

CHAPTER 2.

PROPOSED ACTION AND ALTERNATIVES

2.1 OVERVIEW

The proposed master planning action for an Army Air and Missile Defense Task Force (AMDTF) on Guam contains the following three missile components:

- The Terminal High Altitude Area Defense (THAAD) system is a long-range, land-based air defense weapon system that provides terminal 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 cruise missiles and air breathing threats that 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 threat 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 that 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. The Army has set aside \$242 million for funding in Fiscal Year (FY)-14 and FY-15 for construction of the required facilities (including the weapons emplacement site).

Figure 2.1-1 summarizes the three alternatives carried forward in the Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) impact analysis.

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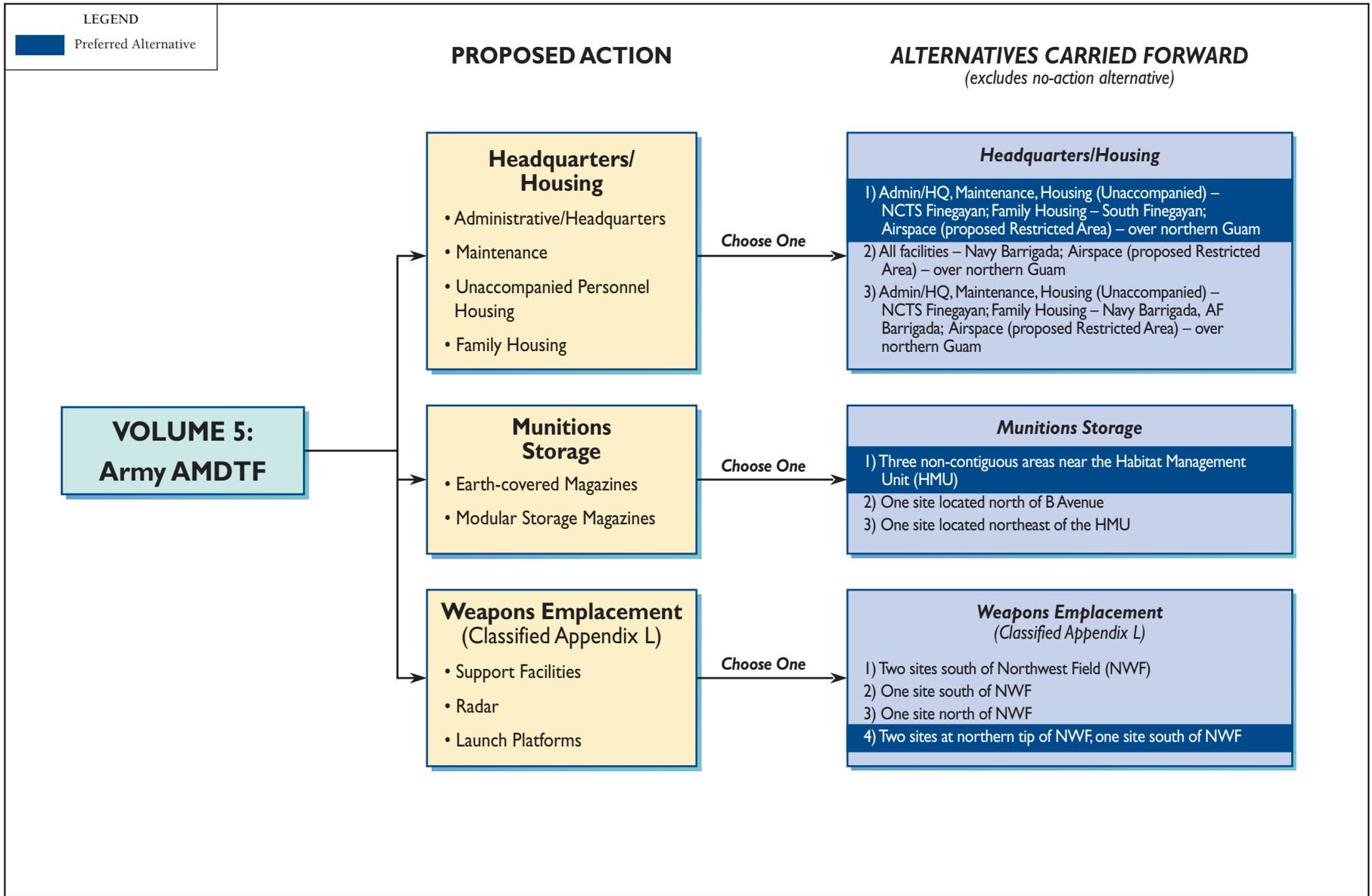


Figure 2.1-1
 Summary of Proposed Action and Alternatives Carried Forward for the
 Army Air and Missile Defense Task Force, Guam

2.2 ALTERNATIVES ANALYSIS METHODOLOGY

The siting options and analyses, including the alternatives considered and dismissed, would be as described for the United States (U.S.) Marine Corps (Marine Corps) portion of the proposed action (see Volume 2). The siting process addressed the major components of the proposed action, such as Headquarters (HQ), Operations, bachelor quarters, and family housing. Requirements for the facilities are addressed in the Marine Corps Main Cantonment component as the Army and Marine Corps would be sharing these facilities. Weapon platform siting is classified and is assessed in a Classified Appendix (Appendix L) to this public EIS/OEIS. The general areas of the proposed weapons emplacement sites are not classified, but the proposed configurations within the areas are classified.

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2.3 PROPOSED ACTION

The proposed action addressed in this volume is to construct facilities and infrastructure on Guam to support relocating Army and dependent personnel, and to establish and operate an Army AMDTF. Three key elements of the proposed action include personnel, facilities, and operations, as discussed in more detail below.

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2.3.1 Personnel

The Army AMDTF would require approximately 630 soldiers, 126 civilian personnel, and 950 dependents, as summarized in Table 2.3-1. For planning purposes it is assumed that all soldiers, contractors, and dependents would be permanently stationed on Guam. The on-island Army population associated with the Army AMDTF would be 50 personnel by 2014, with all 630 military personnel arriving by 2015. All of the civilian population would arrive in 2015. Currently, there are no active duty deployable Army units on Guam. The Guam Army National Guard and Army Reserve have a presence, but are not part of the proposed Army AMDTF action.

Table 2.3-1. Summary of Population Increase Associated with the Proposed AMDTF Action on Guam

<i>Service</i>	<i>Persons</i>
Army	630
Dependents – Army	950
Total military personnel and dependents	1,580
Total Civilians ¹	126

*Notes:*¹Estimated based on Guam Air Force and Navy Civilian positions. Would be filled by new population moving to Guam.

Source: NAVFAC Pacific 2009.

2.3.2 Facilities

Facilities associated with the Army AMDTF would include: administration/HQ and maintenance facilities, munitions storage, weapons emplacement sites, and family housing and associated quality of life (QOL) facilities.

All building construction projects associated with the Army would attain a Silver Leadership in Energy and Environmental Design (LEED) New Construction rating.

2.3.2.1 Administration/HQ and Maintenance Facilities

The administration/HQ and maintenance facilities would comprise approximately 28 acres (ac) (11 hectares [ha]) of developed land including a battalion headquarters, company facilities, and tactical vehicle maintenance facilities (Table 2.3-2).

Table 2.3-2. Army AMDTF Facility Requirements

<i>List of Structures</i>	<i>Total Floor Area (ft²)</i>	<i># of floors/BLDG</i>	<i>BLDG Footprint (ft²)</i>	<i>Parking Req. (ft²)</i>
1. Battalion HQ	18,010 (1,682m ²)	2	10,985 (1,020 m ²)	16,380 (1,820m ²)
2. Company Facilities	71,600 (6,652m ²)	2	61,546 (5,7182,934 m ²)	109,725 (10,194m ²)
3. Tactical Equipment Maintenance Facilities	57,031 (1,614 m ²)	2	46,200 (4,2922,649 m ²)	39,5923 (3,678m ²)
4. Central Vehicle Wash Facilities	255,697 (23,755m ²) (includes water collection components)	2	75,100 (6,968 m ²)	
5. Organizational Storage	7,000 (650m ²)	2	7,000 (650m ²)	1,750 (624 m ²)
6. Organizational Parking		Paved		373,950 (34,741m ²)
7. Housing	Enlisted and Officer housing would be required for 1,580 personnel and dependents.			
8. Oil Storage Building	1,800 (167m ²)		1,800 (167m ²)	

Legend: BLDG = building; ft² = square foot, m² = square meter.

2.3.2.2 Munitions Storage

Eight new climate-controlled, earth-covered magazines (ECMs) and Modular Storage Magazines (MSMs) are proposed on Andersen Air Force Base (AFB) approximately 1 mile (1.6 kilometers [km]) north of the junction of Route 9 and Route 3A. The proposed magazines would be used to store Army missiles and provide safe stowage of the system launchers during inclement weather. The proposed magazines would be constructed based on a standard design that provides required structural components, humidity control, and fire and lightning protection systems. All proposed magazines would meet Anti-Terrorism/Force Protection requirements.

One THAAD launcher storage module (ECMs), two Patriot launcher storage module (ECMs), one SLAMRAAM/Avenger launcher storage module (ECMs), and four missile magazines (MSMs) (see table 2.3-3). The ECMs would be covered with a minimum of 2 ft (0.6 m) of earth. In accordance with established ammunitions storage requirements, native grassy vegetation would be established on and around the magazines. The vegetation would be maintained (e.g., periodically mowed) to minimize fire hazard.

An important operational component of ammunition storage is the associated explosive safety hazard arc, called the Explosive Safety Quantity Distance (ESQD) arc. These are 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 Department of Defense (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.

2.3.2.3 Weapons Emplacement Sites

The weapons emplacement sites would be constructed to accommodate THAAD and Patriot Missile operations. The THAAD and Patriot Missile facilities are summarized in Table 2.3-3. The missile system components are mobile, but the emplacement sites are fixed. The Avenger/SLAMRAAM operations are mobile units. Weapons emplacement sites would include bermed fuel storage areas and crew billeting for shift use.

The general areas of the proposed weapons emplacement sites are not classified. The four geographic alternatives are shown in Figure 2.3-1. Proposed configurations within the areas are classified. These locations and their respective potential environmental impacts are described in a Classified Appendix to this EIS/OEIS, which will be reviewed by resource agency personnel with the appropriate security clearance.

Table 2.3-3. THAAD and Patriot Equipment at Emplacement Sites and Missile Storage Facilities

<i>List of Structures (Assumed Quantity)</i>	<i>Footprint</i>
1. THAAD – Launchers (3)	100ft × 50 ft = 5,000ft ² (30m × 15 m = 465 m ²)
2. THAAD – THAAD Fire Control and Communications TFCC	197ft × 164 ft = 32,292 ft ² (60m × 50 m = 3,000 m ²)
3. THAAD – Radar (Antenna Equipment Unit, Prime Power Unit, Electronic Equipment Unit and Cooling Equipment Unit).	197ft × 164 ft = 32,292 ft ² (60m × 50 m = 3,000 m ²)
4. THAAD – Missile Reload	82ft × 82 ft = 6,724ft ² (25m × 25 m = 625 m ²)
5. THAAD – Personnel Operations Area	82ft × 82 ft = 6,724 ft ² (25m × 25 m = 625 m ²)
6. THAAD – Readiness Building	70 ft × 50 ft = 3,510 ft ² (15 m × 21 m = 326 m ²) For 24/7 manning 25-person crew showers
7. THAAD – Maintenance Personnel Pad	98 ft × 164 ft = 16,072 ft ² (50 m × 30 m = 1,493 m ²)
8. THAAD – FMTV Tractor Pad	164 ft × 197 ft = 32,308 ft ² (60 m × 50 m = 3,002 m ²)
9. THAAD – Vehicle Parking Area	82 ft × 246 ft = 20,160 ft ² (75 m × 25 m = 1,873 m ²)
10. Patriot – Launchers (6)	50 ft × 50 ft = 2,500 ft ² (15 m × 15 m = 232 m ²)
11. Patriot – Radar, Engagement Control Station, Electric Power Plant, Antenna Mast Group	131ft x 148 ft = 19,375 ft ² (45m × 40 m = 1,800 m ²)
12. Patriot – Fuel Tankers	50 ft × 100 ft = 5,000 ft ² (15 m × 30 m = 465 m ²)
13. Patriot – Readiness Building	70 ft × 50 ft = 3,510 ft ² (15 m × 21 m = 326 m ²) For 24/7 manning 25-person crew showers
14. Patriot – Communication Tower	100 ft (30 m) telescopic Antenna – truck mounted
15. Patriot – Fire Direction Center (FDC)	82 ft × 82 ft = 6,724 ft ² (25 m × 25 m = 625 m ²)
16. Patriot – Vehicle Parking Area	82 ft × 246 ft = 20,160 ft ² (75 m × 25 m = 1,873 m ²)
Missile Storage (4)	
17. Patriot – Reload Pad	130 ft x 52 ft = 6,760 ft ² (16 m × 40 m = 628 m ²)
18. Security Control Center (SCC)	20 ft × 25 ft = 500 ft ² (8 m × 6 m = 46 m ²)
19. Entry Control Point (ECP)	20 ft × 8 ft = 160 ft ² (2 m × 6 m = 15 m ²)
20. THAAD Launcher Storage (ECM) (1)	60' X 66' = 3,960 ft ²
21. Patriot/Avenger/ SLAMRAAM Launcher Storage (ECM) (3)	80' X 66' = 5,280 SF ft ²
22. Guided Missile Magazines (MSM) (4)	85' X 30' = 2,550 SF ft ²

2.3.2.4 Family Housing and Associated QOL Facilities

New facilities would be required to house Army personnel and their dependents. Requirements for the accompanied and unaccompanied housing facilities and QOL support facilities are addressed in the Marine Corps Main Cantonment component, as the Army and Marine Corps would be sharing these facilities (see Volume 2).

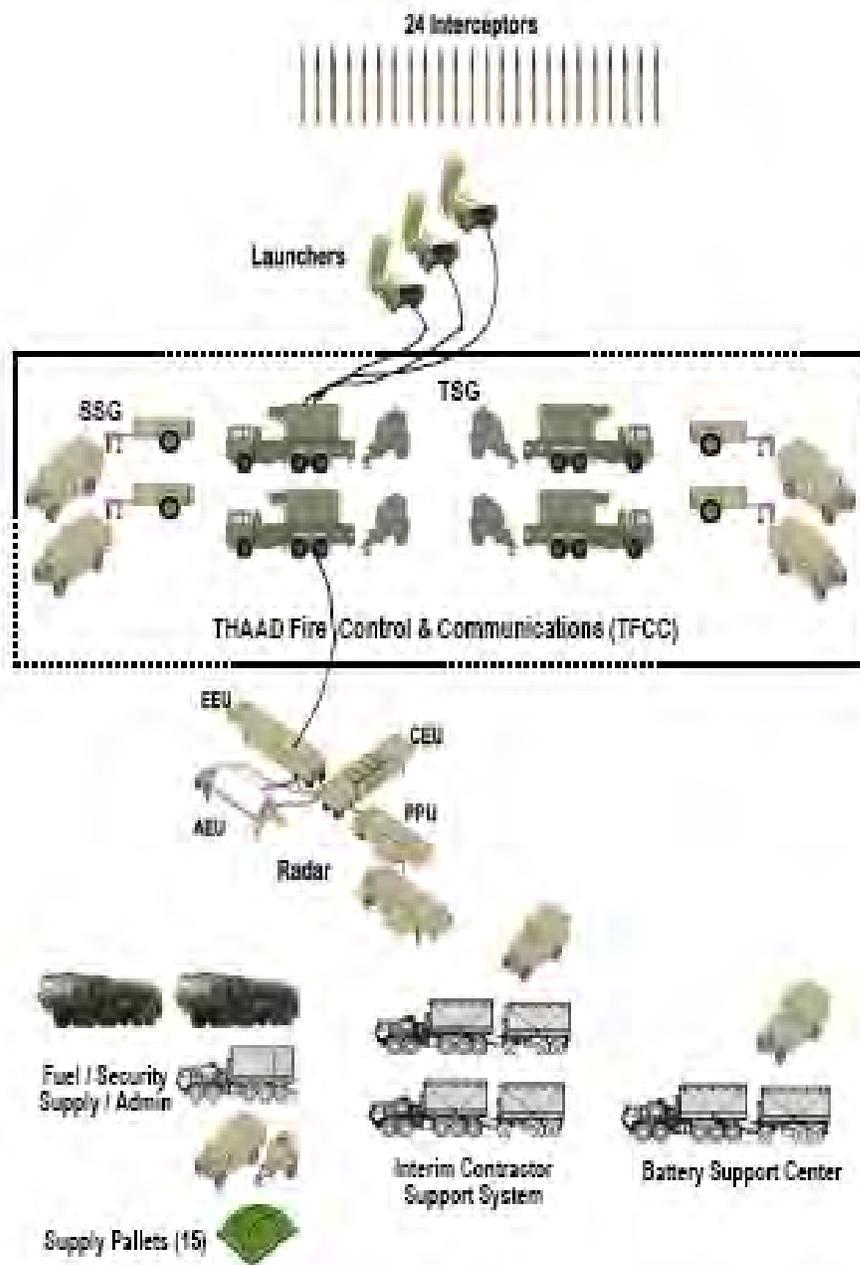


Figure 2.3-1
THAAD Conceptual Configuration

Source: THAAD Capabilities Brief MDA/DOS Case No: T00-D-0134-07 (29 Mar 07)

2.3.3 Operations

2.3.3.1 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. Approximately 630 personnel and approximately 30 visitors per day would access the facility. Among the 630 personnel are those who support the emplacement sites. Each day, these personnel must 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, radar system repairs. Painting would only be done for minor repairs. Other activities would include storage of petroleum, oils, and lubricants (POL); battery storage; fuel dispensing; and welding.

2.3.3.2 Weapons Emplacement Sites

Based on requirements, (Contingency, Maintenance, Training, Certification), planned preventive maintenance would require a minimum continuous period of 45 minutes daily Monday through Friday. Personnel would be on-site after initially reporting to administration/HQ and the system would be active based on need. The THAAD, Patriot, and SLAMRAAM/Avenger facilities would be maintained by approximately 25 personnel at any given time.

The proposed THAAD, Patriot, and SLAMRAAM/Avenger facilities are itemized in Table 2.3-3. In addition to the facilities, the following basic components make up the THAAD, Patriot, and SLAMRAAM/Avenger weapons systems (Figure 2.3-1):

- Fire Direction Center (FDC) – The FDC exercises direct control and supervision of Patriot FUs and attached THAAD batteries during the air battle. The FDC is responsible for operating the Information Coordination Central (ICC). The ICC exchanges data and voice information with the Headquarters Operations Center, the Patriot Fire Unit(s), and the THAAD battery. If the Task Force Operations Center is non-mission capable, the ICC can establish TADIL-J as a primary or TADIL-B communications directly with the regional Control and Reporting Center (CRC). The Engagement Control Station communicates with the launching stations, other AD units, and higher command headquarters. It is the tactical control station that provides the human interface for control of the automated system functions. Operators maintain situational awareness of active and passive airspace as well as the status of unit communications and power generators.
- Radar – provides a broad range of surveillance services that perform target search, acquisition, identification, and tracking functions.
- Interceptor – the missile that intercepts an incoming hostile missile threat or air breathing threat.
- Launch Platforms / Fire Unit – truck-mounted launchers transport, aim, and launch missiles.
 - The THAAD launcher carries a missile round pallet which contains up to eight missiles.
 - Each Patriot Missile launcher has four to 16 missiles, depending on configuration. The Guidance Enhanced Missile variant load is four each, and the PAC-III missile load is 16 each.
 - The SLAMRAAM/Avenger launcher capacity is eight missiles.

2.3.3.3 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 Commonwealth of the Northern Mariana Islands (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 and certification would be required for the Army AMDTF. Routine crew training on all aspects leading up to and through a launch would be required for THAAD, 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.

2.3.3.4 Airspace

During THAAD 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 (MSL) (Flight Level [FL] 220) 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 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 (NOTAM) prior to scheduled use of the airspace.

Figure 2.3-2 depicts the proposed SUA associated with the THAAD. Proposed R-7205 boundaries would start at lat. 13°34'20"N., long. 144°43'00"E.; to lat. 13°40'00"N., long. 144°44'41"E.; to lat. 13°45'18"N., long. 144°54'00"E.; to lat. 13°38'38"N., long. 144°54'03"E.; to lat. 13°34'13"N., long. 144°48'25"E.; to the point of beginning.

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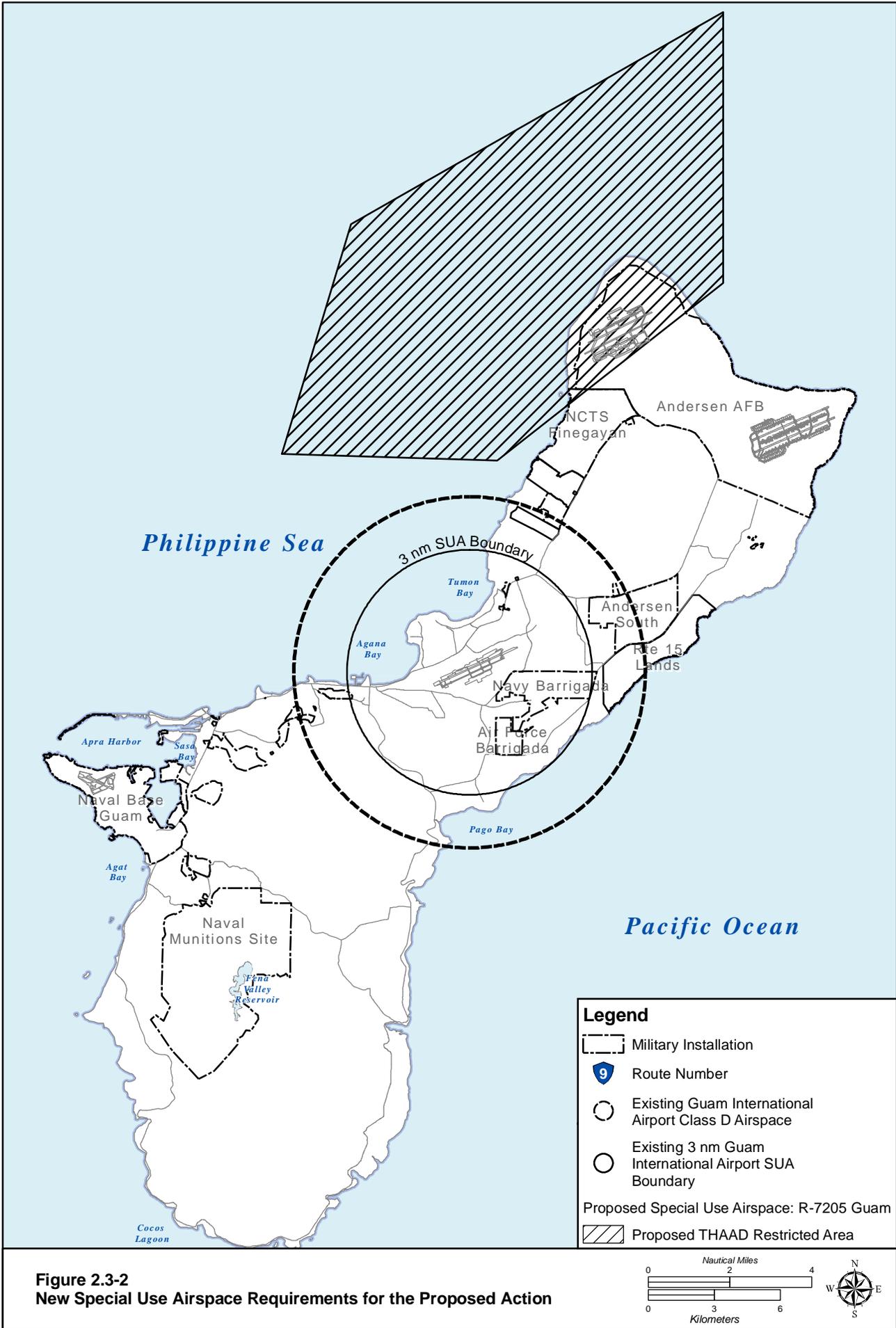


Figure 2.3-2
New Special Use Airspace Requirements for the Proposed Action

2.4 ALTERNATIVES

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 sets of alternatives are described below. The preferred alternative for the headquarters/housing component of the AMDTF action is Alternative 1, the preferred alternative for munitions storage is Alternative 1, and the preferred alternative for the weapons emplacement sites is Alternative 4.

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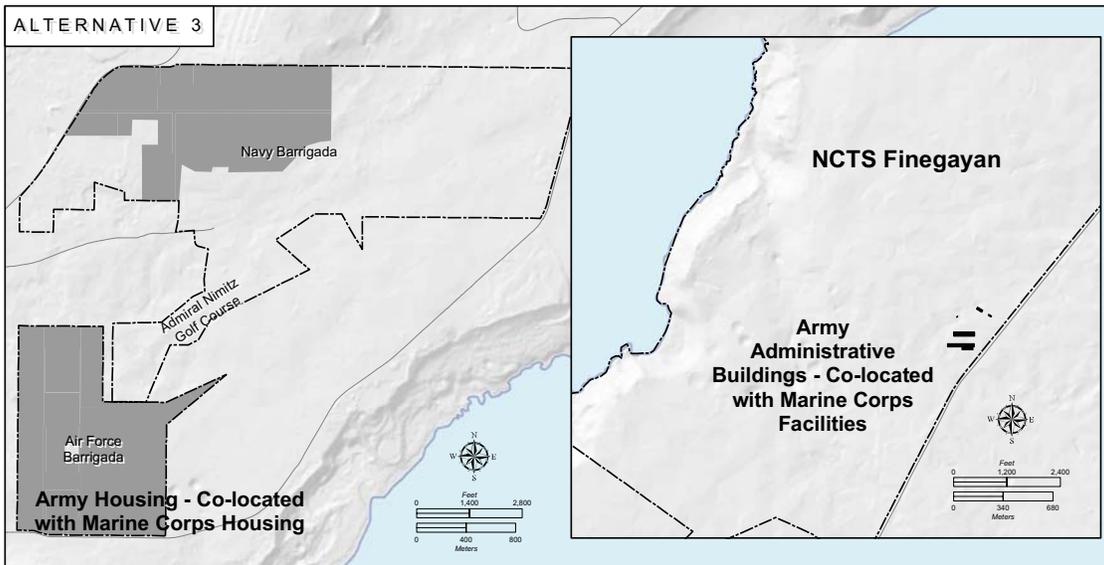
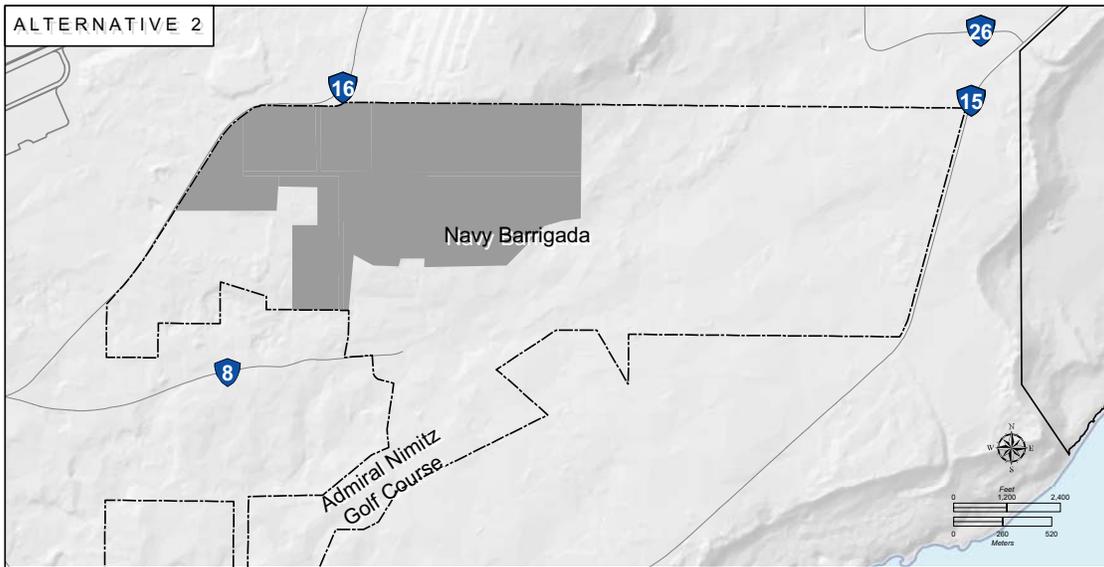
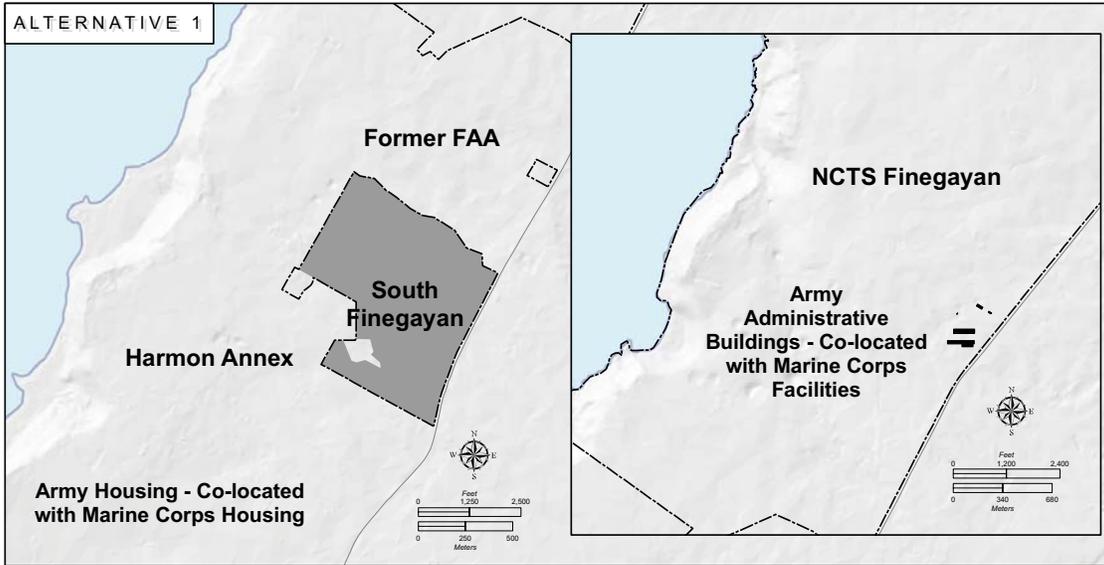
2.4.1 Headquarters/Housing Alternatives

2.4.1.1 Headquarters/Housing Alternative 1 – Army AMDTF Co-located with Marine Corps at Finegayan (Preferred Alternative)

- Administrative/HQ, maintenance operations, and housing facilities for unaccompanied personnel would be co-located in the eastern portion of Naval Computer and Telecommunications Station (NCTS) Finegayan and are compatible with adjacent proposed Marine Corps land uses (Figure 2.4-1).
- 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 Marine Corps Alternatives 2 and 3 (refer to Volume 2).

2.4.1.2 Headquarters/Housing Alternative 2 – Army AMDTF Located at Navy Barrigada

- 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 (Figure 2.4-1) 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 not included in any of the Marine Corps Alternatives (refer to Volume 2).



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Figure 2.4-1
Army AMDTF Headquarters/Housing Alternatives

2.4.1.3 Headquarter/Housing Alternative 3 - Army AMDTF Co-located with Marine Corps at Finegayan, Navy Barrigada, and Air Force Barrigada

- The administrative/HQ, maintenance, and unaccompanied personnel housing would be co-located in the eastern portion of NCTS Finegayan and are compatible with adjacent proposed Marine Corps land uses (Figure 2.4-1).
- 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 Marine Corps Alternative 3 (refer to Volume 2).

2.4.2 Munitions Storage Alternatives

2.4.2.1 Munitions Storage Alternative 1 (Preferred Alternative)

Munitions storage would be in three non-contiguous areas near the Habitat Management Unit (HMU) (Figure 2.4-2). The HMU boundaries specifically exclude two magazine storage areas on 0.7 ac (0.3 ha). These magazines are currently being used by the AAFB for inert storage. 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 to be 6.6 ac (2.7 ha). Existing munitions storage facilities may need to be relocated. The relocation of existing munitions storage facilities would be in Munitions Storage Area 1; however, an exact location has not been determined at this time.

2.4.2.2 Munitions Storage Alternative 2

Munitions storage magazines would be consolidated at one site that is located north of B Avenue (see Figure 2.4-2) and allows for future expansion should that be required. The area of ground disturbance including a buffer is estimated to be 2.7 ac (1.1 ha).

2.4.2.3 Munitions Storage Alternative 3

Munitions storage magazines would be consolidated at a site located northeast of the HMU and an unnamed road (see Figure 2.4-2). The area of ground disturbance including a buffer is estimated to be 2.7 ac (1.1 ha).

2.4.3 Weapons Emplacement Alternatives (Analysis in Classified Appendix)

There are four alternatives for the weapons emplacement sites. The general areas proposed for locating 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. A brief, unclassified description of the locations is presented below. The four geographic alternatives are shown in Figure 2.4-3.

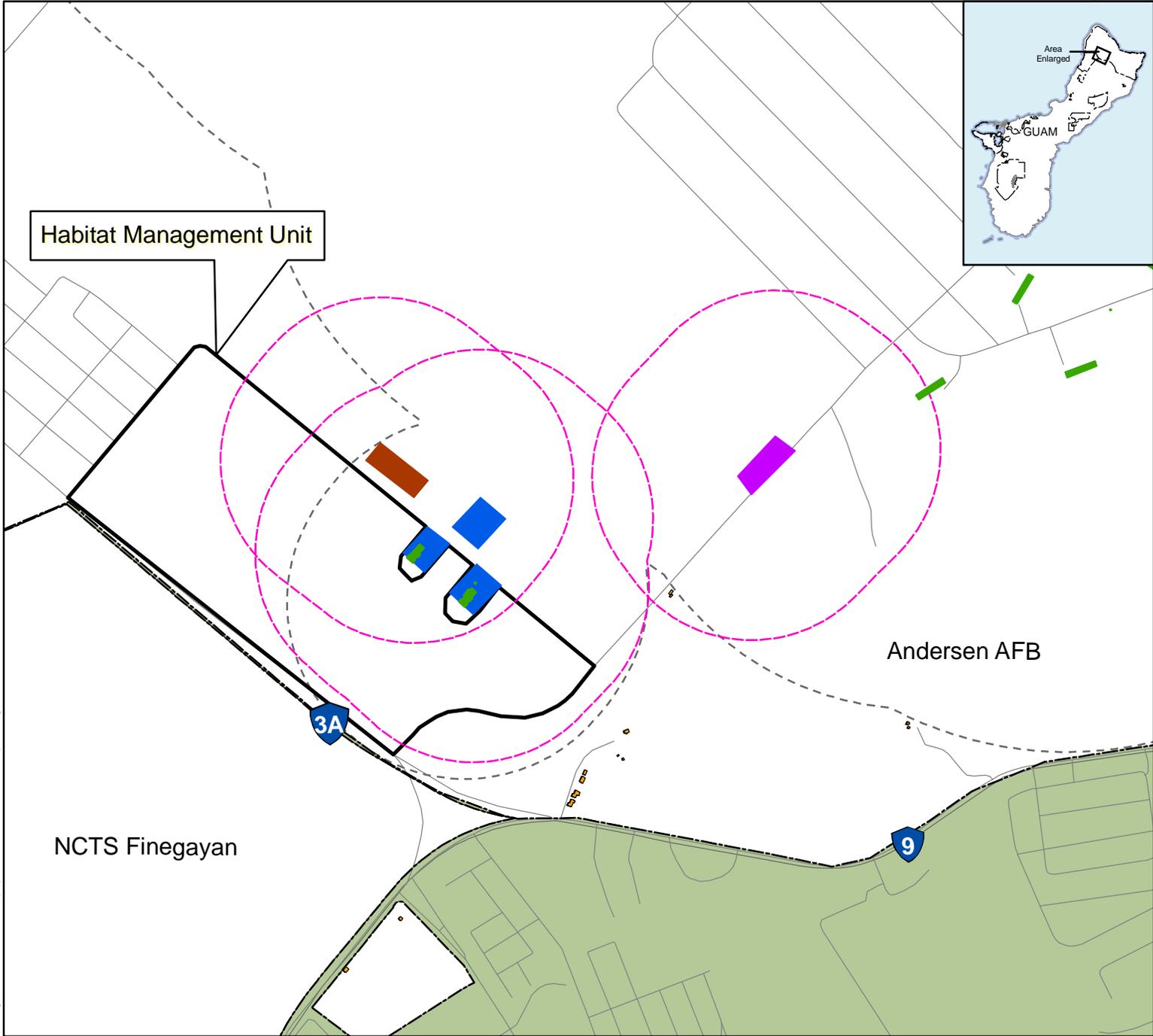
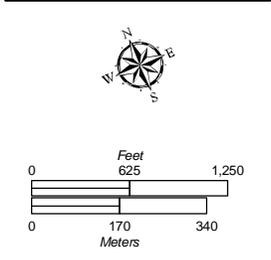


Figure 2.4-2
 Army AMDTF Munitions Storage Alternatives

- Legend**
- Military Installation
 - Non-Military Land
 - Route Number
 - IBD ESQD Arc
 - Notional IBD ESQD Arc
 - Existing Building
 - Existing Munitions Storage Magazines
 - Notional Location THAAD & PATRIOT ECMs
 - Alternative 1
 - Alternative 2
 - Alternative 3



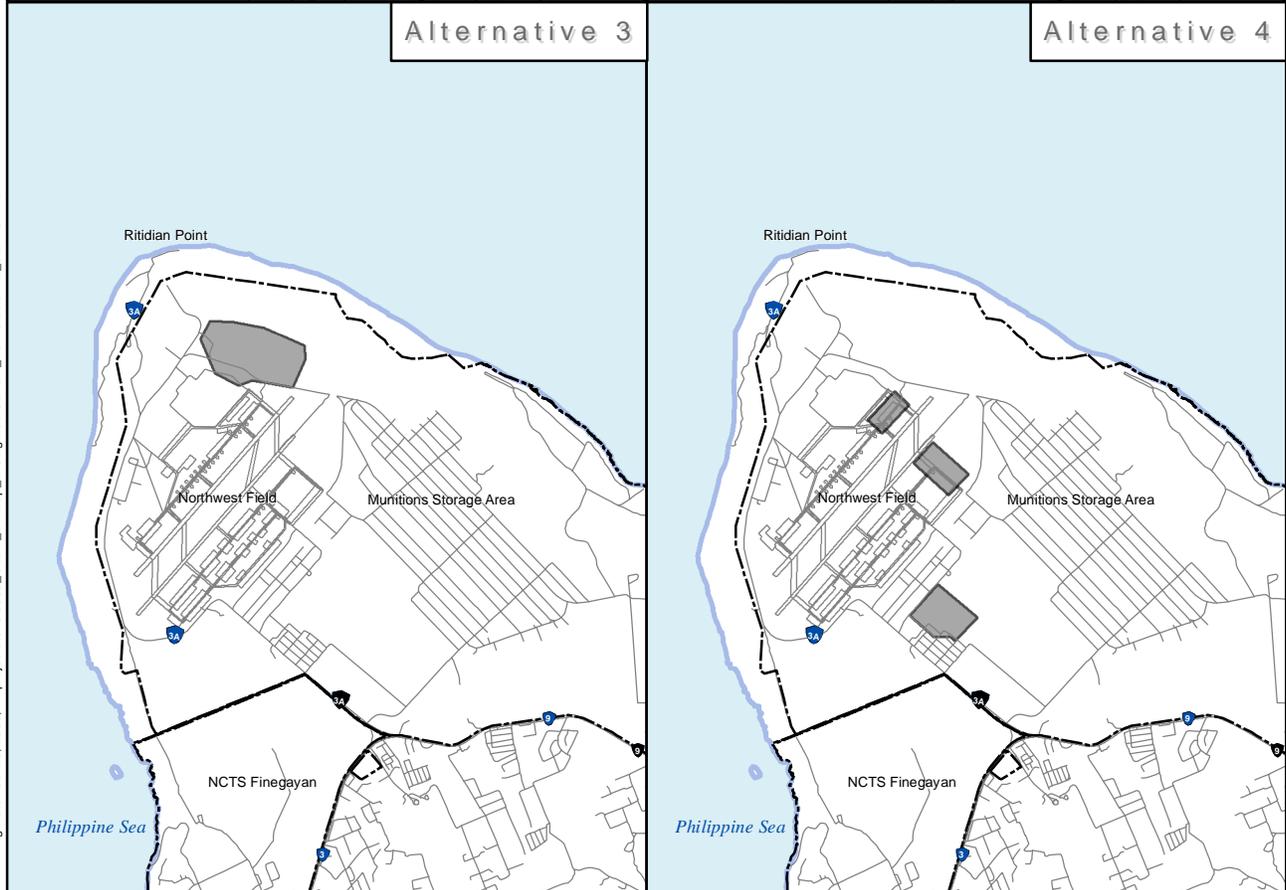
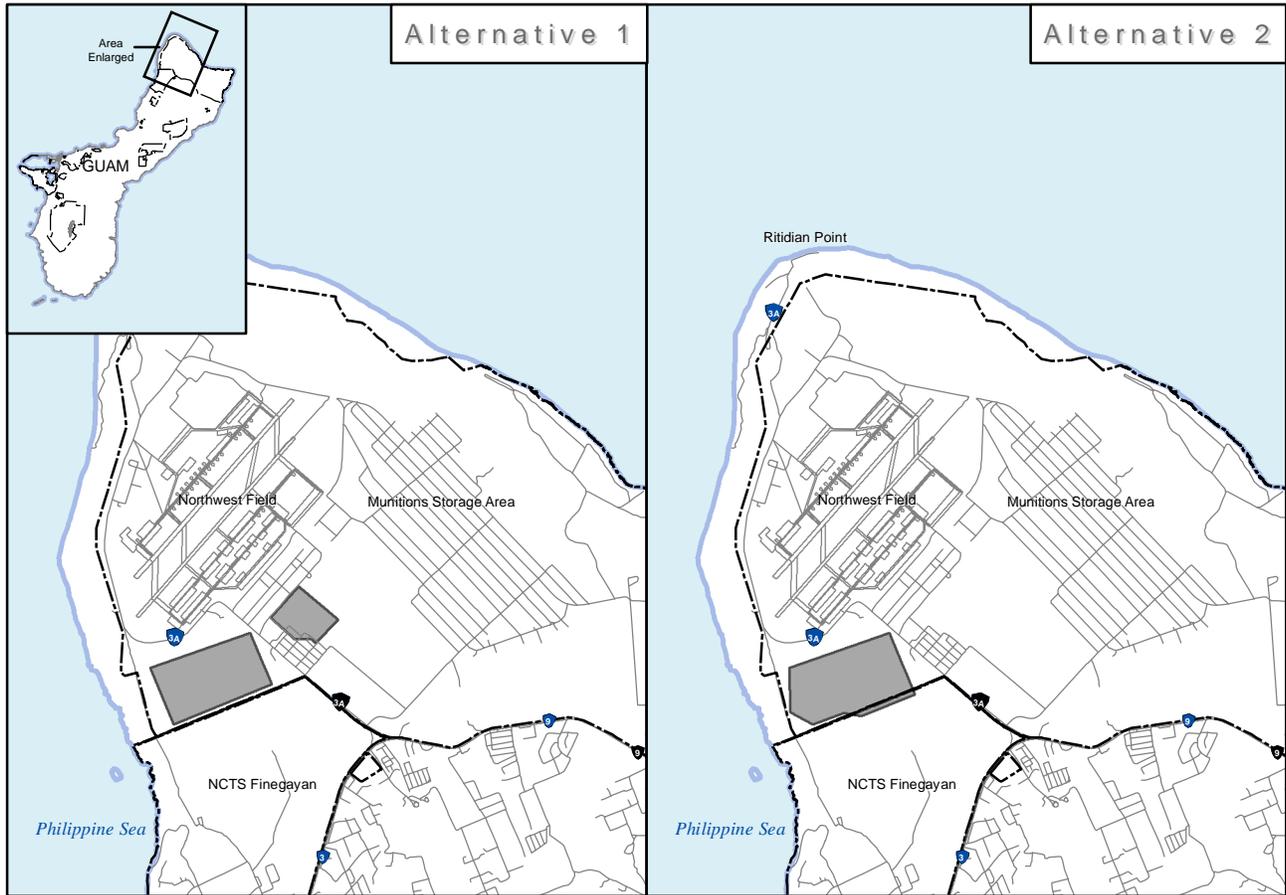
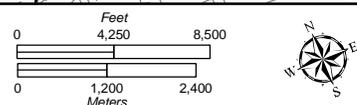


Figure 2.4-3
Army AMDTF Weapons Emplacement Alternatives
in the Classified Appendix



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2.4.3.1 Weapons Emplacement Alternative 1

This alternative consists of two general areas totaling 368 acres (149 ha).

2.4.3.2 Weapons Emplacement Alternative 2

This alternative consists of one general area totaling 333 acres (135 ha).

2.4.3.3 Weapons Emplacement Alternative 3

This alternative consists of one general areas totaling 228 acres (92 ha).

2.4.3.4 Weapons Emplacement Alternative 4 (Preferred Alternative)

This alternative consists of three general areas totaling 187 acres (76 ha).

2.4.4 No-Action Alternative

Under the no-action alternative, there would be no construction to support the proposed AMDTF. Under the no-action alternative, areas proposed for AMDTF facilities would continue to be used for existing DoD functions. The no-action alternative would not meet the purpose of and need for the proposed action.