Open House/Public Hearing

Draft Environmental Impact Statement/ Overseas Environmental Impact Statement

for the

GUAM AND CNMI MILITARY RELOCATION

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

INTRODUCTION

Three military actions have been proposed that together are referred to as the Guam and the Commonwealth of the Northern Mariana Islands (CNMI) military relocation:

- A portion of United States (U.S.) Marine Corps forces currently located in Okinawa, Japan, would relocate to Guam.
- During the same timeframe, a new deep-draft wharf and a turning basin, along with shoreside infrastructure improvements, would be constructed in Guam's Apra Harbor to support U.S. Navy transient nuclear aircraft carriers.
- A U.S. Army Air and Missile Defense Task Force (AMDTF) would be placed on Guam.

Under the National Environmental Policy Act of 1969 (NEPA) and associated regulations, federal agencies are required to prepare an environmental impact statement (EIS) for actions that may significantly affect the environment. In addition, under Executive Order (EO) 12114 and its associated regulations, actions with the potential to affect the environment beyond U.S. territorial waters (i.e., beyond 12 nautical miles) must be analyzed in an overseas environmental impact statement (OEIS).

The Navy is the lead agency for the Draft EIS/OEIS on the proposed action, which was released to the public in November 2009. The Joint Guam Program Office (JGPO) is the Navy's NEPA proponent of the proposed action. Based on analysis contained in the Draft EIS, impacts are now not anticipated beyond 12 nautical miles. Accordingly, EO 12114 no longer applies to the actions as they are proposed and the document will be finalized as an EIS only and developed solely under NEPA, subject to input received during the public comment process. The Draft EIS/OEIS was prepared to inform decision-makers about projected environmental impacts so that a decision can be made whether and how to implement the proposed action, and to enable the Navy to take measures to protect, restore, and enhance the environment.

The project locations addressed in the Draft EIS/OEIS are Guam and Tinian, which are part of the Mariana Islands archipelago.

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action 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 action is to:

- Position U.S. forces to defend the homeland, including the U.S. Pacific territories.
- Maintain a 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 Region.
- Defend the interests of the U.S., Japan, and other allies.
- Provide capabilities that enhance global mobility to meet contingencies around the world.
- Maintain a strong local command and control structure.

PROPOSED ACTION

The main components of the proposed action 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 CVN.
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 action involves components of the Marine Corps, Navy, Army, and existing Air Force assets on Guam. It would require facilities construction and improvements and would entail increased operational activities associated with Marine Corps and Army basing, more frequent ship berthing, establishment of aviation maintenance operations and facilities, and increased opportunities for additional military personnel to meet critical training requirements.

Training could encompass communications/control, combat skills, aviation, amphibious vehicle maneuvers, and weapons firing. Required construction would therefore include both the facilities and infrastructure for maintaining a permanent presence on Guam and the creation of new training ranges on Guam and Tinian. In summary, implementation of the proposed action 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

Proposed Population Changes

Table 1 presents the Estimated Maximal Off-Island Population Increase on Guam. The proposed Marine Corps relocation would involve military personnel, their dependents, and associated base support personnel. The transient population increase is related to the Navy's transient berthing of an aircraft carrier that is usually accompanied by supply and combatant escort ships, referred to as a carrier strike group (CSG).

These population numbers include dependents of the off-island Department of Defense (DoD) civilian workforce and the off-island population increase related to indirect and induced jobs. It is assumed that project-related construction work would begin in 2010 and peak in 2014 and that most of the Marines and their families would arrive on Guam in 2014. Therefore, 2014 represents the peak year for population increase, when 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 influx of construction workers would decline rapidly. By the time construction is completed and military operational spending reaches a steady state, the off-island population increase is projected to level off at an estimated 33,608 persons, approximately 58% below peak.

Table 1. Estimated (Maximal) Off-Island Population Increase on Guam Direct and Indirect

DIRECT DOD POPULATION	2010	2011	2012	2013	*2014*	2015	2016	2017	2018	2019	2020
Active duty Marines	510	1,570	1,570	1,570	*10,552*	10,552	10,552	10,552	10,552	10,552	10,552
Marine dependents	537	1,231	1,231	1,231	*9,000*	9,000	9,000	9,000	9,000	9,000	9,000
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	*1,710*	1,836	1,836	1,836	1,836	1,836	1,836
Civilian military workers dependents	97	232	232	232	*1,634*	1,745	1,745	1,745	1,745	1,745	1,745
Off-island construction workers	3,238	8,202	14,217	17,834	*18,374*	12,140	3,785	0	0	0	0
Off-island construction workers dependents	1,162	2,583	3,800	3,964	*4,721*	2,832	1,040	0	0	0	0
DIRECT POPULATION TOTALS	**5,646**	**14,112**	**21,344**	**25,125**	*46,052*	**39,685**	**29,545**	**24,713**	**24,713**	**24,713**	**24,713**

INDIRECT AND INDUCED POPULATION	2010	2011	2012	2013	*2014*	2015	2016	2017	2018	2019	2020
Off-island construction workers of indirect and induced jobs*	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 construction workers of indirect and induced jobs	2,627	6,685	11,184	13,373	*16,138*	12,293	6,028	4,372	4,372	4,413	4,413
INDIRECT AND INDUCED TOTALS	**5,393**	**13,723**	**22,957**	**27,450**	***33,126***	**25,233**	**12,374**	**8,718**	**8,718**	**8,895**	**8,895**

DIRECT AND INDIRECT POPULATION TOTALS	**11,038**	**27,835**	**44,301**	**52,575**	***79,178***	**64,918**	**41,919**	**33,431**	**33,431**	**33,608**	**33,608**

* Population does not include Guam residents who obtain employment as a result of the proposed actions.
2014 is estimated to be the peak year for population **2017 and beyond is estimated to be the operational population**

ALTERNATIVES DEVELOPMENT

To accomplish the proposed action, the DoD has considered many development and operational alternatives. Analysis of alternative actions is a key aspect of the NEPA process.

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 that were not considered reasonable because of such factors as significant constraints on land use, time frame for land acquisition, geographic constraints, or presence of protected species or cultural resources. Chapter 2 of Volumes 2–6 of the Draft EIS/OEIS contains a description of the alternatives considered but dismissed from further analysis.

ALTERNATIVES CONSIDERED

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MARINE CORPS RELOCATION – GUAM (VOLUME 2)

The proposed action for the Marine Corps relocation involves constructing and using all required facilities, infrastructure, and training assets necessary to establish a Marine Corps base of operations on Guam and to conduct training operations in support of mission objectives and sustainment (see Figure 1).

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

1. *Main Cantonment Area functions, or base operations and support:* headquarters and administrative support, bachelor housing, family housing, supply, maintenance, open storage, community support (e.g., retail, education, recreation, medical, day care), some site-specific training functions, open space (e.g. parade grounds, open training areas, open green space in communities), and the required supporting utilities and infrastructure.

Figure 1: Components of the Proposed Action

2. *Training functions:* Three subclasses of training support functions:
   - *Firing ranges* for live and inert munitions practice, associated safety buffers (surface danger zones, or SDZs), and special use airspace (SUA) for certain weapons.
   - *Non-fire maneuver ranges* for vehicle and foot maneuver training, including urban warfare training conducted in buildings that simulate an urban environment.
   - *Aviation training ranges* used to practice landing/takeoff and air field support (including loading/unloading of fuel, munitions, cargo, and personnel).
3. *Airfield functions:* runway and hangar space; and maintenance, supply and administrative facilities; and the capability to conduct air embarkation (passenger and cargo loading and unloading) operations.
4. *Waterfront functions:* upgrade of waterfront capabilities to accommodate increased ship traffic associated with the increase in personnel being trained in the region. The proposed waterfront requirements are being discussed separately from other training actions.

Main Cantonment Alternatives. Eight Main Cantonment alternatives were developed and evaluated. Alternative 2 is the preferred Main Cantonment alternative. Details on the other alternatives are found in Volume 2 of the Draft EIS/OEIS. The site of Alternative 2 is bounded on the north by Andersen Air Force Base (AFB) Northwest Field (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 on the south by the Harmon Village residential area (non-DoD property).

Alternative 2 would require both DoD-controlled and non-DoD-controlled lands, including land parcels from Naval Computer and Telecommunications Station (NCTS) Finegayan, South Finegayan, and acquisition or long-term leasing of Federal Aviation Administration (FAA) land, for a total of 2,580 acres. Alternative 2 also would involve developing approximately 53% (1,106 acres) of the total Overlay Refuge (2,095 acres) in the Finegayan area. The Overlay Refuge is land established by DoD, the U.S. Fish and Wildlife Service, and the Government of Guam to protect endangered and threatened species and other native flora and fauna, maintain native ecosystems, and conserve native biological diversity.

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.

Airfield Alternatives. Four sites on Guam were analyzed for the Marine Corps airfield functions in terms of land availability, operational capability, training capability, encroachment, antiterrorism/force protection, and compliance with military vision: North Ramp Andersen AFB, Won Pat International Airport, Orote Airfield at Naval Base Guam, and NWF at Andersen AFB. 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, collocated with the Air Force's own such facility.

Waterfront Alternatives. The only reasonable alternative for the waterfront functions was Apra Harbor. Based on existing land availability and Navy operations, the inner Apra Harbor was the only alternative for these Marine Corps facilities, with existing wharf infrastructure that would be upgraded to support the Marine Corps waterfront functions. Administrative and operational facilities would be constructed, and an embarkation and staging area, including a port support building 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 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).

Training Range Complex Alternatives. Based on an extensive screening analysis for firing ranges and non-firing training ranges, the only geographic alternative on Guam 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. SDZs would extend over the ocean.

There are two alternatives for the training ranges on the east coast. Range Alternative A would require an estimated total land area, not including submerged lands, of 921 acres and the realignment of approximately 1.7 miles of Route 15 to the interior of the existing Andersen South parcel. Range Alternative B would not require realignment of Route 15 but would need more land (1,129 acres).

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, other smaller projects, such as ammunition storage and an access road for the naval munitions site, are not described here but are presented in the Draft EIS/OEIS.

Development of Future Training Ranges. The DoD is evaluating all its training needs in the Western Pacific Region as part of 2010 Quadrennial Defense Review (QDR). This includes evaluating the need for additional Marine Corps training facilities in the CNMI to accommodate Marine Corps higher level core competency training required for all Marine units to ensure operational readiness. The training ranges planned for Guam and Tinian only replicate existing individual-skills training capabilities on Okinawa and do not provide for all core competency training. It is anticipated that the QDR will result in recommendations to address the Marine Corps' need for in-theatre training, for which the DoD will conduct additional NEPA/EO 12114 analysis as necessary before implementation, separate and distinct from the ongoing proposed relocation of Marine Corps forces from Okinawa to Guam.

Marine Corps Relocation – Training on Tinian (Volume 3)

Training operations proposed on Tinian would support essential individual up to company-level sustainment training that enables Marine Corps forces to maintain combat readiness (see Figure 2). 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 have 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's 15,353 acres covers the northern portion of Tinian. Training on Tinian is conducted on two parcels within the MLA: the exclusive military use area, encompassing 7,574 acres on the northern third of Tinian, and the leaseback area, encompassing 7,779 acres on the middle third of Tinian. This land, which already contains company and battalion level non-live-fire training areas, could be developed to accommodate live-fire ranges.

Alternative 1 (Preferred). The preferred alternative includes construction of four ranges within the leaseback area on 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 Range, Automated Combat Pistol/Multipurpose Firearms Qualification Course, and Field Firing Range are located along 90th Street and west of Broadway, all generally aligned to the north. The Platoon Battle Course is northwest of the other ranges and is generally aligned to 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 and 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 into the ocean.

Figure 2: Preferred Alternative-Tinian

Aircraft Carrier Berthing (Volume 4)

The analysis and selection of reasonable alternatives for a new deep-draft transient aircraft carrier wharf, including shoreside infrastructure improvements, were based on consideration of the following criteria:

- Is practicable (with subcriteria)
  - Meets security/force protection requirements
  - Meets operational/navigational characteristics
  - Is 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

Two alternatives were evaluated. Polaris Point (Alternative 1) is the preferred alternative (see Figure 3).

Details on Alternative 2 are available in the Draft EIS/OEIS. The navigational approach to the proposed wharf is 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.

Alternative 1 (Polaris Point) (Preferred). The preferred Polaris Point alternative (Figure 3) would call for constructing a new deep-draft wharf at Polaris Point with shoreside infrastructure improvements, and widening the existing Outer Apra Harbor Channel to 600 feet, 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 feet and dredging to meet aircraft carrier requirements. Although this would result in the permanent removal of coral reef within the channel, the proposed channel footprint will result in the smallest possible impact to the coral reef. The Navy will compensate for that impact according to U.S. Army Corps of Engineers regulations. There will be no impact to turtles and no long-term impact to fish.

A new ship turning basin, specially designed to be smaller than any other turning basin ever associated with an aircraft carrier so as to avoid the most valuable coral areas on the harbor bottom, would be established near the wharf and north of the Inner Apra Harbor entrance channel and would require dredging to -49.5 feet Mean Lower Low Water plus 2 feet overdraft.

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. 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.

Army Air and Missile Defense Task Force (Volume 5)

The Navy and Army identified and evaluated three action alternatives for the proposed Air and Missile Defense Task Force (AMDTF) facilities and operations on Guam and three action alternatives for munitions storage. Preferred headquarters (HQ)/housing and munitions storage alternatives are described below, along with a discussion of SUA and weapons platform siting, which is classified.

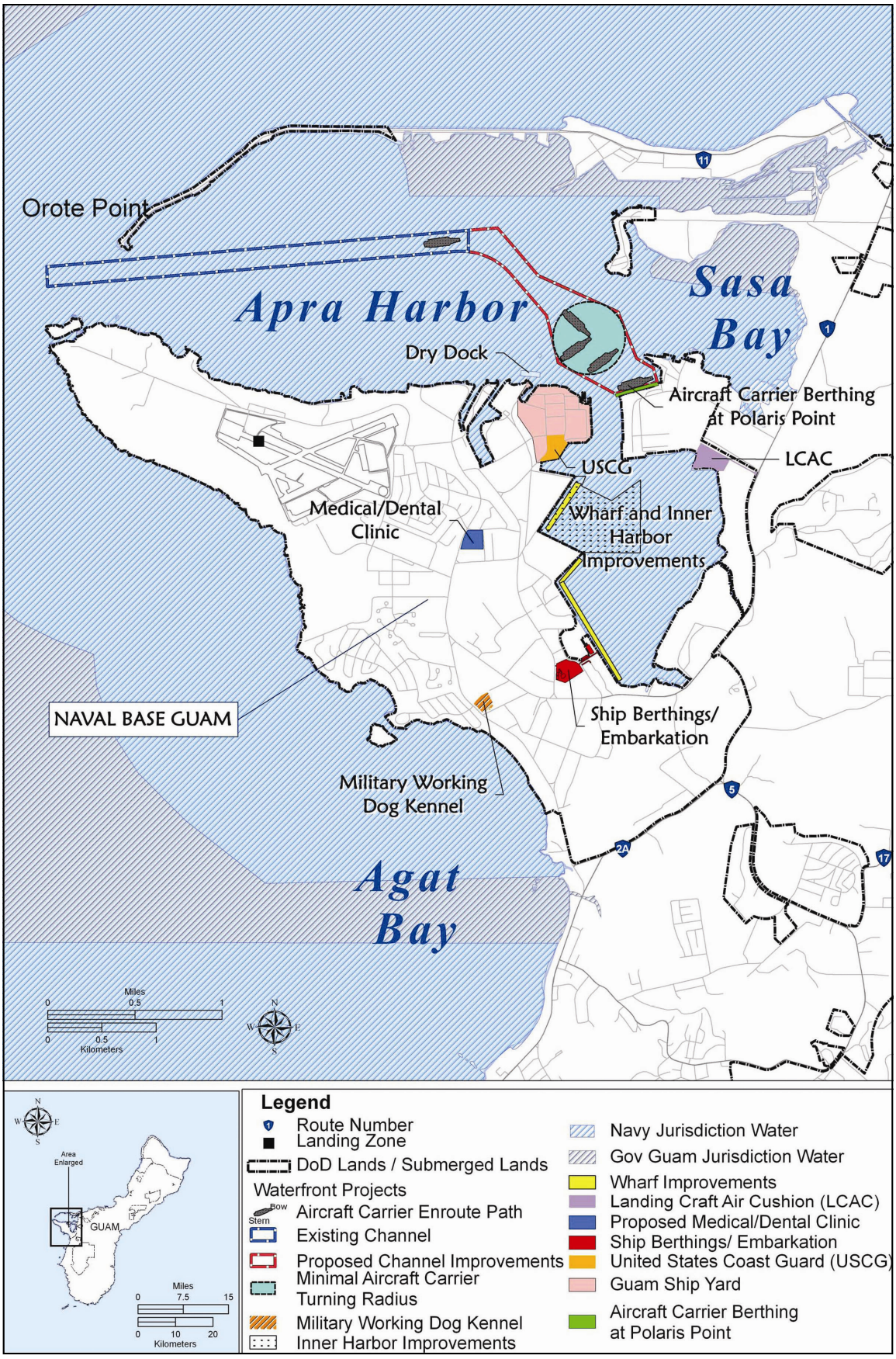

Figure 3: Preferred Alternative-Apra Harbor

Headquarters/Housing Alternative 1 (Preferred). This alternative would collocate Army AMDTF support facilities with the proposed Marine Corps units at Finegayan. Administration/HQ and maintenance operations would be collocated 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 within NCTS Finegayan. Accompanied personnel housing facilities would be collocated with the Main Cantonment housing areas in South Finegayan. Recreational and Quality of Life (QOL) facilities would be collocated 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.

Munitions Storage Alternative 1 (Preferred Alternative). Munitions storage would be in three noncontiguous areas near the habitat management unit at munitions storage area 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 habitat management unit across an unnamed roadway. The area of ground disturbance, including a buffer and excluding the existing munitions storage facilities, is estimated at 6.6 acres.

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).

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 consisting of a proposed restricted area (to be called R-7205) from the surface up to 22,000 feet above mean sea level (Flight Level 220). R-7205 would be activated based on FAA-approved airspace periods required for system maintenance, training, certification, contingency operations, and preventive maintenance for a minimum continuous period of 45 minutes daily Monday through 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 before 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 would be a temporary surge in construction personnel and construction activities. The Draft EIS/OEIS analyzes the related actions and presents alternatives to reduce the effects of the increased population.

Alternatives presented were 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 (see Figure 4). Although interim and basic alternatives were addressed with known or project-specific information, long-term alternatives were dealt with more generally. The proposed interim utility alternatives bridge the gap between existing conditions and final long-term utility solutions. Interim alternatives provide solutions until future implementation of the long-term 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 initiated after signature of the Record of Decision and completed soon enough to support the DoD buildup. As with prior subsections, only the preferred alternatives are discussed in this document. Details on the other alternatives can be found in appropriate sections of Volume 6 of the Draft EIS/OEIS.

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 on its existing permitted facilities. Reconditioning would occur at existing permitted facilities at the Marbo, Yigo, Dededo No. 1, and Macheche combustion turbines, which are not currently being used up to permit limits. T&D system upgrades would be on existing

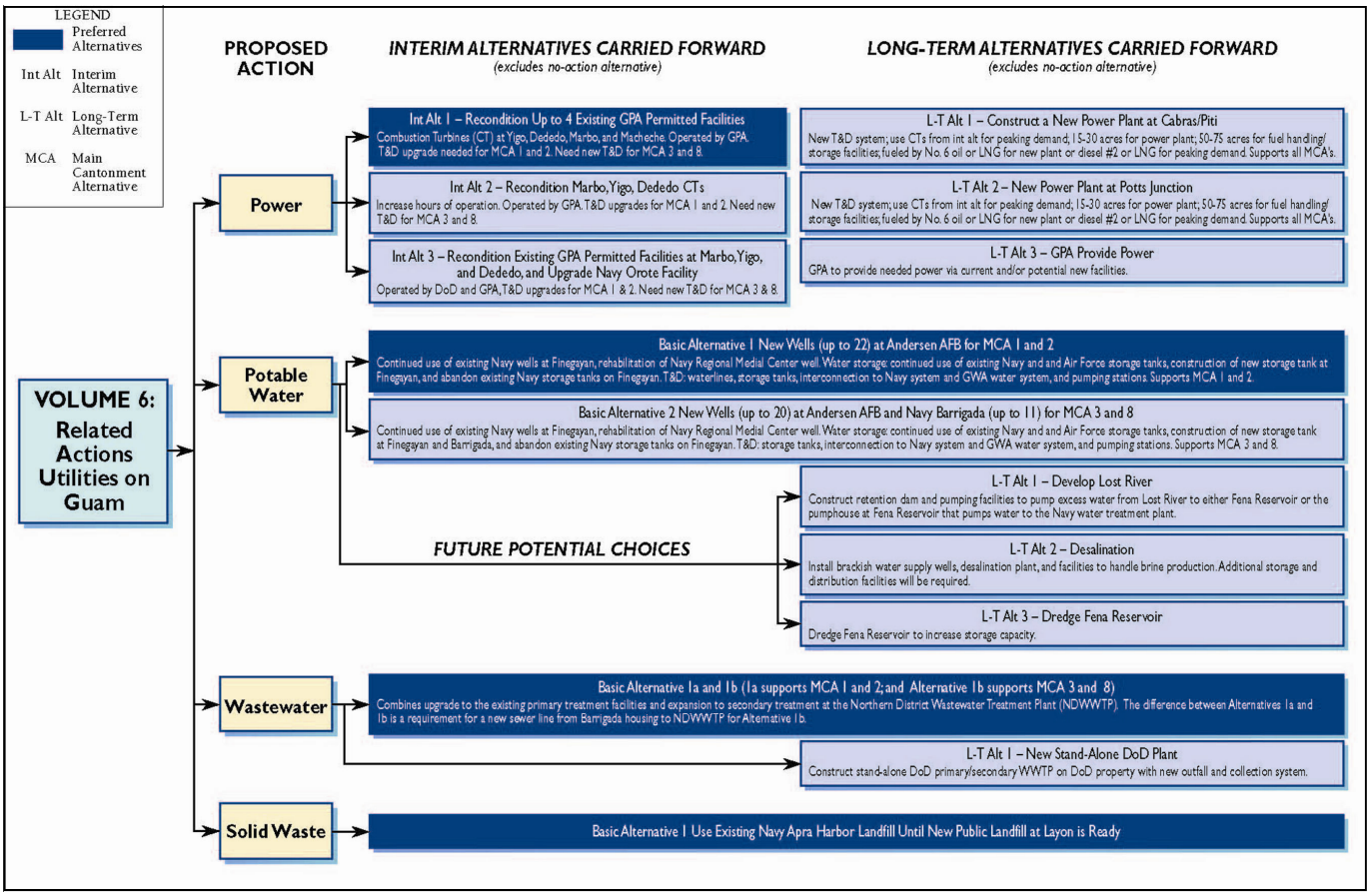

Figure 4: Summary of Proposed Action and Alternatives Carried Forward for Utilities, Guam

aboveground and underground transmission lines. This alternative supports the preferred Main Cantonment Alternative 2.

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 Waterworks Authority (GWA) water system, and associated water line transmission and distribution systems. A new 5-million-gallon water storage tank would be constructed at ground level at Finegayan.

Wastewater

Basic Alternative 1a (Preferred). Basic Alternative 1 combines upgrade to the existing primary treatment facilities and expansion to secondary treatment at the Northern District Wastewater Treatment Plant.

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 of the Draft EIS have been prepared jointly by the Federal Highway Administration (FHWA) as a federal cooperating agency, the Navy's JGPO as the federal lead agency for the Guam and CNMI military relocation, and the Guam Department of Public Works as a participating agency.

There are 58 potential roadway projects that cover four geographic regions on Guam: North, Central, Apra Harbor, and South. Not all 58 projects would be implemented because only a specific combination of roadway projects supports each cantonment alternative. For example, a different combination of 49 Guam Roadway Network (GRN) projects would be required for the preferred Main Cantonment Alternative 2: 29 pavement strengthening projects, 8 roadway widenings, 14 intersection improvements (includes 8 Military Access Points [MAPs]), 5 bridge replacements, 1 road relocation, and 1 new road. Figure 5 summarizes the 58 potential projects.

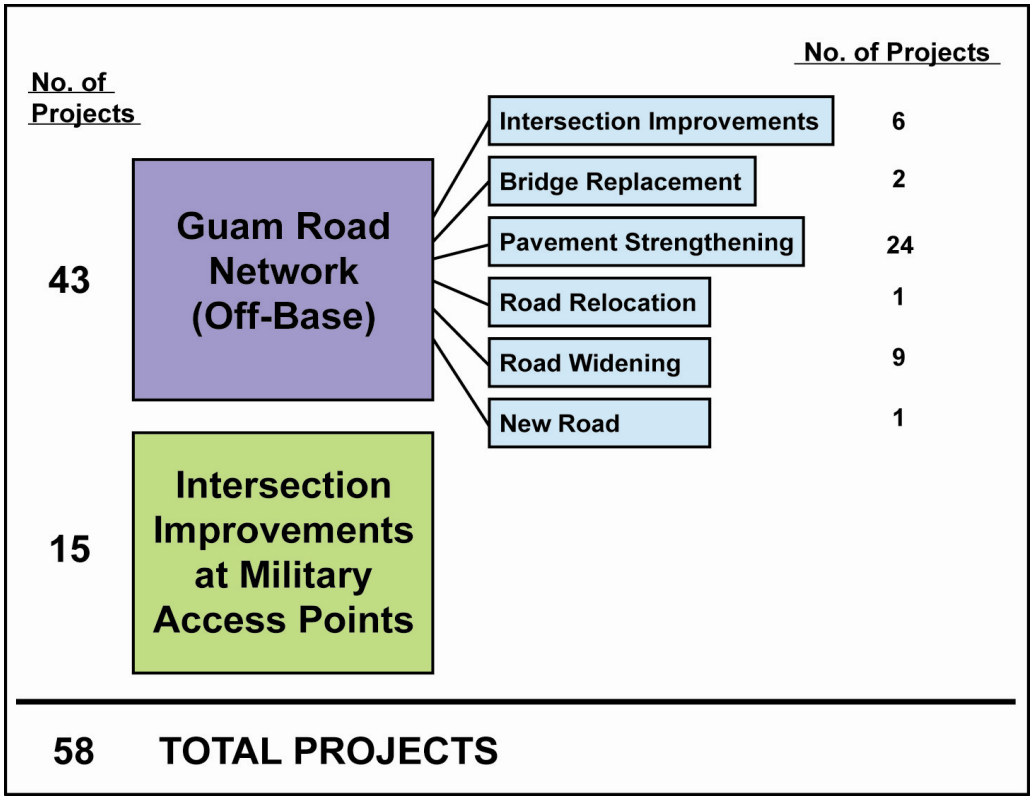

Figure 5: Summary of Roadway Projects

The proposed construction of the 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, which 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.

Forty-three GRN (off-base) projects and 15 intersection improvement projects at MAPs (i.e., gates) have been identified from recent transportation and traffic studies on the island of Guam. The 43 GRN (off-base) projects are composed of 6 types of roadway improvements:

- Intersection improvement projects
- Bridge replacement projects (5 bridges)
- Pavement strengthening (combined with roadway widening at some locations)
- Roadway relocation (Route 15)
- Roadway widening
- Construction of a new road (Finegayan Connection)

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 implementing an alternative. In 40 Code of Federal Regulations 1500, the Council on Environmental Quality defines "mitigation" as:

- Avoidance: Avoid the impact by not taking certain portions of the actions that would cause undesired environmental effects.
- 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 impact.

Best management practices (BMPs) are ongoing management actions implemented by the Navy as part of standard operating procedures. Examples include erosion control, stormwater management, water quality monitoring plans, hazardous waste management, and spill prevention control and counter-measures plans. These and other BMPs serve to minimize and reduce or eliminate potentially adverse impacts. Additional detail on the BMPs is provided in Volumes 2–6, and a summary is in Volume 7, Chapter 2.

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

IMPACTS OF PROPOSED GUAM MILITARY RELOCATION AND POTENTIAL MITIGATIVE MEASURES

The Draft EIS/OEIS provides information on the affected environment and impacts of implementing the proposed action for a number of distinct resource areas. Volumes 2–5 of the Draft EIS/OEIS provide details on the impacts of implementing individual proposed Marine Corps, Navy, and Army actions, and Volume 6 addresses island-wide impacts of implementing utilities and proposed roadway improvement projects. Volume 7 provides a summary of the impacts of all the proposed actions if the preferred alternative in each case is implemented.

Table 2 presents a summary of impacts by resource area on Guam and Tinian that would result from implementing the proposed action and that have been deemed significant in the context of NEPA, as well as potential mitigation measures to reduce the environmental consequences of these impacts.

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 annually.

Table 2. Summary of Significant Impacts of the Preferred Alternatives

Potentially Impacted Resource	*Significant Impacts and Potential Mitigation of Preferred Alternatives*
Water Resources	**Construction** **SI-M (Guam and Tinian)** • Temporary water quality impacts on near-shore waters and coral in Apra Harbor during dredging. Implementing a suite of mitigation measures required by dredging permits, such as physical barriers to limit sediment dispersal, would reduce impacts to less than significant. • Potential fill of wetlands and indirect wetland impacts. Mitigation measures could include adjustment of construction footprints to avoid wetlands as much as possible, creation of replacement wetlands, or preservation or improvement of existing wetlands.
Noise	**Operation (Guam only)** **SI** • 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.
Land, Roadways, and Submerged Land Use	**Construction (Guam only)** **SI-M** • 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. **Operation** **SI-M (Guam)** • Federal acquisition of land for main cantonment, firing ranges, and roadway improvements on Guam. Mitigation would include long-term leases of property instead of purchase. • Mitigation for traffic and transportation impact would include intersection improvements, pavement widening and strengthening, and bridge replacements. **SI (Tinian)** • 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.
Terrestrial Biological Resources	**Construction** **SI (Guam and Tinian)** • Special status species: loss of habitat for special-status species on Guam and Tinian, including federal threatened and endangered species, from clearing of vegetation. Mitigation could include avoiding biologically sensitive areas whenever possible, protecting and enhancing remaining habitat, and implementing conservation actions for bats. • Invasive species introduction would be mitigated through existing interdiction plans and policies, and new measures identified in the Micronesian Biosecurity Plan (being developed). **Operation** **SI-M (Guam and Tinian)** • Operational noise would result in the disturbance of special-status species. • A suite of existing procedures, BMPs, and mitigation measures, including noise barriers, would be implemented to address construction and operational impacts on terrestrial biology.

Potentially Impacted Resource	*Significant Impacts and Potential Mitigation of Preferred Alternatives*
Cultural Resources	**Construction (Guam and Tinian)** **SI-M** • Potential significant adverse direct impacts include approximately 34 archaeological resources eligible or listed in the National Register of Historic Places on Guam and 10 on Tinian. Mitigation would be conducted in accordance with a programmatic agreement with the State Historic Preservation Officer that would require avoidance, survey, monitoring during construction, data recovery, building documentation, public education, and training of military personnel. • Potential significant adverse impacts on four traditional cultural properties would be mitigated to less than significant through public education and implementation of a preservation plan.
Utilities	**Construction and Operation (Guam only)** **SI-M** • Impact on existing overburdened utilities infrastructure on Guam. • 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 Waterworks Authority (GWA) water system capacity. Projected potable water demand would not exceed sustainable yield of the Northern Guam Lens Aquifer. • Higher than currently permitted wastewater flow to the Northern District Wastewater Treatment Plant. GWA would be required to upgrade the plant to secondary treatment. • A suite of mitigation measures are under consideration to mitigate impacts on utilities on Guam, including joint DoD-Government of Guam management of the aquifer to protect it, consultation with local experts on aquifer issues, sharing of surplus water capacity to meet off-base needs, upgrade of existing Northern District Wastewater Treatment Plant, phased-in advance treatment at the plant, reconditioning of existing power generation facilities, burial of key power lines to improve reliability, continued use of Navy landfill pending opening of Layon landfill, recycling and waste minimization programs, and adaptive management techniques to adjust construction tempo.
Socioeconomics and General Services	**Construction and Operation (Guam and Tinian)** **SI-M** • Beneficial impacts on economics and tourism. • Adverse impacts on population, housing, public services, crime, social order, and community. • Impacts of sudden activity (both positive and negative) that peak during the 2013–2015 timeframe. • Effects on neighborhoods and businesses. • Property acquisition and relocation. • A suite of mitigation measures under DoD and non-DoD control are under consideration to mitigate impacts on socioeconomics and services on Guam, including adaptive management techniques to adjust construction tempo.
Environmental Justice and the Protection of Children	**Construction (Guam only)** **SI-M** • Roadway traffic and noise would impact low-income residents, children, and racial minorities. Mitigation for noise is proposed but would create visual impacts that need to be considered. **Operation (Guam and Tinian)** **SI-M (Guam) and SI (Tinian)** • Access restrictions to cultural sites. • Limited health care services for underinsured. • Access restrictions on chili-pepper gathering (Tinian only). • No mitigation proposed for Tinian impacts.

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

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