations.

The clearing and grubbing would generate a mix of soil and organic material. Soil encountered is not expected to be contaminated; however, if it is within an area of known contamination or suspected contamination, the soils would be tested and, if contaminated, would likely be disposed of off-island.

In known uncontaminated areas, the possibility of allowing interested islanders to harvest plants that would be cleared is being considered; also, the contractor may be asked to set plants and trees aside for replanting and/or landscaping after the project is completed. The latter would allow existing indigenous and/or native plants already adapted to the area to be reused and reduce the need to purchase and use exotic plants. Other woody brush, such as tangantangan (*Leucaea leucocephala*), can be removed and used for mulch or open cooking fires. Based on Guam landfill requirements, green waste would be recycled and not placed in public landfills.

The proposed new Guam landfill is located in Layon, near the village of Inarajan. This new landfill is not intended for construction debris disposal but it can use construction debris in its operation (recycled into beneficial use). Construction debris that is not recycled would be directed to Guam Environmental Protection Agency-approved landfills. Grading generally would not create excess material. All clean soil and rock would likely be used on the originating site. Additionally, where possible, soil and rock would be stockpiled and used for other DoD construction projects. Reuse of the concrete, plant materials, clean soil, topsoil, and rock would constitute cost savings as well as promote recycling. Compaction of aggregate and soil would require water and where possible surface runoff water would be captured and used. Fill and/or engineered fill (aggregate or specific ratios of varying sizes) would likely be required but stockpiled material would be selected before new aggregate materials are purchased. Grading typically requires dust control and periodic or continuous watering may be needed. However, because rainfall occurs frequently (85 inches [215 centimeters] to 115 inches [235 centimeters] annually) in Guam and the humidity is high, continuous or frequent watering may not be needed. In order to save potable water resources, designers and contractors would consider captured runoff or brackish water use for water control. Stormwater Pollution Prevention Plans employing Best Management Practices would be prepared and implemented during the grading work.

All material used at the sites, with the exception of aggregate, clean soil, and topsoil would be imported from off-island. Because most of the construction materials used must be imported from off-island, the DoD would reuse demolition waste and recover and use plant materials, clean soil, topsoil, and rocks when effective. This would limit construction materials from off-island thus reducing the need to dispose of the recovered material in a landfill and the resources and facilities needed to ship materials to Guam.

Foundations, walls and roofs would be primarily concrete; some may be cast-in-place and some may be precast. Concrete batch plants would likely be set up on larger construction sites for cast-in-place construction and possibly precast facilities. On-site batch plants would require delivery of cement via specialty hopper trucks; aggregate via 18-20 cubic yard (14-15 cubic meter) dump trucks; and other minor ingredients of concrete (admixtures) primarily delivered in small bulk containers, sacks, and as liquid in drums.

Precast operation may also be set up at other sites that would require truck transportation of precast panels to the site. Some wall construction may use concrete masonry units, which would be fabricated in an off-site specialty yard. For smaller sites, and at some larger sites, concrete would be delivered in mixer trucks from commercial off-site concrete batch plants. All other 'post-structural' building and construction work would involve on-site workers installing delivered material.

**Table 2.7-7. Estimated Total and Off-island Construction Workers Needed for DoD Projects**

<i>Year</i>	<i>Marine Corps</i>	<i>Navy</i>	<i>Army</i>	<i>Related Actions</i>	<i>Totals</i>
2010	3,186	0	0	748	3,934
	2,624	0	0	615	3,239 (82%)
2011	7,627	460	0	1,633	9,720
	6,447	386	0	1,369	8,202 (84%)
2012	12,358	613	0	3,627	16,598
	10,589	525	0	3,100	14,214 (86%)
2013	15,816	613	0	3,992	20,421
	13,817	535	0	3,482	17,834 (87%)
2014	15,257	460	1,812	3,512	21,041
	13,329	401	1,580	3,063	18,373 (87%)
2015	10,572	0	1,812	1,518	13,902
	9,236	0	1,580	1,324	12,140 (87%)
2016	3,928	0	0	405	4,333
	3,432	0	0	353	3,785 (87%)

*Notes:* White rows represent the estimated total number of construction workers needed for DoD projects.

Shaded rows represent the estimated off-island construction workers needed for DoD projects. Parentheses represent the percentage of off-island construction workers compared to the total number of construction workers.

#### 2.7.1.5 Labor Force Requirement for DoD Projects

There would be a demand for construction-related labor for DoD projects between the years of 2010 and 2016. The estimated demand of total labor, off-island-sourced labor by year, and DoD component and related actions is shown in Table 2.7-7. The table presents unconstrained values.

There is an inadequate supply of labor available in Guam for all categories of work: management, supervision, skilled labor, and general labor. Management support during the past years of high construction activity (1990-1996) primarily came from the U.S., Japan, Korea, and Australia. It is reasonable that this historical pattern would be repeated for these proposed actions.

Historically, skilled, semi-skilled, and general labor primarily came from the Philippines and China but some skilled labor came from the other areas of the U.S. This historical pattern may be repeated, with at least two differing conditions:

- Early phases of the construction are expected to occur during reduced level of American and worldwide economic activity. This may cause jobs on Guam to be more attractive to Americans living in the continental U.S. than they were in the early 1990s.
- Use of Chinese labor in the 1990s included a high level of misrepresentation of workmen's skills. The nature of construction in China is such that skill levels in many cases are lower, and the knowledge required to execute the work do not match American style construction practices. There may be an effort by public and private entities to minimize, or even prevent such workers from being brought to Guam for the proposed actions.

Workers may be available from the CNMI and the Federated States of Micronesia. The skill level and knowledge of American construction practices are also limited in these groups. They have been used in the past with some success for labor type work but would be a numerically insignificant source of labor for the proposed actions, especially for skilled labor.

If adequate workers are not willing to travel from other parts of the U.S. to Guam to work, then foreign workers would be required to make up the shortfall. Legally, this is accomplished by issuing H-2B visas to workers from other countries, such as the Philippines. These visas are issued for specific projects and expire on completion of the work.

Although there is no conclusive method to determine where most of the off-island construction workers (under H-2B visas) would originate from, it is likely that a majority of these workers would be from the Philippines. This is because (1) Filipinos speak English, and their skill sets and construction knowledge and practice in the Philippines most closely match that of the U.S., when compared with any other nearby nations; (2) the proximity of the Philippines to Guam and the familiarity of cultural aspects on Guam; and (3) worldwide, Filipino workers represent the highest number of expatriate workers in other countries (approximately 2 million in 2008) with an estimated remittance sent back to the Philippines of \$3.2 billion (Government of the Philippines 2008).

The widespread employment of H-2B workers may lead to only a small number of workers from the U.S. mainland being employed on construction projects related to the proposed actions. U.S. mainland labor may be hesitant to work on Guam since Guam tends to have lower construction wages than other U.S. regions; the lower wages can, partially, be attributed to the availability of H-2B labor. However, the current economic downturn has resulted in substantial unemployment among construction workers on the U.S. mainland and these workers may look to Guam for employment opportunities. Also, Guam labor law guarantees that U.S. citizens get first priority in job placement.

#### 2.7.1.6 Work Force Housing

In the first half of the 1990s, several housing patterns developed for workers living on Guam. These patterns would likely continue to some extent during the proposed action.

Managers, supervisors, and skilled labor from elsewhere in the U.S., Australia, and other western nations primarily lived in single family housing or apartments, either with their families or sharing amongst single workers. American managers are not attracted to group housing within the U.S., although they do commonly live in such arrangements in other locations throughout the world.

Managers and supervisors from Asian countries mostly lived in shared housing, single family residences, or apartments. A few senior managers lived with their families.

H-2B workers lived in residential compounds provided by their employers or by a subcontracted arrangement. Guam law states that if housing is provided by employers and available for H-2B workers, H-2B workers must live in the provided housing. This would include housing provided by logistics housing and service providers, if such housing was offered as part of the employment contract. This was the practice in the early 1990s, and would likely be so for the proposed actions.

There is a long, successful history of H-2B housing on Guam; the GovGuam has an established permitting process in place, and it is well understood by the local contractors. There are approximately 17 previously used H-2B housing facilities on Guam, located primarily in Yigo, Dededo, and Tamuning municipalities; others are located in Agat, Barrigada, and Yona. These could be considered for renovation

and new permits, and if determined to be safe, placed in use as worker housing, dining, and recreation facilities. However, these would not likely be adequate for all required non-local housing.

Due to the need to bring off-island workers to Guam over a short period, there are logistics and other companies planning several worker housing and related support facilities. These companies would then offer these facilities for use by construction contractors. This approach may not be adopted by all contractors, but it has enough potential advantages that it would likely be one significant aspect of how workers are housed.

These facilities are currently planned for at least two locations: one is adjacent to Route 34 (west of Route 3) in an area near Punta Dos Amantes, and another is the former Tumon Village Apartments (near Route 1) in Upper Tumon. In addition, there is a current project to renovate and utilize former barracks at the former Agana Naval Air Station.

#### 2.7.1.7 Work Force Transportation

Contractors and/or providers of housing would provide transportation to and from construction sites via buses and vans. The common workday schedule would begin work early in the day (perhaps by 5 a.m. or 6 a.m.) in order to minimize affects on typical morning commuter traffic. The length of workdays would vary over location and time, and multiple work shifts may be used on some projects of the proposed actions. The affect of afternoon worker transportation on afternoon commuter traffic would be much more variable.

#### 2.7.1.8 Work Force Meals

This need would be met by food preparation and dining facilities associated with each housing area. Workers would likely carry their lunches with them when they travel to the job sites in the morning.

#### 2.7.1.9 Work Force Medical Care

Regular non long-term care could be provided as part of the overall housing support operations, (such as first aid and primary care). Initial trauma and hospitalization would be provided on-island. Long-term care would likely be provided off Guam, including transportation of persons to their home of record, for long-term and serious medical care.

#### 2.7.1.10 Work Force Recreation

Recreation would be provided at the housing operations. Workers would be provided transportation by the housing operators or take mass transit to public recreation and entertainment facilities.

### 2.7.2 Construction Material

#### 2.7.2.1 Aggregate Requirements

Aggregate material is used in construction. It is used in concrete and pavement mixes. It can also be used a backfill. Aggregate material is divided into either coral or basalt based on its origin. It can be further divided based on its intended use.

#### Transportation

There are four sites on Guam from which coral aggregate material can be gathered. Basalt aggregate would be imported to Guam via ocean transportation through the Port of Guam and then transported in trucks to specific Guam locations.

### Stockpile

Some aggregate material may require stockpiling off-site, depending on the availability of an area at the construction sites. Several areas may be available for off-site stockpiling such as Harmon Industrial Park, and currently undeveloped areas in Yigo and Dededo. Some on-site stockpiling may be possible at Finegayan, North Ramp, and the wharf. On-site stockpiling is less costly for the government if an area is available.

#### 2.7.2.2 Equipment Requirements

Import of grading equipment, trucks, cranes, and small equipment would occur. There is equipment on-island but currently not enough for the proposed actions especially if multiple construction projects occur during the same time period.

#### 2.7.2.3 Fuel Requirements

All powered equipment would be powered by diesel, gasoline, and possibly propane fuel.

## CHAPTER 3.

# SUMMARY OF ALTERNATIVES

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### 3.1 INTRODUCTION

As described in Chapter 1, the proposed actions consists of: (1) development and construction of facilities and infrastructure to support approximately 8,600 Marines and their dependents relocated from Okinawa to Guam, and development and construction of facilities and infrastructure to support training and operations on Guam and Tinian for the relocated Marines; (2) construction of a new deep-draft wharf with shoreside infrastructure improvements creating the capability in Apra Harbor, Guam to support a transient nuclear powered aircraft carrier; and (3) development and construction of facilities and infrastructure on Guam to support relocating approximately 600 military personnel and their dependents to establish and operate an Army Air and Missile Defense Task Force (AMDTF). Each major project component (i.e., the U.S. Marine Corps on Guam, the Marine Corps on Tinian [Commonwealth of the Northern Mariana Islands {CNMI}], the Navy, and the Army) has its own sets of alternatives. In addition, related actions include utilities and roadway projects necessary to implement the proposed actions. Below is a summary of alternatives for each of the major project components.

#### ***Chapter 3:***

##### *3.1 Introduction*

##### *3.2 Marine Corps Relocation – Guam (Volume 2)*

##### *3.3 Marine Corps Relocation – Training on Tinian (Volume 3)*

##### *3.4 Aircraft Carrier Berthing (Volume 4)*

##### *3.5 Army Air and Missile Defense Task Force (Volume 5)*

##### *3.6 Utilities & Roadway Projects -Guam (Volume 6)*

## 3.2 MARINE CORPS RELOCATION – GUAM (VOLUME 2)

Alternatives 1, 2, 3, and 8 were retained for analysis and are being evaluated for the development and construction of facilities and infrastructure to support Marine Corps relocation on Guam for the Main Cantonment and training are shown in Figure 3.2-1. (Alternatives 4 through 7 were eliminated from further consideration through the process discussed in Volume 2.) Figure 3.2-2 depicts proposed actions and alternatives carried forward for the Marine Corps Relocation on Guam. In addition to the Main Cantonment alternatives, there are alternatives for firing ranges for live and inert ordnance, range access roads, and non-firing maneuver ranges. Figure 3.2-1 also displays the locations for waterfront projects in Apra Harbor, ammunition storage locations at the Naval Munitions Site (NMS) and Munitions Storage Area, Andersen Air Force Base (AFB), and aviation facilities and embarkation facilities at Andersen AFB. These projects are associated with the relocation and remain the same for all alternatives. The land parcels for the Main Cantonment alternatives are compared in Table 3.2-1.

### 3.2.1 Alternative 1

Alternative 1 includes: Naval Computer Telecommunications Station (NCTS) Finegayan (1,090 acres [ac] [441 hectares {ha}]), South Finegayan (290 ac [117 ha]), acquisition or long-term leasing of Federal Aviation Administration (FAA) land (680 ac [275 ha]), and acquisition or long-term leasing Harmon Annex (326 ac [132 ha]), for a total of 2,386 ac [966 ha]. Of the total Overlay Refuge (2,095 ac [848 ha]) in the Finegayan area, this alternative would develop approximately 29% (599 ac [242 ha]). The Overlay Refuge that is managed pursuant to a Memorandum of Agreement with the United States Fish and Wildlife Service (USFWS) (Navy and USFWS 1994). “Overlay Refuge” refers to specific areas on Guam that were established through a cooperative program centered on the protection of endangered and threatened species and other native flora and fauna, maintenance of native ecosystems, and the conservation of native biological diversity in cooperation with Guam Department of Agriculture Division of Aquatic and Wildlife Resources that is consistent with the national defense mission of the Navy and Air Force.

The site of this alternative would be bounded to the north by Andersen AFB Northwest Field (NWF) and Route 3; and on the west by a cliff line (within Department of Defense [DoD] property) and the Philippine Sea. It would be bounded to the east by limited residential development and to the south by the Harmon Village residential area (non-DoD property). Although DoD property extends to the waterline, the Main Cantonment area would be situated on the upper area of NCTS Finegayan and would not encroach on the cliff line leading to the ocean.

### **Chapter 3:**

#### *3.1 Introduction*

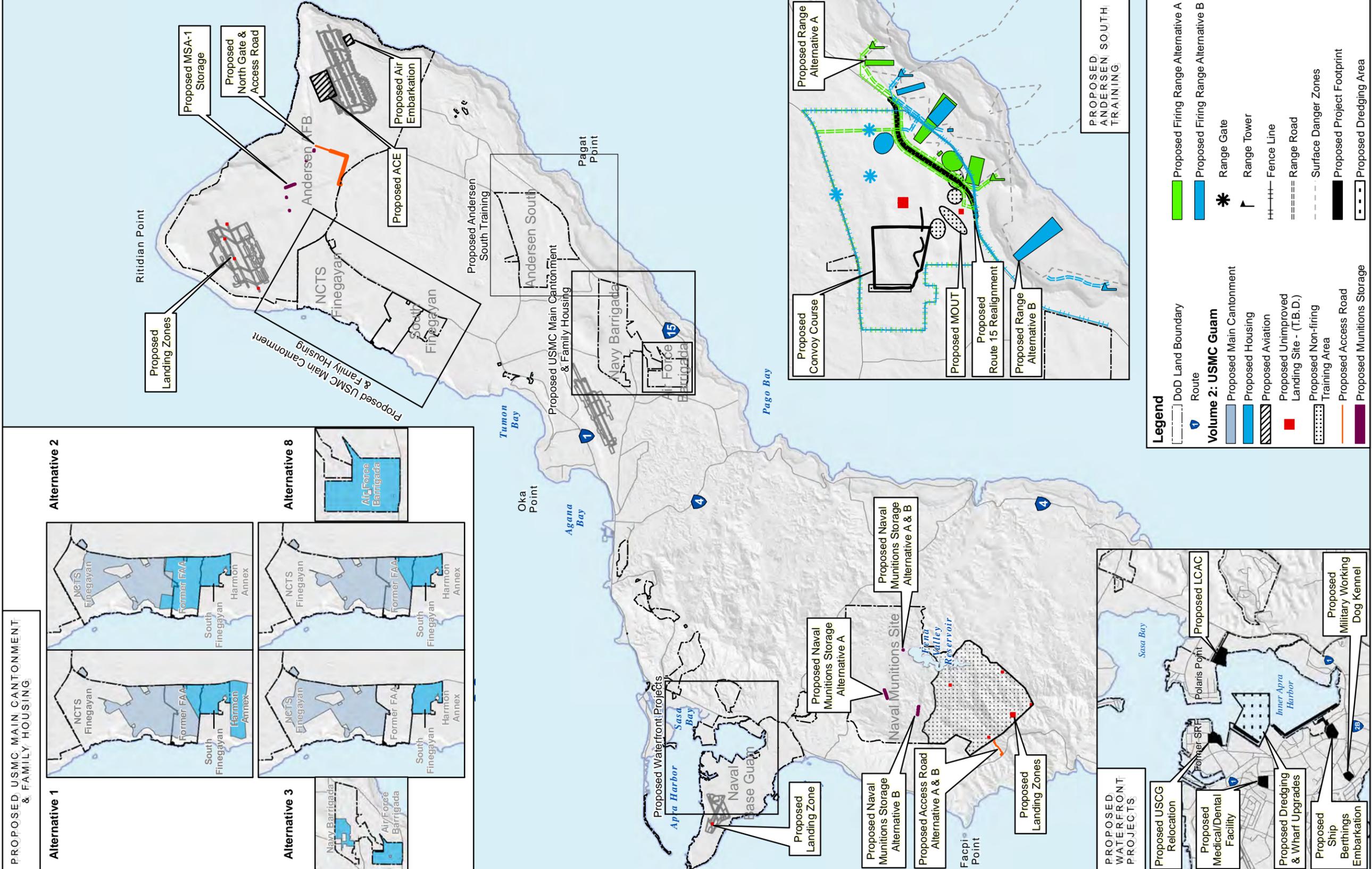
#### *3.2 Marine Corps Relocation – Guam (Volume 2)*

#### *3.3 Marine Corps Relocation – Training on Tinian (Volume 3)*

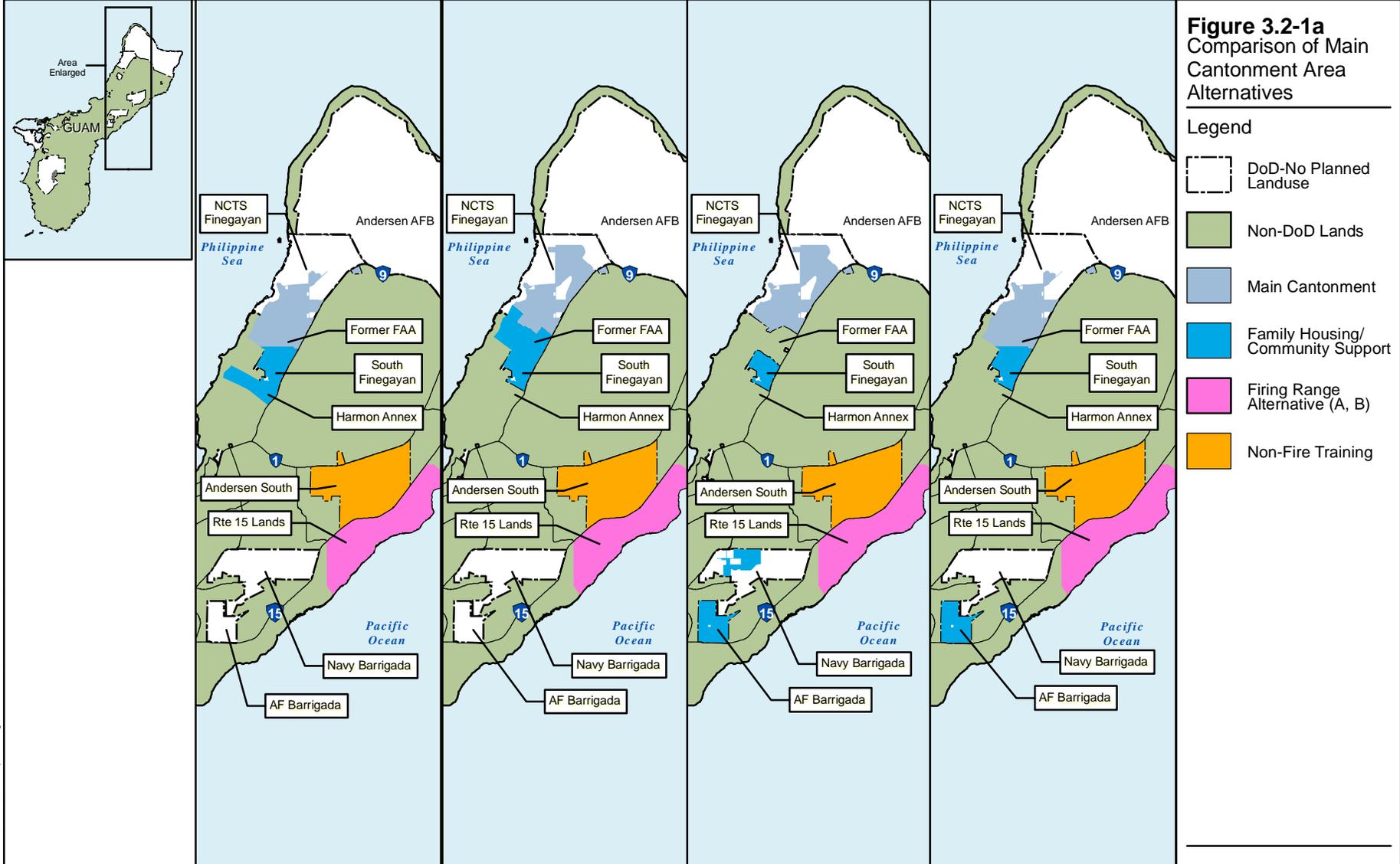
#### *3.4 Aircraft Carrier Berthing (Volume 4)*

#### *3.5 Army Air and Missile Defense Task Force (Volume 5)*

#### *3.6 Utilities & Roadway Projects -Guam (Volume 6)*



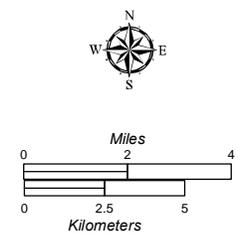
**Figure 3.2-1**  
**Volume 2: Marine Corps Relocation Alternatives (Guam)**



**Figure 3.2-1a**  
Comparison of Main Cantonment Area Alternatives

- Legend**
- DoD-No Planned Landuse
  - Non-DoD Lands
  - Main Cantonment
  - Family Housing/Community Support
  - Firing Range Alternative (A, B)
  - Non-Fire Training

Alternative	1	2	3	8
<b>Characteristics</b>				
Percent of Overlay Refuge lost at NCTS Finegayan	29	53	53	29
Fomer FAA (acres)	680	680	0	680
Former Harmon Annex (acres)	326	0	0	0



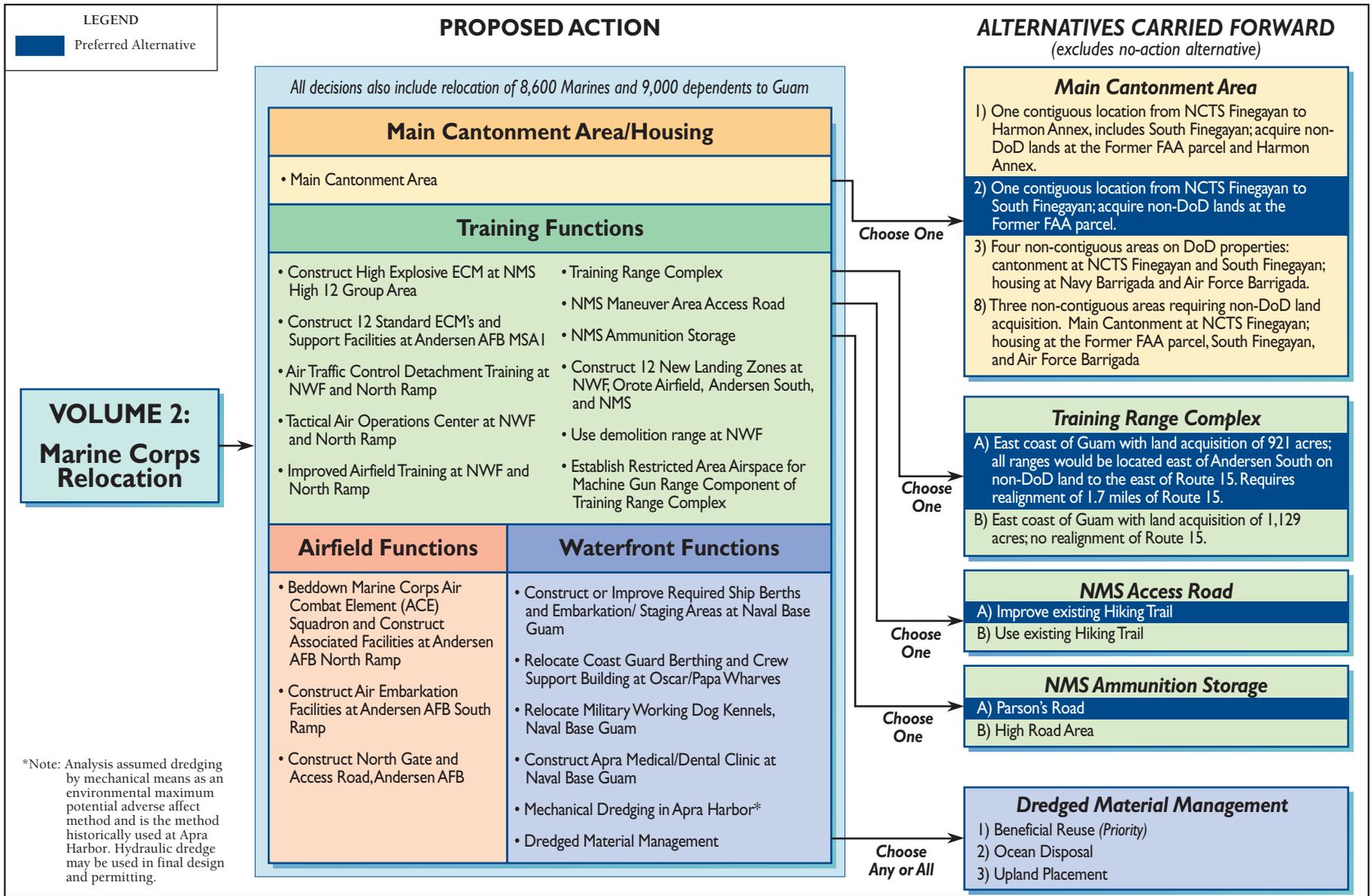


Figure 3.2-2  
 Summary of Proposed Action and Alternatives Carried Forward for the Marine Corps Relocation, Guam

**Table 3.2-1. Summary of Parcels for Each Main Cantonment Alternative (Alternative 2–Preferred)**

Alternative	Total Land (ac/ha)	DoD Lands				Private Lands		Finegayan Overlay Refuge <sup>1</sup> (ac/ha)
		NCTS Finegayan <sup>1,2</sup> (ac/ha)	South Finegayan <sup>3</sup> (ac/ha)	Navy Barrigada <sup>2</sup> (ac/ha)	Air Force Barrigada <sup>4</sup> (ac/ha)	Former FAA <sup>5</sup> (ac/ha)	Harmon Land <sup>6</sup> (ac/ha)	
1	2,386/966	1,090/441	290/117			680/275	326/132	599/242
2	2,580/1,044	1,610/652	290/117			680/275		1,106/448
3	2,707/1,096	1,610/652	290/117	377/153	430/174			1,106/448
8	2,490/1,008	1,090/441	290/117		430/174	680/275		599/242

Notes: <sup>1</sup>Based on calculations for vegetation cover in Chapter 10.

<sup>2</sup>Proposed developed area only.

<sup>3</sup>Assumes entire parcel is developed.

<sup>4</sup>Excludes Next Generation Weather Radar (NEXRAD).

<sup>5</sup>Total acquisition area, including planned open space.

<sup>6</sup>Total acquisition area.

### 3.2.2 Alternative 2 (Preferred Alternative)

Alternative 2 includes: NCTS Finegayan (1,610 ac [652 ha]), South Finegayan (290 ac [117 ha]), and acquisition or long-term leasing of FAA land (680 ac [275 ha]), for a total of 2,580 ac [1,044 ha]. Of the total Overlay Refuge (2,095 ac [848 ha]) in the Finegayan area, this alternative would develop approximately 53% (1,106 ac [448 ha]). Under Alternative 2, the Main Cantonment area would also be configured such that all facilities would be on one contiguous parcel of land, including the family housing area.

The site of Alternative 2 would be also bounded on the north by Andersen AFB NWF, and by Route 3; on the west by a cliff line (within DoD property) and the Philippine Sea. It would be bounded to the east by a limited residential development and to the south by the Harmon Village residential area (non-DoD property).

### 3.2.3 Alternative 3

Alternative 3 includes: NCTS Finegayan (1,610 ac [652 ha]), South Finegayan (290 ac [117 ha]), with portions of the military housing and quality of life (QOL) services at Air Force and Navy Barrigadas (430 and 377 ac, respectively [174 ha and 153 ha]), for a total of 2,707 ac (1,096 ha). Of the total Overlay Refuge (2,095 ac [848 ha]) in the Finegayan area, this alternative would develop approximately 53% (1,106 ac [448 ha]). Under this alternative, the Main Cantonment area would be configured such that the housing would not be contiguous to the Main Cantonment area.

This configuration of the Main Cantonment area would be bounded on the north by Andersen AFB, on the west by a cliff line and the Philippine Sea, by Route 3 and limited residential development to the east, and by the former FAA area to the south. South Finegayan would be used for housing; it is located south of the former FAA area. The Navy and Air Force Barrigadas are located approximately 9 miles (mi) (14 kilometers [km]) from the proposed Main Cantonment area on the eastern side of Guam. Navy and Air Force Barrigadas have Route 15 bordering the site to the east, and Routes 10 and 16 bordering the site to the west. Navy Barrigada is largely used to support DoD communications high frequency transmitting activities. Headquarters facilities for the Guam Army National Guard are located adjacent to Navy land at the Barrigada. The Navy Barrigada is 1,418 ac (574 ha) and of that, 250 ac (101 ha) are available for development. The Air Force Barrigada is a 433-ac (175-ha) parcel used by the Air Force to accommodate

the Next Generation Weather Radar weather satellite receiver. It has been estimated that 400 ac (162 ha) of this parcel would be available for development. The Navy Barrigada and the Air Force Barrigada are currently connected by the Navy Golf Course. The golf course would be removed if it was determined that the two parcels should be connected.

### **3.2.4 Alternative 8**

Alternative 8 includes: NCTS Finegayan (1,090 ac [441 ha]), acquisition or long-term leasing of FAA land (680 ac [275 ha]), South Finegayan (290 ac [117 ha]), and portions of military housing and QOL services at Air Force Barrigada (430 ac [174 ha]), for a total of 2,490 ac (1,008 ha). Of the total Overlay Refuge (2,095 ac [848 ha]) in the Finegayan area, this alternative would develop approximately 29% (599 ac [242 ha]). In Alternative 8, as with Alternative 3, the Main Cantonment area would be configured such that a portion of the housing would not be contiguous to the Main Cantonment area.

### **3.2.5 Additional Projects Required for Marine Corps Relocation – Guam**

#### **3.2.5.1 Training Range Complex**

##### Range Alternative A (Preferred)

Alternative A for the Training Range Complex includes all ranges located east of Andersen South on non-DoD land to the east of Route 15 as shown on Figure 3.2-1. The total land area, not including submerged lands, is estimated at 921 ac (373 ha). This alternative would require the realignment/reconstruction of a portion of Route 15. An approximately 1.7 mi (2.8 km)-long segment of Route 15 would be relocated to the north into Andersen South and 1.2 mi (2.0 km) of this roadway would be constructed at an average elevation of 15 feet (ft) (4.5 meters [m]) below grade.

##### Range Alternative B

Range Alternative B would not require realignment of Route 15, and the land for this alternative is estimated at 1,129 ac (426 ha) as shown on Figure 3.2-1. Land acquisition or long-term leases would be required for control of lands associated with the Surface Danger Zones (SDZs) east of Route 15. Special Use Airspace (SUA) (restricted area) would also be required above the SDZs in the vicinity of Route 15.

#### **3.2.5.2 Naval Munitions Site Access Road Alternatives (NMS Access Road Alternative A Preferred)**

The access road alternatives are located outside NMS property and would require acquisition of a right-of-way extending approximately 300 ft (91 m) from the road centerline. The access road alternatives are as follows:

- NMS Access Road Alternative A: This existing hiking trail is 0.4 mi (0.6 km) long, would cover 0.8 ac (0.3 ha) at a 16-ft (5-m) width, and includes no stream crossings. Under Alternative A, the trail would be improved.
- NMS Access Road Alternative B: Under this alternative, the road would not be improved and would be used by foot traffic.

Alternative A would include clearing of vegetation for the road shoulder for a total estimated width of disturbance of 50 ft (15 m). Locked, unmanned gates would be placed at the beginning of the access road and at the entrance to the NMS. These access road alternatives are depicted on Figure 3.2-1..

##### Ammunition Storage Alternatives

The candidate sites for ammunition storage in support of the proposed action are the NMS and Andersen AFB Munitions Storage Area (MSA)

### NMS (Preferred Alternative)

One high explosive earth-covered magazine (ECM) (providing up to 500,000 pounds [lb] net explosive weight [NEW] storage) would be sited in the High 12 Group area of NMS that contains other high explosive magazines. Ten other ECMs would be co-located at the NMS based on operational efficiency. Two locations were considered as potential sites for these ECMs: the Parson's Road Area and the High Road Area.

- Parson's Road Area (Ammunition Storage Alternative 1-Preferred): this area has two configurations for layout of 10 ECMs that would allow for a combined capacity of 360,000 lb NEW.
- High Road Area (Ammunition Storage Alternative 2): this area has one site that could accommodate 10 ECMs in a configuration that would allow for a combined capacity of 500,000 lb NEW.

Construction of one ECM at the High 12 Group area and 10 additional ECMs at either the Parson's Road (Alternative 1) or High Road (Alternative 2) area would occur within existing munitions area boundaries and would not alter the existing ESQD arcs at NMS. Land use constraints at each site include natural resources and proximity to other magazines. Although there may be opportunities for using older magazines with appropriate upgrades or replacing existing magazines with the proposed ECMs, the EIS/OEIS evaluates the development of ammunition storage facilities in currently undeveloped areas. This does not preclude replacement or upgrade alternatives within implementation, but rather conservatively estimates potential impacts for the purposes of this EIS/OEIS.

### Andersen AFB MSA

Within MSA 1 (Andersen AFB), one alternative was identified for the placement of ECMs, work areas, administrative/inert warehouse building, and storage for ammunition, chaff, and flares. The proposed ECMs would be sited within the existing grid of ECMs at MSA while the storage for ammunition, chaff, and flares would be satisfied with an addition to an existing building. All proposed munitions facilities would be sited within existing munitions area boundaries and would not alter the existing ESQD arcs. An administration and inert warehouse facility would be constructed in the southeast corner of the MSA adjacent to the Air Force 36<sup>th</sup> Munitions Squadron administrative facility. Land use constraints at each site include natural resources and proximity to other ammunition storage facilities and infrastructure.

As with the NMS alternative, although there may be opportunities for using older magazines with appropriate upgrades or replacing existing magazines with the proposed ECMs, the EIS/OEIS evaluates development of the ECMs in currently undeveloped areas. This does not preclude replacement or upgrade alternatives within implementation, but rather conservatively estimates potential impacts for the purposes of this EIS/OEIS.

#### 3.2.5.3 Airfield Projects

Airfield projects associated with the Marines Relocation would be located at Andersen AFB North Ramp and include: beddown and construction of associated facilities for the Marine Corps Air Combat Element; construction of air embarkation facilities, construction of entry control point and associated facilities to control access to the Marine Corps facilities at the airfield (refer to Figure 3.2-1).

#### 3.2.5.4 Waterfront Projects

Waterfront projects associated with the Marines Relocation would be consolidated with existing Marine Corps and U.S. Navy activities at Apra Harbor. Certain infrastructure improvements and facility relocations, however, would be required to accommodate the additional functions. Some wharfs would be refurbished and infrastructure improved. An embarkation and staging area would also be created. The U.S. Coast Guard ship berthing and crew support building would be relocated to a different wharf. The Apra Medical/Dental Clinic would be relocated on Naval Base Guam. The Military Working Dog Kennel would also be relocated. These proposed projects are depicted on Figure 3.2-1.

### 3.3 MARINE CORPS RELOCATION – TRAINING ON TINIAN (VOLUME 3)

Alternatives evaluated for training on the island of Tinian related to the Marine Corps relocation are shown in Figure 3.3-1. Figure 3.3-2 shows the proposed action and alternatives carried forward for the Marine Corps Relocation training actions on the island of Tinian.

#### 3.3.1 Alternative 1 (Preferred Alternative)

This alternative includes construction of four ranges within the leaseback area on the island of Tinian. Three ranges would be oriented north, with the fourth, the Platoon Battle Course, oriented northeast. All four range footprints partially overlay the FAA Mitigation Area. The associated notional SDZs for these ranges would overlap to a large extent. They would extend over the FAA Mitigation Area, DoD “No Wildlife Disturbance” Mount Lasso escarpment area, and a segment of Broadway. No SDZs would extend beyond land and into the ocean.

#### 3.3.2 Alternative 2

Under the Range Training Area Alternative 2, no ranges would be located south of 90th Avenue. Compared to Alternative 1 there would be more range footprint encroachment on the FAA Mitigation Area. The Platoon Battle Course would be located south of its Alternative 1 location. The orientation would be aligned toward the northeast, similar to Alternative 1. The Field Firing Range surface danger zone (SDZ) would extend over the ocean.

#### 3.3.3 Alternative 3

Alternative 3 configuration is notably different from Alternatives 1 and 2 due to three of the ranges being sited south of 90<sup>th</sup> Avenue and north of West Field. These three ranges are the Field Firing Range, Combat Pistol/Multipurpose Firearms Qualification Course and the Rifle KD Range. All three ranges are sited along the southern Military Lease Area boundary and aligned generally to the north. None of these range footprints is within the FAA Mitigation Area. None of the SDZs under Alternative 3 extend into the ocean.

#### **Chapter 3:**

3.1 Introduction

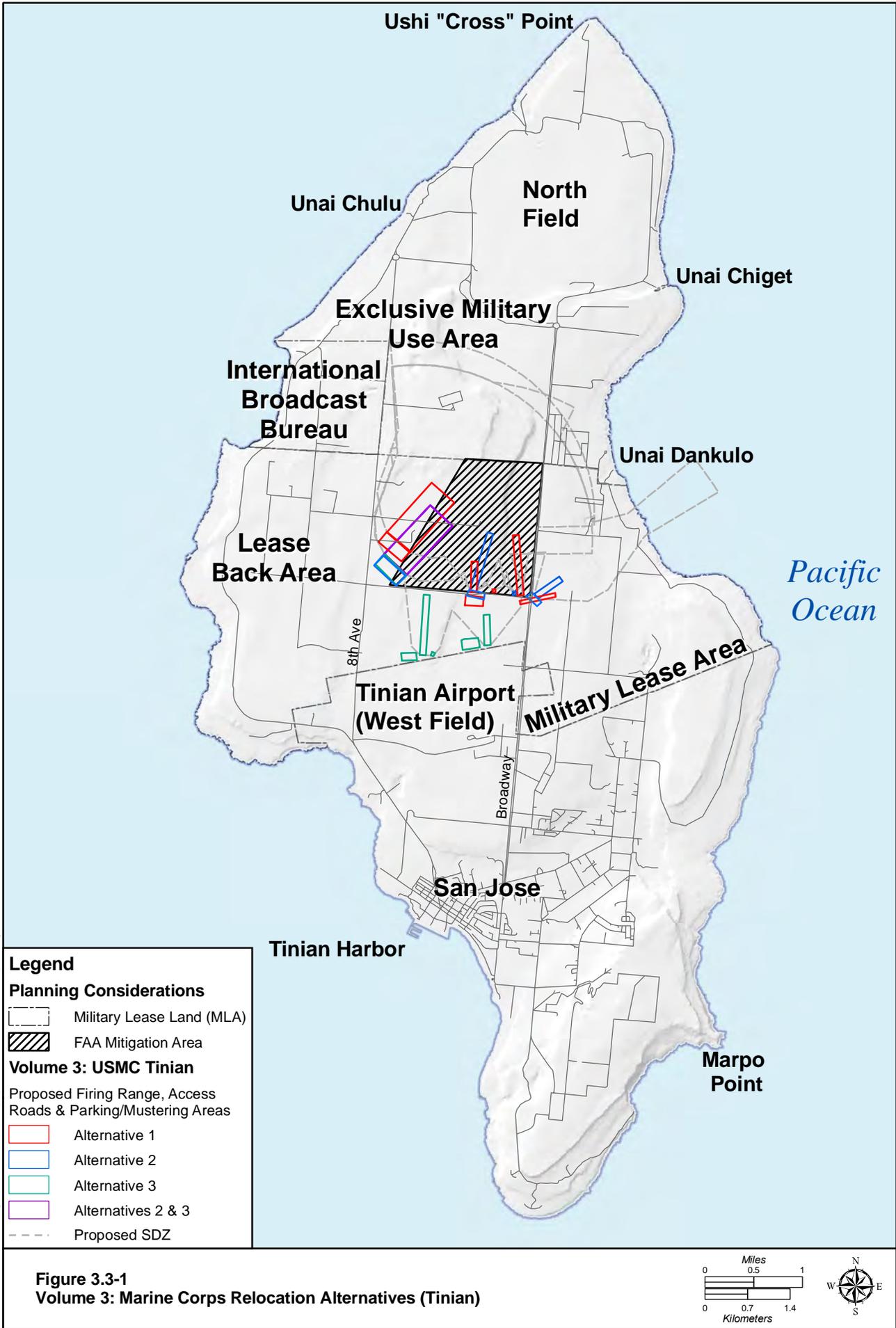
3.2 Marine Corps Relocation – Guam (Volume 2)

3.3 Marine Corps Relocation – Training on Tinian (Volume 3)

3.4 Aircraft Carrier Berthing (Volume 4)

3.5 Army Air and Missile Defense Task Force (Volume 5)

3.6 Utilities & Roadway Projects -Guam (Volume 6)



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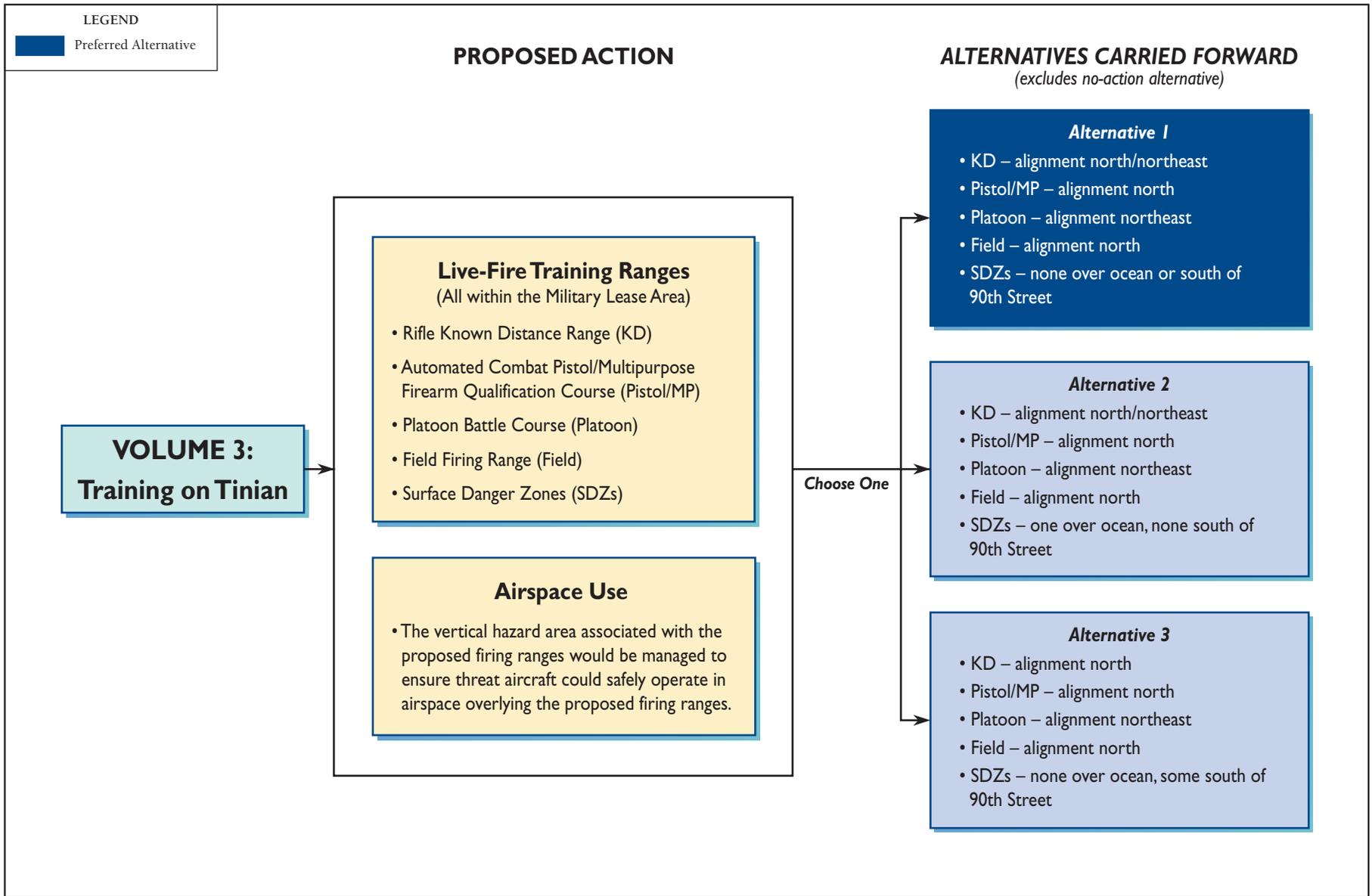


Figure 3.3-2  
 Summary of Proposed Action and Alternatives Carried Forward for the  
 Marine Corps Relocation – Training, Tinian

### 3.4 AIRCRAFT CARRIER BERTHING (VOLUME 4)

Alternatives being evaluated for the aircraft carrier berthing are shown in Figure 3.4-1. The flow chart shown in Figure 3.4-2 depicts the proposed action and alternatives carried forward for the Navy aircraft carrier berthing on Guam.

The wharf alternatives are located on either side of the entrance to the Inner Apra Harbor channel. The wharf concepts would be pile supported marginal wharfs that would be constructed parallel to shore. Each shares the same navigational approach through Outer Apra Harbor. The aircraft carrier would come through Outer Apra Harbor using the minimum power required to achieve forward motion and assisted by tugboats to provide lateral guidance. Ship navigation into the new berth would require a turning basin in front of the wharf. The turning basin for either alternative are similarly aligned.

#### 3.4.1 Alternative 1 (Preferred)

This alternative would construct a new deep-draft wharf at Polaris Point with shoreside infrastructure improvements. The existing Outer Apra Harbor Channel would be widened to 600 feet (ft) (183 meters [m]) with minor adjustments to channel centerline and navigational aids. No dredging would be required to widen the Outer Apra Harbor east-west portion of the navigation channel. There is a sharp southward bend in the existing channel toward Inner Apra Harbor that would require widening to 600 ft (183 m) and dredging to meet aircraft carrier requirements. A new ship turning basin would be established that would require dredging to -49.5 ft (-15.1 m) Mean Lower Low Water plus 2 ft (.6 m) overdraft. The turning basin would be located near the wharf and north of the Inner Apra Harbor entrance channel. The eastern edge of the new wharf would not have the required full 600 ft (183 m) of distance from the wharf face and care would be necessary to nudge the carrier into position. However, Commander, U.S. Pacific Fleet requirements show that ships can safely navigate the reduced clearance at this site.

Shoreside facilities would include utilities upgrades to meet 100% of aircraft carrier requirements. A new Port Operations support building and various utility buildings would be constructed on a staging area at the wharf. There would be an area established for morale, welfare, and recreation activities and vehicle parking.

The aircraft carrier would be assisted by tug boats, pivoted within the minimum radius turning basin to be aligned starboard (i.e., right side when facing the front or “bow” of the ship) to the wharf and the bow would be facing east. On departure, the aircraft carrier would follow the same route.

### **Chapter 3:**

3.1 *Introduction*

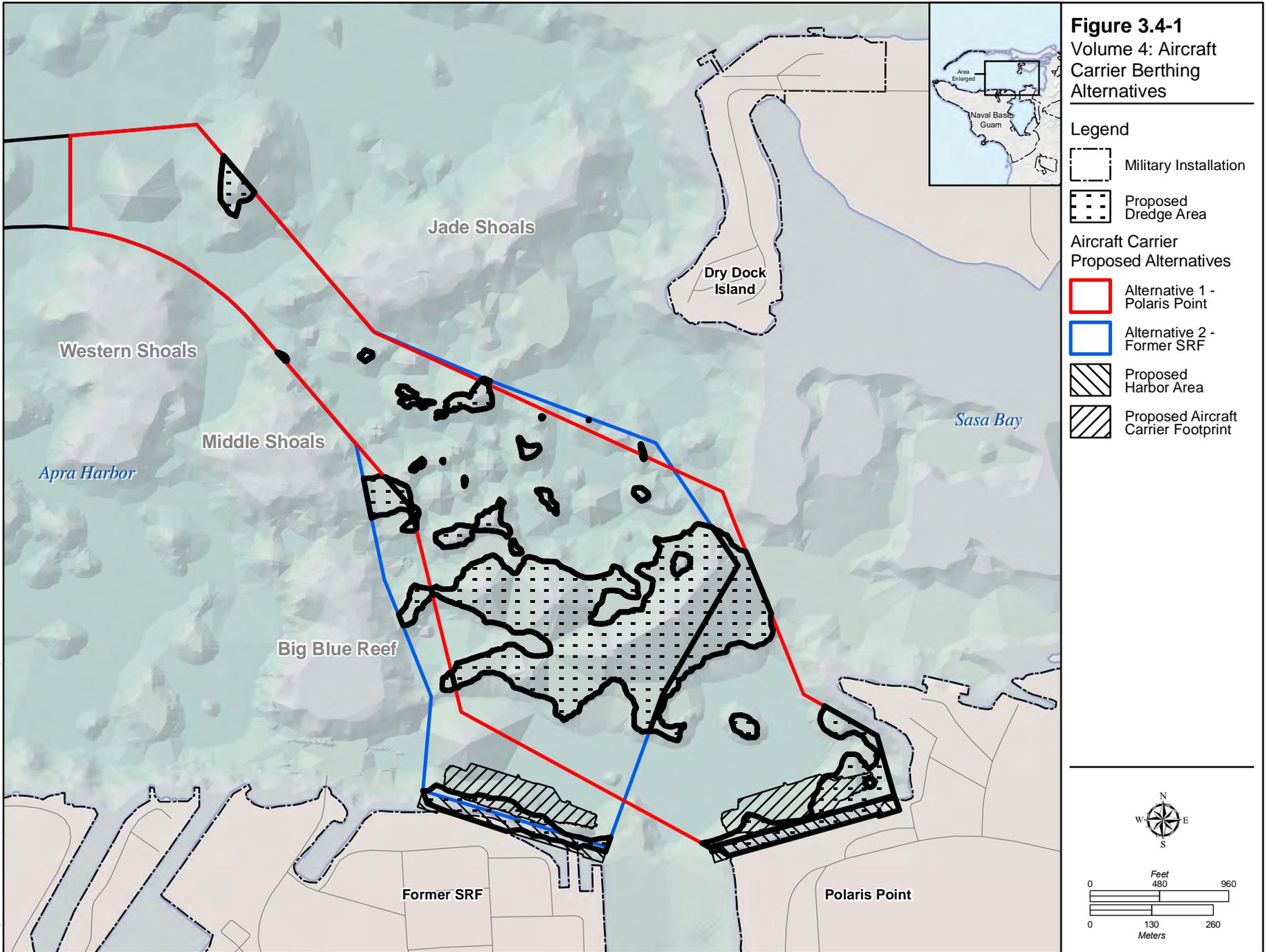
3.2 *Marine Corps Relocation – Guam (Volume 2)*

3.3 *Marine Corps Relocation – Training on Tinian (Volume 3)*

3.4 *Aircraft Carrier Berthing (Volume 4)*

3.5 *Army Air and Missile Defense Task Force (Volume 5)*

3.6 *Utilities & Roadway Projects -Guam (Volume 6)*



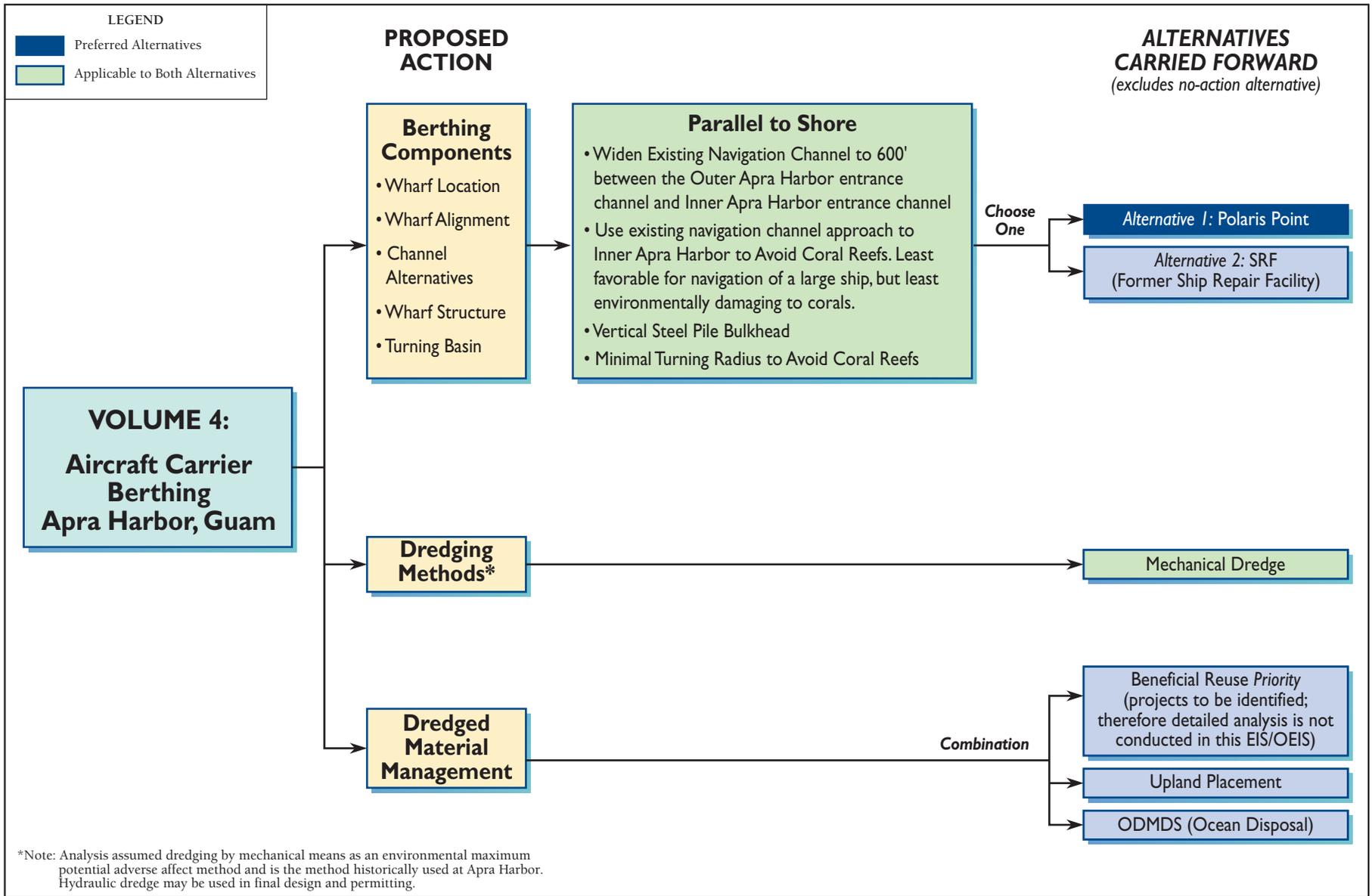


Figure 3.4-2  
Summary of Proposed Action and Alternatives Carried Forward for the  
Navy Aircraft Carrier Berthing, Guam

### Least Environmentally Damaging Practicable Alternative

In addition to being the preferred alternative, Alternative 1 is considered the *least environmentally damaging practicable alternative* (LEDPA). Specifically, § 404(b)(1) of the Clean Water Act stipulates that no discharge of dredged or fill material into waters of the United States, which include wetlands, shall be permitted if there is a practicable alternative which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant environmental consequences. Furthermore, an alternative is considered practicable if it is available and capable of being implemented after taking into consideration cost, existing technology, and logistics in light of overall project purposes. Section 404 permitting is applicable to the proposed new berthing of the aircraft carrier on Guam for the proposed work within Apra Harbor. Permitting decisions are based on guidelines (“404(b)(1) Guidelines”) developed jointly with the USEPA that are now part of the Code of Federal Regulations (40 CFR 230).

A Section 404 Permit would be applied for and obtained prior to construction. An analysis was conducted during this EIS/OEIS process to illustrate the screening and selection process used in the development of this EIS/OEIS has identified the LEDPA consistent with the § 404(b)(1) guidelines (see Volume 4, Section 2.4.1). Following the Record of Decision, the Navy would provide design level detail with its permit application in accordance with the USACE permit process. The USACE would make the final LEDPA determination during its Section 404 permit decision.

#### **3.4.2 Alternative 2**

This alternative would have the aircraft carrier berthing at the former Ship Repair Facility. The Outer Apra Harbor channel improvements would be as described in Alternative 1. The turning basin location would be similar to Alternative 1, with a slight shift to the west. Unlike Alternative 1, the full 600-ft (183-m) approach distance in front of the wharf would be accommodated. The aircraft carrier would be pivoted within the minimum radius turning basin to be aligned starboard to the wharf and the bow would be facing east. On departure, the aircraft carrier would follow the same route with assistance by tugs.

### 3.5 ARMY AIR AND MISSILE DEFENSE TASK FORCE (AMDTF) (VOLUME 5)

The Navy and Army have conferred and identified three action alternatives and the no-action alternative for consideration of proposed Army AMDTF facilities and operations on Guam. The two lesser components (the munitions storage magazines and the weapons emplacement sites) each have their own set of alternatives. All three alternatives, discussed below, have been evaluated with regard to stated purpose and need for the proposed AMDTF action and are shown in Figure 3.5-1. Figure 3.5-2 shows the proposed action and alternatives carried forward for the AMDTF facilities on Guam.

The preferred alternative for the proposed headquarters/housing facilities is Alternative 1, the preferred alternative for munitions storage is Alternative 1, and the preferred alternative for the weapons emplacement sites is Alternative 4. Weapon platform siting is classified and is assessed in a Classified Appendix to this public EIS/OEIS. This classified information will be reviewed by regulatory agency personnel with the appropriate security clearance.

#### 3.5.1 Headquarters/Housing Alternative 1 (Preferred)

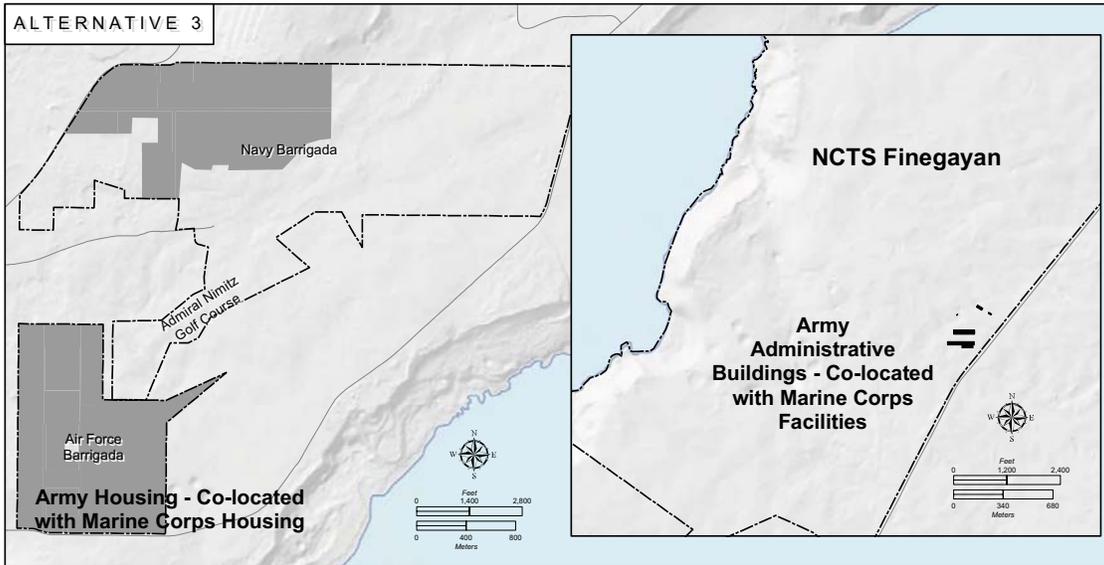
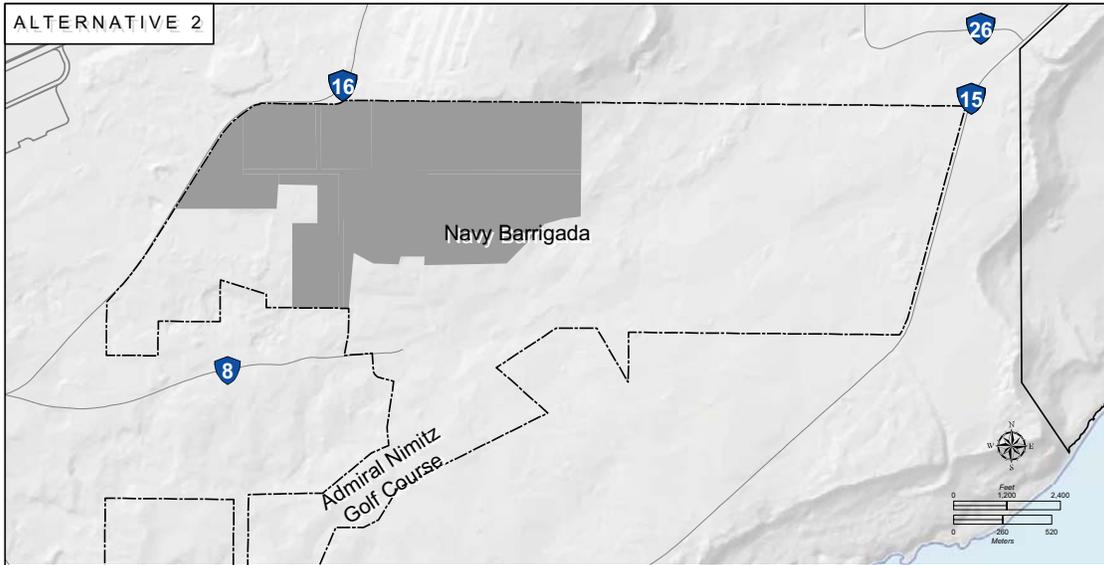
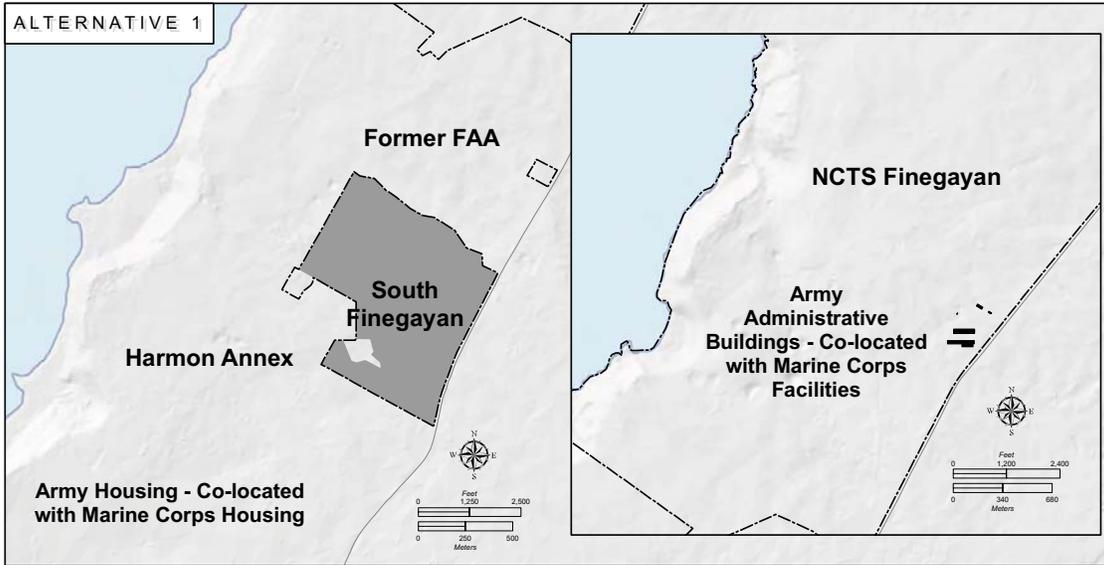
- The Administrative/HQ, maintenance operations, and housing facilities for unaccompanied personnel would be co-located in the eastern portion of NCTS Finegayan and would be compatible with adjacent proposed Marine Corps land uses.
- Accompanied personnel housing facilities would be co-located with the Main Cantonment housing areas in South Finegayan, while recreational and QOL facilities would be co-located within and adjacent to the housing areas.
- The administrative/HQ, maintenance, housing, and QOL portions of this alternative are included in U.S. Marine Corps Alternatives 2 (refer to Volume 2).
- Munitions storage would be in three non-contiguous areas near the Habitat Management Unit (HMU).

#### 3.5.2 Headquarters/Housing Alternative 2

- The administrative/HQ and maintenance operations would not be co-located with the Marine Corps Main Cantonment facilities. The administrative/HQ and maintenance element would be located within Navy Barrigada adjacent to the NCTS antenna farms.
- Accompanied and unaccompanied personnel housing facilities would be located within Navy Barrigada, with recreational and QOL facilities included in the housing areas.
- The administrative/HQ, maintenance, housing, and QOL portions of this alternative are included in U.S. Marine Corps Alternatives 1, 2 and 8 (refer to Volume 2).
- Munitions storage magazines would be consolidated at one site that is located north of B Avenue.

#### **Chapter 3:**

- 3.1 *Introduction*
- 3.2 *Marine Corps Relocation – Guam (Volume 2)*
- 3.3 *Marine Corps Relocation – Training on Tinian (Volume 3)*
- 3.4 *Aircraft Carrier Berthing (Volume 4)*
- 3.5 *Army Air and Missile Defense Task Force (Volume 5)*
- 3.6 *Utilities & Roadway Projects -Guam (Volume 6)*



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**Figure 3.5-1**  
**Volume 5: Army AMDTF Alternatives**

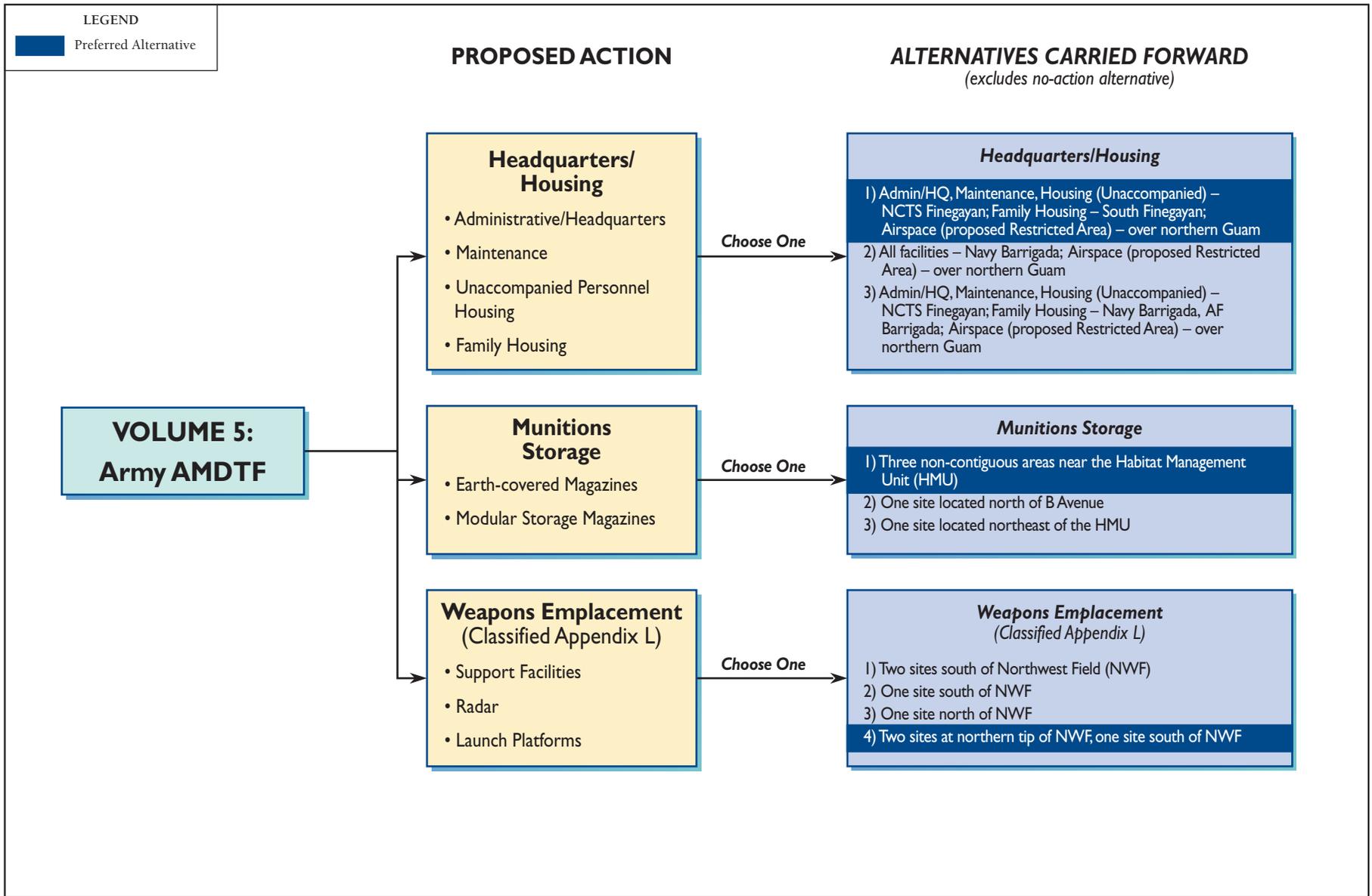


Figure 3.5-2  
 Summary of Proposed Action and Alternatives Carried Forward for the  
 Army Air and Missile Defense Task Force, Guam

### 3.5.3 Headquarters/Housing Alternative 3

- The administrative/HQ, maintenance, and unaccompanied personnel housing would be co-located in the eastern portion of NCTS Finegayan and would be compatible with adjacent proposed U.S. Marine Corps land uses.
- Accompanied personnel housing facilities would be co-located with Marine Corps housing within Navy Barrigada and Air Force Barrigada. Recreational and QOL facilities would be included in the housing areas.
- The administrative/HQ, maintenance, housing, and QOL portions of this alternative are included in U.S. Marine Corps Alternative 3 (refer to Volume 2).
- Munitions storage magazines would be consolidated at a site located northeast of the HMU and an unnamed road.

### 3.5.4 Munitions Storage Alternatives

#### 3.5.4.1 Munitions Storage Alternative 1 (Preferred Alternative)

Munitions storage would be in three non-contiguous areas near the HMU at MSA 1 at Andersen AFB. The proposed magazines would be constructed at these two sites (requiring demolition) and at a third site located east of the HMU across an unnamed roadway. The area of ground disturbance including a buffer (and excluding the existing munitions storage facilities) is estimated 6.6 ac (2.7 ha).

#### 3.5.4.2 Munitions Storage Alternative 2

Munitions storage magazines would be consolidated at one site that is located north of B Avenue at MSA 1. The area of ground disturbance including a buffer is estimated 2.7 ac (1.1 ha).

#### 3.5.4.3 Munitions Storage Alternative 3

Munitions storage magazines would be consolidated at a site located northeast of the HMU and an unnamed road at MSA 1. The area of ground disturbance including a buffer is estimated 2.7 ac (1.1 ha).

### 3.5.5 Weapons Emplacement Alternatives (Analysis in Classified Appendix)

Four alternatives exist near NWF at Andersen AFB for the weapons emplacement sites. The general areas of the proposed weapons emplacement sites are not classified, but the proposed configurations within the areas are classified. Detailed information on the weapons emplacements is contained in a Classified Appendix (Appendix L) that is only available to regulatory agency reviewers with the appropriate security clearance.

### 3.5.6 Airspace

During Terminal High Altitude Area Defense radar operation, there is a potential hazard to military and civilian aircraft. Therefore, proposed Special Use Airspace (SUA) would be located along and off the northwest coast of Guam. The SUA would consist of a proposed Restricted Area to accommodate hazards associated with THAAD radar operations. The proposed Restricted Area (to be called R-7205) would be from the surface up to 22,000 ft (6,700 m) above mean sea level (Flight Level [F220) and would be activated based on Federal Aviation Administration (FAA) approved airspace periods required for system maintenance, training, certification, and contingency operations. Planned preventive maintenance would require a minimum continuous period of 45 minutes daily Monday-Friday. Training and certification periods would be processed to the FAA for approval to use the R-7205 airspace. The FAA would issue a Notice to Airmen prior to scheduled use of the airspace.

### 3.6 UTILITIES AND ROADWAY PROJECTS – GUAM (VOLUME 6)

Alternatives being evaluated for the utilities projects and roadway projects on Guam are described below. Figure 3.6-1 shows the proposed action and alternatives carried forward for utilities on Guam.

#### 3.6.1 Power

##### 3.6.1.1 Interim Alternative 1 (Preferred)

Interim Alternative 1 would recondition existing combustion turbines and upgrade transmission and delivery (T&D) systems and would not require new construction or enlargement of the existing footprint of the facility. This work would be undertaken by the Guam Power Authority (GPA) on its existing permitted facilities. Reconditioning would be made to existing permitted facilities at the Marbo, Yigo, Dededo No. 1, and Macheche combustion turbines. These combustion turbines are not currently being used up to permit limits. T&D system upgrades would be on existing above ground and underground transmission lines. This alternative supports Main Cantonment Alternatives 1 and 2 and Main Cantonment Alternatives 3 and 8 would require additional upgrades to the T&D system.

##### 3.6.1.2 Interim Alternative 2

Interim Alternative 2 is a combination of reconditioning of existing permitted GPA facilities, an increase in operational hours for existing combustion turbines, and upgrades to existing T&D systems. Interim Alternative 2 would not require new construction or enlargement of the existing footprint of the facility. Reconditioning would be performed on the existing permitted GPA facilities at the Marbo, Yigo, and Dededo combustion turbines. This alternative supports Main Cantonment Alternatives 1 and 2 and Main Cantonment Alternatives 3 and 8 would require additional upgrades to the T&D system.

##### 3.6.1.3 Interim Alternative 3

Interim Alternative 3 is a combination of reconditioning existing GPA permitted facilities at Marbo, Yigo, and Dededo and upgrades to the Department of Defense power plant at Orote. Upgrades would be made to existing T&D. The proposed reconditioning to the existing power generation facilities at Marbo, Yigo, and Dededo would not require new construction or enlargement of the existing footprint of the facility. For the Orote power plant, upgrades would include a new fuel storage facility to facilitate longer run times between refueling. This would disturb approximately one acre (4,047 square meters). This alternative supports Main Cantonment Alternatives 1 and 2 and Main Cantonment Alternatives 3 and 8 would require additional upgrades to the T&D system.

##### 3.6.1.4 Long-Term Alternative 1

New Power Plant at Cabras/Piti – Combine re-powering of existing generation units for peaking power, a new power plant for baseload power, and new/upgraded distribution system. The base load generation would be fueled by No. 6 oil or Liquefied Natural Gas (LNG) and peaking generation would be fueled by diesel oil No. 2 or LNG.

#### **Chapter 3:**

3.1 Introduction

3.2 Marine Corps Relocation –  
Guam (Volume 2)

3.3 Marine Corps Relocation –  
Training on Tinian (Volume  
3)

3.4 Aircraft Carrier Berthing  
(Volume 4)

3.5 Army Air and Missile  
Defense Task Force  
(Volume 5)

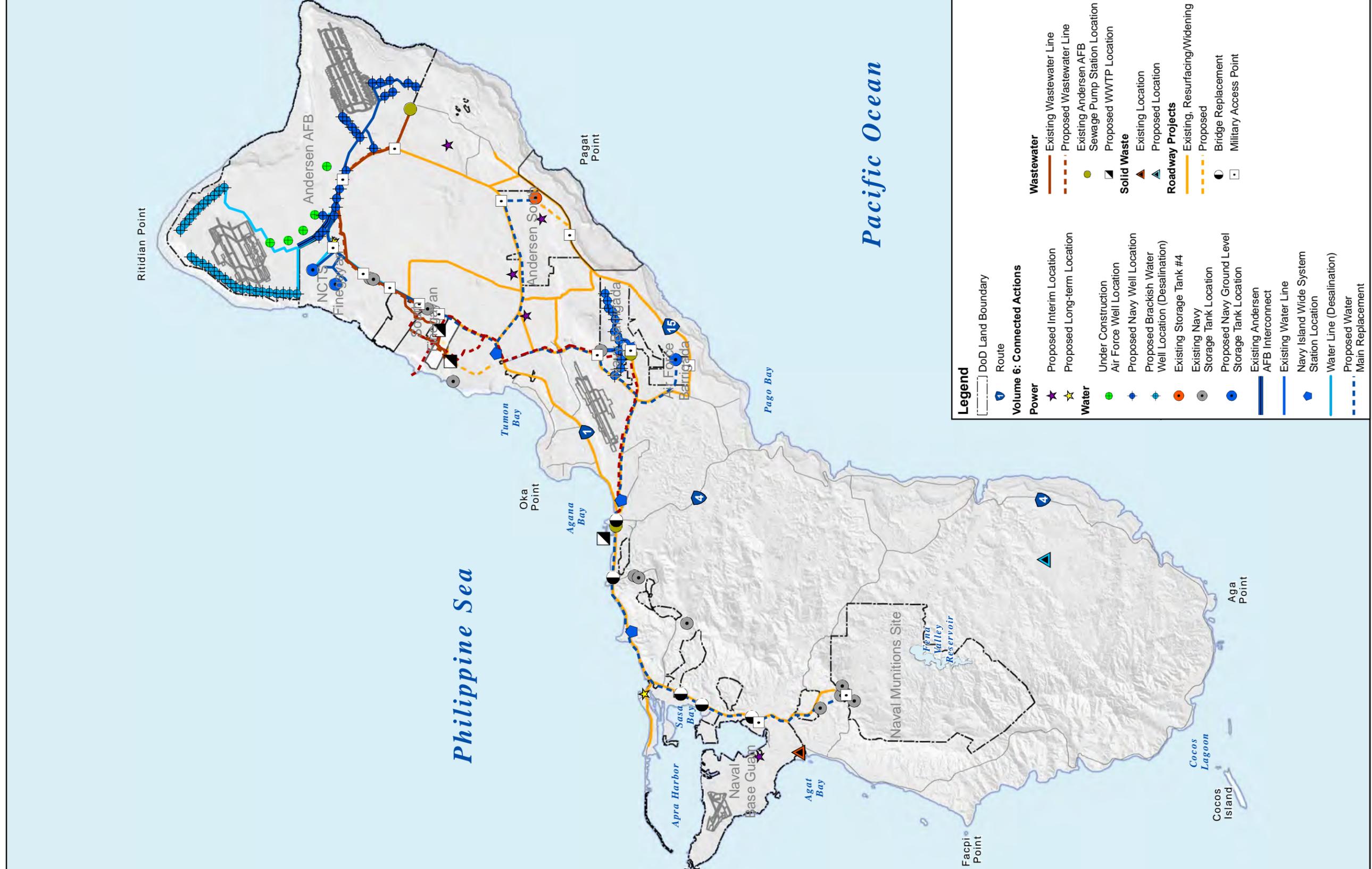
3.6 Utilities & Roadway  
Projects -Guam (Volume 6)

### 3.6.1.5 Long-Term Alternative 2

New Power Plant at Potts Junction – Combine re-powering of existing generation units for peaking power, a new power plant for baseload power, and new/upgraded distribution system. The base load generation would be fueled by No. 6 oil or LNG and peaking generation would be fueled by diesel oil No. 2 or LNG.

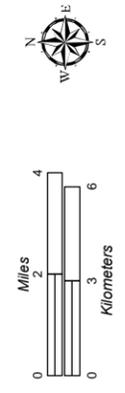
### 3.6.1.6 Long-Term Alternative 3

GPA would provide needed power via current and/or potential new facilities.



**Legend**

- DoD Land Boundary
- Route
- Volume 6: Connected Actions**
- Power**
  - Proposed Interim Location
  - Proposed Long-term Location
- Water**
  - Under Construction
  - Air Force Well Location
  - Proposed Navy Well Location
  - Proposed Brackish Water Well Location (Desalination)
  - Existing Storage Tank #4
  - Existing Navy Storage Tank Location
  - Proposed Navy Ground Level Storage Tank Location
  - Existing Andersen AFB Interconnect
  - Existing Water Line
  - Navy Island Wide System Station Location
  - Water Line (Desalination)
  - Proposed Water
  - Main Replacement
- Wastewater**
  - Existing Wastewater Line
  - Proposed Wastewater Line
  - Existing Andersen AFB Sewage Pump Station Location
  - Proposed WWTP Location
- Solid Waste**
  - Existing Location
  - Proposed Location
- Roadway Projects**
  - Existing, Resurfacing/Widening
  - Proposed
  - Bridge Replacement
  - Military Access Point



**Figure 3.6-1**  
**Volume 6: Related Actions – Utilities and Roadway Projects (Guam)**

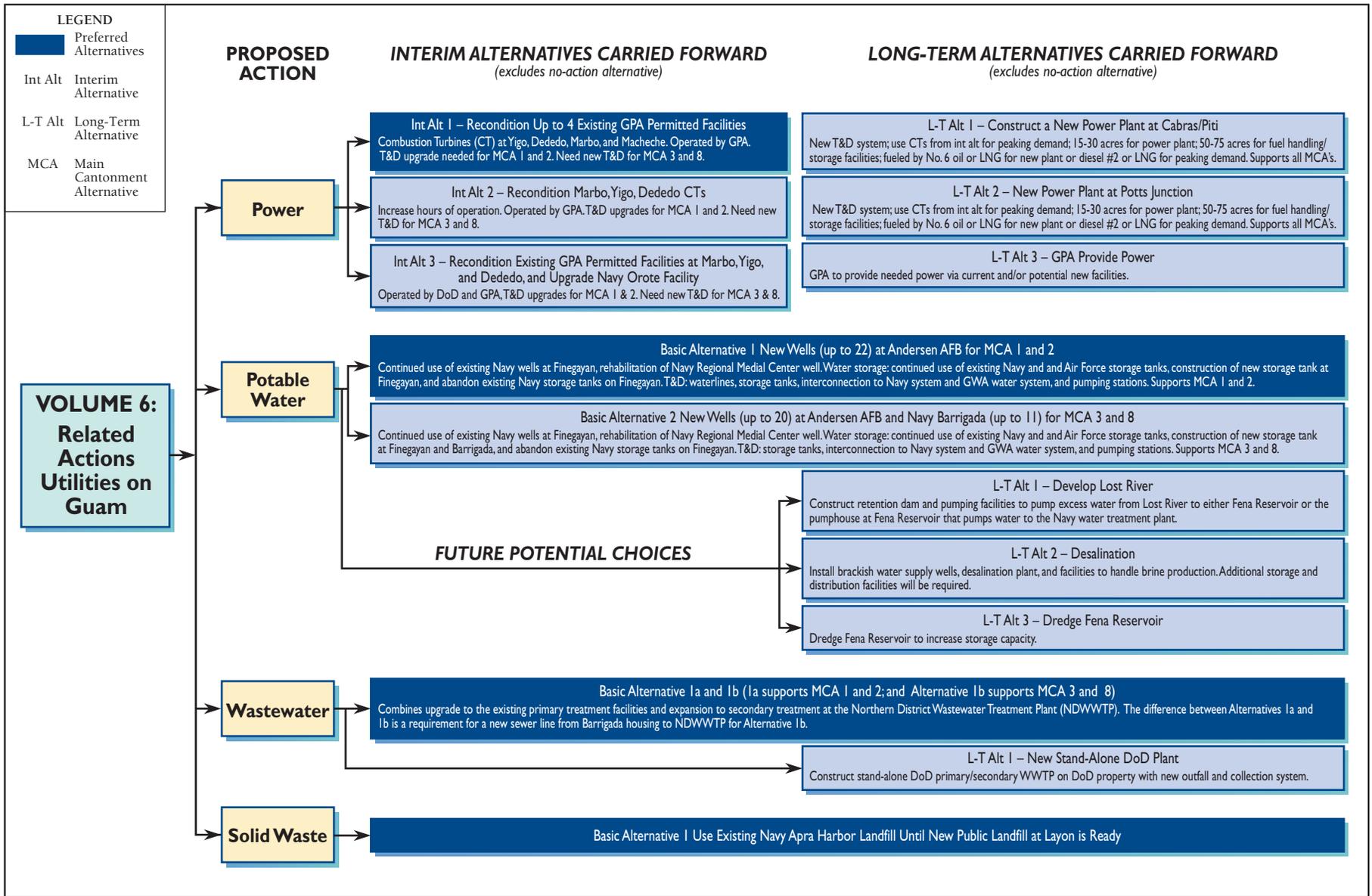


Figure 3.6-2  
Summary of Proposed Action and Alternatives Carried Forward for Utilities, Guam

### **3.6.2 Potable Water**

#### **3.6.2.1 Basic Alternative 1 (Preferred)**

Basic Alternative 1 would consist of installation of up to 22 new potable water supply wells at Andersen AFB, rehabilitation of existing wells, and interconnection with the Guam Waterworks Authority water system, and associated T&D systems. A new 5 million gallons (MG) (19 million liters [ML]) water storage tank would be constructed at ground level at Finegayan.

#### **3.6.2.2 Basic Alternative 2**

Basic Alternative 2 would consist of installation of up to 20 new potable water supply wells at Andersen AFB, up to 11 new potable water supply wells at Barrigada, rehabilitation of existing wells, interconnection with the Guam Waterworks Authority water system, and associated transmission and distribution systems upgrades. Additionally, new 3.6 MG (13.6 ML) and 1 MG (3.8 ML) water storage tanks would be constructed at ground level at Finegayan and Barrigada, respectively.

#### **3.6.2.3 Long-Term Alternative 1**

Long-term Alternative 1 would augment water supply by development of surface water resources in the south part of Guam, specifically the Lost River. A retention area would be dredged and water contained with sheetpile or other methods of damming to create an area to extract water via pumping. Excess water would be pumped either into Fena Reservoir for later use or directly to the pump house that pumps water from Fena Reservoir to the Navy water treatment plant.

#### **3.6.2.4 Long-Term Alternative 2**

Long-term Alternative 2 would augment water supply by desalination of brackish water which requires the removal of salt water by reverse osmosis. This option would be implemented to meet projected DoD water demands in the event that the supply from freshwater wells is insufficient to meet DoD demand. Desalination plants produce liquid wastes (brine) that may contain the following constituents: high salt concentrations, chemicals used during defouling of plant equipment, and pretreatment residues. These byproducts can be discharged directly into the ocean as long as they are diluted with other discharges, such as cooling water from power plants, they can be discharged directly in to the sewer system, or it can be dried and disposed of in a landfill.

#### **3.6.2.5 Long-Term Alternative 3**

Long-term Alternative 3 is to dredge Fena Reservoir to restore the original design storage capacity. This would provide additional storage for use during the annual dry periods.

### **3.6.3 Wastewater**

#### **3.6.3.1 Basic Alternative 1a (Preferred) and 1b**

Basic Alternative 1 (Basic Alternative 1a supports Main Cantonment Alternatives 1 & 2; & Basic Alternative 1b supports Main Cantonment Alternatives 3 & 8) combines upgrade to the existing primary treatment facilities and expansion to secondary treatment at the Northern District Wastewater Treatment Plant (NDWWTP). The difference between Basic Alternatives 1a & 1b is a requirement for a new sewer line from Barrigada housing to NDWWTP for Basic Alternative 1b.

3.6.3.2 Long-Term Alternative 1

Long-term Alternative 1 would build a new separate DoD secondary treatment plant at the NDWWTP site to treat the DoD loads only. This would support Marine Corps Relocation – Guam Alternatives 1 and 2 in their entirety, and the Finegayan development for Guam Alternatives 3 and 8.

In addition to the above, a new separate DoD secondary treatment plant at the Hagatna WWTP site to treat the DoD loads only from Barrigada would be required to support Marine Corps Relocation – Guam Alternatives 3 and 8, if one of those would be chosen.

3.6.4 Solid Waste

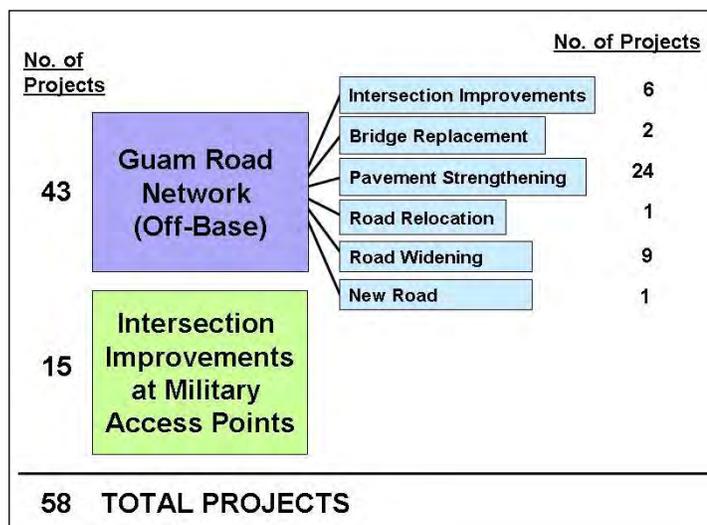
3.6.4.1 Basic Alternative 1 (Preferred)

The Preferred Alternative for solid waste would be the continued use of Navy Landfill at Apra Harbor until Layon Landfill is opened, which is scheduled for July 2011.

3.6.5 Roadway Projects

Individual projects have been identified from recent transportation and traffic studies on the island of Guam. These consist of 43 Guam Road Network (GRN) (off-base) projects and 15 intersection improvement projects at military access points (MAPs) (i.e., gates). The 43 GRN (off-base) projects are composed of six types of roadway improvements:

- Intersection improvement projects
- Bridge replacement projects (involving five bridges)
- Pavement strengthening (combined with roadway widening at some locations)
- Roadway relocation (Route 15)
- Roadway widening
- Construction of a new road (Finegayan Connection)



The 58 projects cover four geographic regions on Guam: North, Central, Apra Harbor, and South. Details as to the project specific characteristics of all the projects are contained in Volume 6. Not all 58 projects would be implemented since only a specific combination of roadway projects support each cantonment alternative.

- Main Cantonment Alternative 1: There are 49 GRN projects that would be required for Alternative 1. These projects include 29 pavement strengthening, 8 roadway widening, 14 intersection improvements (includes 8 MAPs), 5 bridge replacements, 1 road relocation, and 1 new road.
- Main Cantonment Alternative 2 (Preferred): A different combination of 49 GRN projects would be required for Alternative 2. These projects include 29 pavement strengthening, 8

roadway widening, 14 intersection improvements (includes 8 MAPs), 5 bridge replacements, 1 road relocation, and 1 new road.

- Main Cantonment Alternative 3: There are 51 GRN projects that would be required for Alternative 3. These projects include 29 pavement strengthening, 10 roadway widening, 17 intersection improvements (includes 11 MAPs), 5 bridge replacements, and 1 road relocation.
- Main Cantonment Alternative 8: A different combination of 51 GRN projects would be required for Alternative 8. These projects include 28 pavement strengthening, 8 roadway widening, 15 intersection improvements (includes 9 MAPs), 5 bridge replacements, 1 road relocation, and 1 new road.

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## CHAPTER 4.

# REFERENCES

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- Deputy Secretary of Defense. 2006. Memorandum regarding the Joint Guam Program Office. 25 August.
- DoD. 2006. Quadrennial Defense Review Report. <http://www.comw.org/qdr/qdr2006.pdf>. Accessed November 13 2008. February 6, 2006.
- FAA. 2008. Procedures for Handling Airspace Matters. FAA Order JO 7400.2G
- Government of the Philippines. 2008. 2007 and 2008 Survey on Overseas Filipinos. Income and Employment Statistics Division, Household Statistics Department. Philippines National Statistics Office. Manila, Philippines.
- Marine Corps. 2005. Marine Corps Order 3550- Policies and Procedures and Range and Training Area (RTA) Management. 2 July.
- NAVFAC Pacific. 2006. Sediment Characterization for Construction Dredging at Charlie, Sierra and SRF Wharves, Apra Harbor Guam. Prepared by Weston Solutions. August.
- NAVFAC Pacific. 2007. Scoping Meeting Summary Report, April 17-20, 2007. Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) for the Relocation of U.S. Marine Corps Forces to Guam, Enhancement of Infrastructure and Logistic Capabilities, Improvement of Pier/Waterfront Infrastructure for Transient U.S. Navy Nuclear Aircraft Carrier (CVN) at Naval Base Guam, and Placement of a U.S. Army Ballistic Missile Defense (BMD) Task Force in Guam. June. Honolulu, HI.
- NAVFAC Pacific. 2008. CVN-Capable Berthing Study, Apra Harbor. Prepared by TEC Inc Joint Venture in association with Halcrow HPA, Helber Hastert & Fee, HHMI Corporation, and Engineering Concepts. July.
- NAVFAC Pacific. 2009. Projected Population Associated with the Proposed Military Relocation Project on Guam. February. Honolulu, HI.
- Navy. 2006. Navy Memorandum for Assistant Secretary of the Navy, Subject: Requirements for National Environmental Policy Act Analysis of Marine Corps Relocation from Okinawa to Guam. 14 September .
- Navy. 2007a. 72 FR(44) 10186, March 7, 2007. "Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) for the Relocation of U.S. Marine Corps Forces to Guam, Enhancement of Infrastructure and Logistic Capabilities, Improvement of Pier/Waterfront Infrastructure for Transient U.S. Navy Nuclear Aircraft Carrier (CVN) at Naval Base Guam, and Placement of a U.S. Army Ballistic Missile Defense (BMD) Task Force in Guam."
- Navy. 2007b. 72 FR(86) 25272, May 4, 2007. "Notice of Revised Deadline for Scoping Comments for the Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) for the Relocation of U.S. Marine Corps Forces to Guam, Enhancement of Infrastructure and Logistic Capabilities, Improvement of Pier/Waterfront Infrastructure for Transient U.S. Navy Nuclear Aircraft Carrier (CVN) at Naval Base Guam, and Placement of a U.S. Army Ballistic Missile Defense (BMD) Task Force in Guam."
- Navy. 2009a. OPNAV Notice 5400: Establishment of U.S. Naval Support Activity Andersen Guam, Mariana Islands. 10 September.

Navy. 2009b. Navy Fact File: Aircraft Carriers - CV, CVN.

[http://www.navy.mil/navydata/fact\\_display.asp?cid=4200&tid=200&ct=4](http://www.navy.mil/navydata/fact_display.asp?cid=4200&tid=200&ct=4). Last updated 5 February 2009, accessed 24 March 2009.

Navy and USFWS. 1994. Cooperative Agreement between the U.S. Navy and the U.S. Fish and Wildlife Service for the Establishment and Management of the Guam National Wildlife Refuge, Guam. March.