

GUAM TRAINING RANGES REVIEW AND ANALYSIS

DRAFT

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I. INTRODUCTION

This document, titled the Guam Training Ranges Review and Analysis (TRRA), presents information on the development of alternatives and potential adverse effects to historic properties within each of the alternatives being analyzed as the location for the Marine Corps Live Fire Training Range Complex (LFTRC) on Guam in the Guam and Commonwealth of the Northern Mariana Islands Military Relocation (2012 Roadmap Adjustments) Supplemental Environmental Impact Statement (SEIS). Preparation and distribution of the TRRA complies with Stipulation V.C. of the *Programmatic Agreement among the Department of Defense, the Advisory Council on Historic Preservation, the Guam State Historic Preservation Officer, and the Commonwealth of the Northern Mariana Islands State Historic Preservation Officer Regarding the Military Relocation to the Islands of Guam and Tinian* (2011 PA). The Draft SEIS is available for public review at <http://guambuildupeis.us>.

Following completion of consultation on the TRRA, measures to avoid, minimize, and mitigate adverse effects to historic properties and other cultural resources impacts developed during the consultation effort will be incorporated into the Range Mitigation Plan (RMP) called for under Stipulation V.C.4 of the 2011 PA. The most current version of the draft RMP will also be reflected in the Record of Decision (ROD) for the Final SEIS.

Section II of this TRRA presents an overview of the 2011 PA, with emphasis on its provisions for the LFTRC decision. Section III summarizes each of the five LFTRC alternatives analyzed in the SEIS and discusses potential effects to historic properties and impacts to other cultural resources. The TRRA closes in Section IV with a more detailed assessment of adverse effects and other impacts associated with the preferred LFTRC alternative location at Northwest Field (NWF), which has been identified as the preferred alternative in the Draft SEIS. Should a different alternative be selected in the ROD, then this analysis will be modified accordingly.

Background

In September 2010, the U.S. Department of the Navy (DON) signed a ROD (77 Federal Register [FR] 60438-60440, September 30, 2010) regarding the 2010 *Final Environmental Impact Statement (EIS) for the Guam and Commonwealth of the Northern Mariana Islands (CNMI) Military Relocation; Relocating Marines from Okinawa, Visiting Aircraft Carrier Berthing, and Army Air and Missile Defense Task Force* (DON 2010). The ROD documented the DON's decision to implement the preferred alternatives identified in the 2010 Final EIS for the main base (cantonment), aviation, and waterfront operations to support relocation of approximately 8,600 Marines and approximately 9,000 dependents from Okinawa to Guam. The ROD deferred a decision on the development of the LFTRC along Route 15 in the northeastern part of Guam.

In the months following issuance of the ROD, the DON committed to the Government of Guam (GovGuam) that if the Route 15A area was selected for the LFTRC, the DON would ensure access 24

hours a day and 7 days a week to Pãgat Village and Pãgat Cave historical sites, to include the existing trail from Route 15A leading to both locations (DON 2011, Department of Defense [DoD] 2011). To meet this commitment, the DON applied more precise modeling to determine the size of the surface danger zone (SDZ) associated with a Multi-Purpose Machine Gun (MPMG) Range, which would require the largest SDZ in the LFTRC. Application of this methodology reduced the size of the overall footprint for the SDZs (Appendix B). Based on the reduced SDZ footprint, the DON was able to identify several additional LFTRC preliminary alternatives and elected to prepare an SEIS to evaluate potential impacts associated with the location, construction, and operation of an LFTRC on Guam for the new alternatives. The DON issued a Notice of Intent (NOI) to prepare the LFTRC SEIS in February 2012 (77 FR 6787, February 9, 2012) and held public scoping meetings on Guam in March 2012.

2012 Roadmap Adjustments and the SEIS

On April 27, 2012, the U.S.-Japan Security Consultative Committee issued a joint statement announcing its decision to adjust the plans outlined in the May 2006 Roadmap for Realignment Implementation. In accordance with these “2012 Roadmap Adjustments,” the DoD adopted a new force posture in the Pacific providing for a materially smaller and reconfigured force on Guam. In conjunction with changes in the mix of personnel involved in the relocation, the adjustments reduced the originally planned relocation of approximately 8,600 Marines with approximately 9,000 dependents to relocation of a force of approximately 5,000 Marines with approximately 1,300 dependents. That decision prompted the DON’s review of the actions previously planned for Guam and approved in the September 2010 ROD. This review concluded that while some actions remained unchanged, others, such as the size and location of the cantonment and family housing areas, could significantly change because of the force modification.

As a result, in October 2012 the DON published an NOI (77 FR 61746, October 11, 2012) to amend the scope of the LFTRC SEIS to address those relocation actions that materially changed due to the new force posture. The DON conducted additional public scoping meetings on Guam for this expanded SEIS in November 2012. Input received from the public, existing cultural resources survey data and operational requirements were considered early in the planning process to maximize opportunities to avoid adverse effects to historic properties.

Development of LFTRC Alternatives

The Draft SEIS documents a methodology for identifying and evaluating LFTRC alternatives that includes the identification of preliminary alternatives based on a search for land areas on Guam large enough to accommodate the LFTRC, and application of preliminary screening criteria reflecting the essential training requirements of the relocating forces. In the initial review of LFTRC alternatives, the DON applied preliminary screening criteria to seven preliminary LFTRC site alternatives (DSEIS [2014], Section 2.5.2: Evaluation of Preliminary Alternatives for Live-Fire Training Range Complex). The initial screening criterion for the LFTRC was the availability of sufficient area, including land, sea, and airspace to conduct the training mission of the LFTRC. For each alternative, the affected areas include the space for the range facilities (including firing points, berms, and impact areas) and associated SDZs. There was no precise, singular land acreage requirement for the LFTRC because the footprint for each alternative varies based on the topography and specific site conditions. The quantity and quality of land that would need to be acquired and the current ownership of such land were also considered in the evaluation. The evaluation also included considerations of grading and other earthwork expected to be required during facility construction at any of the alternative sites, in order to balance cut and fill onsite to the extent possible and minimize the need to import fill. If off-site fill material is needed, it would be obtained from

a permitted source. All screening criteria are described in detail in the DSEIS [2014], Section 2.3: Alternatives Development Methodology.

The evaluation of preliminary alternatives described above determined that five LFTRC alternatives are sufficiently aligned with the screening criteria and the Marine Corps Guiding Principles to be carried forward for impacts analysis in the SEIS. Following are the five LFTRC Alternatives analyzed in the DSEIS [2014]:

- Route 15 (Alternative 1)
- Naval Magazine (NAVMAG) - East/West (Alternative 2)
- NAVMAG - North/South (Alternative 3)
- NAVMAG - L-Shaped (Alternative 4)
- Northwest Field (NWF) (Alternative 5)

Refer to Appendix A of this TRRA for maps that correspond to the impact areas associated with each of the five LFTRC alternatives. See Appendix C for a table that illustrates a comparison of cultural resources impacts and potential mitigation measures for each LFTRC alternative.

II. 2011 PROGRAMMATIC AGREEMENT

Consultations under Section 106 of the National Historic Preservation Act (NHPA) for the Military Relocation to Guam (2010 Final EIS) resulted in execution of the 2011 PA, a formal agreement establishing a program alternative to accomplish Section 106 compliance for the overall relocation action. The 2011 PA was developed in consultation with the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officers (SHPOs) from Guam and CNMI, the National Park Service, interested groups, and the public, consistent with 36 Code of Federal Regulations (CFR) § 800.14(b) (3). Accounting for the size, complexity, duration, and as-yet undetermined aspects of the relocation action, or undertaking, the 2011 PA is a process-based agreement designed to incorporate meaningful reviews and stakeholder participation as projects are defined over time. The 2011 PA accommodates changes and new information in the overall relocation action by establishing specific procedures for addressing such changes and their potential effects to historic properties and other cultural resources. These processes provide measures for reviewing projects associated with the relocation action, as they are developed, and for considering the views of the public and the parties to the 2011 PA to determine mitigation measures when historic properties and other cultural resources may be adversely affected.

Stipulation on the Guam Training Ranges

For the LFTRC, the 2011 PA incorporates a process for consulting with the public and the parties to the PA on the potential effects to historic properties and other cultural resources associated with a decision on the LFTRC. This was necessary because when the 2011 PA was signed, a decision had not yet been made for the LFTRC. Accordingly, Stipulation V.C of the 2011 PA, entitled “Guam Training Ranges,” outlines requirements to conduct focused reviews and consultation with the parties to the PA and the public, in order to afford their participation in reviewing potential effects associated with the location, orientation, design, and operation the ranges within any area that that may be selected in the ROD for the LFTRC. The process includes consultation with the parties to the 2011 PA and the public in a review and assessment of potential direct and indirect effects to historic properties, consistent with the documentation standards defined under PA Stipulation IV.E.

This TRRA provides information on historic properties and other cultural resources for each of the five alternative LFTRC areas analyzed in the SEIS. LFTRC Alternative 5, Northwest Field, is identified in the DSEIS as the preferred alternative, and it is therefore analyzed in greater detail in this TRRA. Should a different alternative be selected in the ROD, this TRRA will be modified accordingly.

Public Participation

Throughout the process of developing alternatives, the DON has worked to support meaningful public participation. The DSEIS was distributed to Federal, state, and local agencies, elected officials, and other interested individuals and organizations in order to provide opportunities for those involved to learn about the proposed action and express their views.

Public scoping, which was conducted once for the LFTRC SEIS from February-April 2012, and a second time from October-December 2012 when the SEIS was expanded, takes public input into consideration on early planning efforts. Three meetings on Guam were held during this phase and took place November 8-12, 2012. DON cultural resources subject matter experts listened to public concerns with respect to potential impacts to cultural resources and communicated that the 2011 PA is equipped to satisfy Section 106 of the NHPA compliance with the changing proposed action.

A 60-day public comment period, which commenced with the release of the DSEIS to the public, took place from April-July 2014. Three public meetings were held during this time and took place May 20-22, 2014. Each meeting began with a two-hour open house session that was intended for project team members and subject matter experts to inform the public about the proposed action and potential environmental impacts. DON cultural resources subject matter experts and a public poster station communicated to the public that the 2011 PA remains in place to fulfill the requirements under Section 106 of the NHPA for the revised action described in the SEIS. DON cultural resources personnel explained how the PA processes will support the revised relocation action. Public hearings followed each open house session to provide the public with a forum to communicate views about the proposed action to government officials and fellow members of the public. DON representatives were present during the meetings to discuss the proposed action and the 2011 PA with all interested participants. .

During the public comment period for the SEIS, individuals from GovGuam agencies, Federal agencies, non-governmental organizations, and the public commented on cultural resources issues related to the LFTRC. Comments collected during the SEIS process will be taken into account as part of the DON's consideration of the proposed action.

III. ASSESSMENT OF FIVE LFTRC ALTERNATIVES

For each LFTRC alternative location carried forward for analysis in the SEIS, the DON conducted focused reviews to identify historic properties and other cultural resources that could be affected. Each LFTRC alternative includes range footprints, which delineate two types of potential effects: the areas of direct effects resulting from range construction and operation and large surface danger zones with the potential to affect these resources indirectly, for example by limiting access. The DON used different study methodologies for each type of area. This differentiation of inventory methods is consistent with the standards included in Stipulation IV.F of the 2011 PA and 36 CFR § 800.4(b) (1), as well as specific guidance from the ACHP. In its publication "Meeting the Reasonable and Good Faith Identification Standard in Section 106 Review," the ACHP guidance advises agencies to determine appropriate identification efforts based on: past planning, research and studies; the magnitude and nature of the undertaking and the degree of federal involvement; the nature and extent of potential effects on

historic properties; and the likely nature and location of historic properties within areas that may be affected (ACHP 2007). For the LFTRC alternatives assessment, additional considerations for the potential presence of other cultural resources included review of plant communities in affected areas to consider whether natural resources of cultural importance could be affected.

Work Plans

In preparation for the reviews, the DON prepared work plans summarizing the background and methods to be conducted, and submitted them to the Guam Historic Resources Division for review and comment. Separate work plans addressed the identification efforts for areas subject to direct effects and for SDZs, in which the DON anticipates only indirect effects are likely to occur. For purposes of reference, the work plans refer to areas of potential direct effect as “Potential Direct Impacted Area,” (PDIA) and “Potential Indirect Impacted Area,” (PIIA). The work plan for LFTRC PDIA is titled *Archaeological Surveys and Cultural Resource Studies, Live-Fire Training Range Complex Naval Munitions Site and Route 15 Alternatives, Territory of Guam* (Dixon *et al.* 2013a). The work plan for the PIIAs, where direct impacts are not anticipated, is titled *Archaeological Surveys and Cultural Resource Studies, Live-Fire Training Range Complex NCTS Finegayan and Northwest Field Alternatives and Main Cantonment Alternatives, Territory of Guam* (Dixon *et al.* 2013b). In addition to detailing the essential components of the in-fill surveys, the work plans presented the approach, methodology, personnel, and schedule for accomplishing the studies. The work plans also included historic contexts, summaries of previous archaeological research, and examinations of historic maps of the areas.

In both PDIA and PIIA, the beginning and ending transect coordinates were recorded with sub-meter accuracy, using a survey-grade Trimble GeoXH GeoExplorer 2008 Series Global Positioning System unit, to ensure the survey area was completely covered. Transect orientation was determined by terrain and access. Additionally, terrain in either area that could not be surveyed for safety reasons, such as areas for which access was prohibited or areas too steep to safely navigate on foot or areas covered in standing water, were marked on a map and the rationale as to why they were not surveyed provided in the results section of respective chapters in the cultural resource technical reports. The results of the in-fill surveys for the PDIA and the PIIA were summarized in technical reports detailing a review of previous surveys, methods, site and structure descriptions, NRHP evaluations (for PDIA), and possible effects from the proposed action (Dixon *et al.* 2013c, 2013d). These reports have been submitted to the Guam SHPO for review and summaries were provided during the bi-annual PA meetings to the parties involved with the 2011 PA.

PDIA Reviews

As described in the work plans, the DON surveyed all of the PDIA that had not been previously surveyed. For these areas, pedestrian surveys were conducted using survey transects spaced no more than 5 meters apart. When a site was identified in a PDIA, it was recorded in terms of the horizontal and vertical dimensions, number and type of associated features, morphology, function, presence of surface artifacts, cultural affiliation or occupation period, vegetation, and ground surface visibility. The field teams prepared detailed maps, site descriptions, and photo-documented all archaeological resources identified during the in-fill surveys of the PDIA and collected sufficient data to complete NRHP evaluations of these sites. In-fill surveys in PDIA also included subsurface testing (shovel test pits or controlled test units) for the purpose of determining presence or absence of intact subsurface cultural deposits judged to have potential for intact buried deposits. The utility improvement corridors were analyzed through an in-depth literature review of previous studies and primary source archival/historic documents that were used to establish a chronology of pre-contact and post-contact activity, and land use patterns, to support assessments of potential sensitivity for historic properties. Draft cultural

resources technical reports, which included summaries of the results of in-fill surveys and the literature review of utility improvement corridors, were submitted to Guam SHPO for reviews on May 21, 2013 and April 12, 2014. Utility Improvement Corridors are described in detail in the DSEIS [2014], Section 3.10.3.1: Methodology.

Architectural properties within PDIA's not exempted from further Section 106 review by a program comment were recorded through detailed descriptions of construction techniques, existing conditions, character-defining features, and alterations. For architectural properties in the PDIA's that were constructed between 1946 and 1991, the Navy Cold War Context (Aaron 2011) provided a primary analytical basis for NRHP evaluation. The context supported consideration of NRHP eligibility and for identifying properties of "potentially" exceptional significance that are less than 50 years old (Criteria Consideration G). All architectural properties within the PDIA's were photographed and evaluated in compliance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. Guam Historic Properties Inventory (GHPI) forms were completed for each site, building, and other property types.

PIIA Reviews

For the PIIAs, information collected from literature reviews was supplemented with pedestrian surveys of in-fill areas. As documented in the work plans, pedestrian surveys in these areas involved survey transects spaced at 10-meter intervals. Site recordation included sketch maps and collection of one global positioning system point at the center of each site. The difference in methodology between the PDIA's and the PIIAs is consistent with the ACHP's guidance on reasonable level of effort (ACHP 2012), which is discussed above. No new eligibility determinations were made for the sites identified in the PIIAs. Therefore, GHPI data forms were not completed. Sites in the PIIAs were not subject to subsurface testing. Architectural properties within the PIIAs were described and photographed, but were not evaluated for NRHP eligibility.

Common Characteristics of the LFTRC Alternatives

In advance of construction, each LFTRC alternative proposes to conduct geotechnical and topographic surveys to support project design efforts for future improvements and vertical construction projects. Project works will include vegetation clearance for the purpose of accessing specific study locations, placing geotechnical borings (via auger) and mechanized excavation to facilitate sample collection, and placement of survey markers (wooden stake hubs and/or rebar) for topographic support. Generally, geotechnical work entails drilling borings with a truck-mounted drill rig using 8-inch diameter augers or pipe casing with water or air rotary drilling. Boring depths vary, but generally range from 5 feet to a maximum of 110 feet.

All LFTRC alternatives are located within moderate likelihood areas for encountering Munitions of Explosive Concern (MEC) and/or Material Potentially Presenting an Explosive Hazard (MPPEH), and therefore, all intrusive activities will follow procedures described in the Joint Region Marianas Explosives Safety Submittal (JRM ESS), Amendment 5, Correction 1, Section 6.1.5 Anomaly Avoidance Part 1. Anomaly avoidance techniques will be employed during all excavations.

Each LFTRC alternative would include the MPMG Range, Modified Record of Fire (MRF) Range, Known Distance (KD) Pistol Range, KD Rifle Range, Non-standard Small Arms Range, and a range maintenance building. Additionally, all five LFTRC alternatives include the Hand Grenade (HG) Range, which would be located in the central part of Andersen South for each alternative. The HG Range would consist of an approximately 1.0 acre (0.4 ha) area that would be developed as a training facility for the M67

fragmentation hand grenade. It would include a demonstration area with bleachers, an open practice throwing field with various targets and throwing positions located outside the hazard zone, and a parking area. An additional 1.0 acre (0.4 ha) training area would be developed adjacent to the range. No adverse effects to NRHP-eligible or listed properties are anticipated from the projected construction or operation of the HG Range. The proposed HG Range is illustrated in Appendix A of this TRRA. Details about the HG Range are provided in DSEIS [2014], Section 2.2.3.

Each alternative would require utility improvement corridors, which will include trenching for power, potable water, wastewater, and solid waste disposal, as well as information technology and communications (IT/COMM) utility lines.

Alternative 1: Route 15

The Route 15 LFTRC alternative would encompass approximately 3,777 acres (1,528 ha), plus approximately 2 acres (0.8 ha) for the HG Range at Andersen South. Alternative 1 would be sited as a complex adjacent to Andersen South Air Force Compound, Yigo Municipality. Access to the range complex would be via Route 1 through the existing Andersen South entry control point. The proposed site is illustrated in Appendix A of this TRRA.

Direct physical disturbance would potentially occur on approximately 398 acres (161 ha) of this site for the construction of the individual ranges, range support building, parking areas, range towers, range access roads, a perimeter fence, and the realignment location of Route 15. Approximately 3,379 acres (1,367 ha) would include lands and submerged lands within the SDZ that would not be directly impacted as a result of construction or operation of the LFTRC. Additionally, excavation and soil removal associated with the construction of Alternative 1 could adversely affect three historic properties, including Pre-Contact artifact scatters and sites containing *latte* components (DSEIS [2014], Table 5.1.10-1: Archaeological Sites within the Alternative 1 PDIA). Construction associated with Alternative 1 would not directly affect any NRHP-eligible archaeological sites or properties.

Indirect adverse effects from the operation of Alternative 1 could result from changes in the auditory setting of certain site types (effect on site integrity), with small arms live-fire noise being audible near five NRHP-eligible archaeological sites with *latte* components, and one potential traditional cultural property (TCP) (Pågat Point). Changes to the setting of the Pågat Point site could be adverse, if the property is confirmed as a TCP. Indirect impacts from the operation of Alternative 1 would not result in additional restrictions on access. Consistent with the 2011 PA, access to Pågat Cave, Pågat Village, and the existing path to these sites would not be encumbered by the SDZ for the ranges, and ownership of these properties would remain with the Government of Guam.

Additional details about this alternative are provided in DSEIS [2014], Section 2.5.4.1 and in Appendix C of this TRRA.

Alternative 2: NAVMAG (East/West)

The NAVMAG (East/West) LFTRC Alternative 2 would encompass approximately 3,735 acres (1,511 ha), plus approximately 2 acres (0.8 ha) for the HG Range at Andersen South. Alternative 2 would be a range complex located primarily on non-federal land to the southeast of NAVMAG. Access to the ranges would be via a new access road from Dandan Road that would be constructed as part of the same project. The proposed site is illustrated in Appendix A of this TRRA.

Excavation and soil removal associated with the construction of Alternative 2 could adversely affect nine known historic properties, including Pre-Contact artifact scatters and sites containing *latte* components (DSEIS [2014] Table 5.2.10-1: Archaeological Sites within the Alternative 2 PDIA). Direct physical disturbance would potentially occur on approximately 302 acres (122 ha) of this site for the construction of the individual ranges, range support building, range access roads, and a perimeter fence. Approximately 3,026 acres (1,255 ha) would include lands within the SDZ that would not be directly impacted as a result of construction or operation of the LFTRC. Additionally, construction associated with Alternative 2 could potentially impact NRHP-eligible archaeological sites in areas that could not be accessed during the in-fill surveys due to standing water. No NRHP-eligible buildings or structures would be directly affected.

Indirect adverse effects from the operation of Alternative 2 could result from changes in the auditory setting of certain site types, with small arms live-fire noise being audible near one NRHP-eligible archaeological site and 21 potentially eligible sites that are located within the expanded noise contours. Changes to the setting of one NRHP-eligible site with *latte* components could be adverse. There may also be an indirect effect to three potentially eligible sites with *latte* components. Other indirect impacts from the operation of Alternative 2 could result from additional restrictions on access to one potential TCP (a high density area of *latte* sites). Changes could also occur to access on lands currently owned by the Government of Guam and by private landowners.

Additional details about this alternative are provided in DSEIS [2014], Section 2.5.4.2 and in Appendix C of this TRRA.

Alternative 3: NAVMAG (North/South)

The NAVMAG (North/South) LFTRC Alternative 3 would encompass approximately 3,575 acres (1,446 ha) in the south-central portion of Guam almost entirely within the NAVMAG), plus approximately 2 acres (0.8 ha) for the HG Range at Andersen South. The proposed site is illustrated in Figure 2.5-4 of the DSEIS [2014] and in Appendix A of this TRRA. Approximately 396 acres (160 ha) would be required for construction of the proposed range facilities, while 3,179 acres (1,286 ha) would be land within the SDZ that would not be directly affected by construction or operation of the LFTRC. Additionally, excavation and soil removal associated with the construction of Alternative 3 could adversely, directly affect 11 known historic properties, including Pre-Contact artifact scatters, sites containing *latte* components, rock shelters, and WWII military sites (DSEIS [2014] Table 5.3.10-1: Archaeological Sites within the Alternative 3 PDIA). Construction could also affect two potentially eligible sites and one potential TCP (Boña Springs). Based on an examination of previous investigations and predictive modeling, there is a low potential for NRHP-eligible sites in areas that could not be accessed during the in-fill surveys due to standing water. Construction activities associated with Alternative 3 may also require the demolition of 24 architectural properties. All of the buildings and structures are covered under the *Program Comment for World War II and Cold War Era (1939-1974) Ammunition Storage Facilities* (ACHP 2006), which resolves NHPA Section 106 requirements for demolition of these buildings.

Indirect adverse effects from the operation of Alternative 3 could result from changes in the auditory setting of certain site types (effect to site integrity), with small arms live-fire noise being audible near 60 NRHP-eligible archaeological sites with *latte* components, and two potential TCPs (Boña Springs and Alifan Peak) that are located within the expanded noise contours. Changes to the setting of 25 NRHP-eligible sites with *latte* components could be adverse. Indirect impacts from the operation of Alternative 3 could result from additional restrictions on access to five potential TCPs: Boña Springs, Almagosa Springs, Dobo Springs, Almagosa Mountain, and a high density area of *latte* sites.

Additional details about this alternative are provided in DSEIS [2014], Section 2.5.4.3 and in Appendix C of this TRRA.

Alternative 4: NAVMAG (L-Shaped)

The NAVMAG (L-Shaped) LFTRC Alternative 4 would encompass approximately 4,816 acres (1,949 ha) in the south-central portion of Guam and includes land within the NAVMAG and privately-owned lands to the west and to the southeast of the NAVMAG), plus approximately 2 acres (0.8 ha) for the HG Range at Andersen South. Alternative 4 would be divided between two locations; the MPMG Range and range maintenance facility would be located in the same respective locations identified in Alternative 3 (DSEIS [2014], Section 2.5.4.3: Naval Magazine (North/South) Live-Fire Training 2.5.4.3 Range Complex - Alternative 3) and the other ranges would be located on adjacent non-federal property to the southeast of the NAVMAG, near the area of Alternative 2 (DSEIS [2014], Section 2.5.4.2). Though these components of range would not be contiguous, they would all be in close proximity as required by the Marine Corps Guiding Principles. Access to the ranges located east of the NAVMAG would occur via a new access road from Route 4. Access between the ranges proposed in the southeastern portion of the LFTRC would be via new roads constructed as part of the LFTRC. The proposed site is illustrated in DSEIS [2014], Figure 2.5-5 and in Appendix A of this TRRA. Alternative 4 would use approximately 398 acres (161 ha) for the construction of the individual ranges, range support building, range access roads, munitions magazine relocation area, and a perimeter fence along the western and southern edges of the LFTRC. Approximately 4,165 acres (1,686 ha) of land within the SDZ would not be directly affected by construction or operation of the LFTRC. Additionally, excavation and soil removal associated with the construction of Alternative 4 could adversely, directly affect 11 known historic properties, including Pre-Contact artifact scatters, sites containing *latte* components, and WWII military sites (DSEIS [2014], Table 5.4.10.1: Archaeological Sites within the Alternative 4 PDIA). Construction could also affect historic properties and impact culturally important natural resources. Construction activities associated with Alternative 4 may also require the demolition of architectural properties. All of the buildings and structures are covered under the *Program Comment for World War II and Cold War Era (1939-1974) Ammunition Storage Facilities* (ACHP 2006), which resolves NHPA Section 106 requirements for demolition of these buildings.

Indirect impacts from the operation of Alternative 4 could result from changes in the auditory setting of certain site types (effect on site integrity), with small arms live-fire noise being audible near 40 NRHP-eligible archaeological sites with *latte* components, 20 potentially eligible sites, and two potential TCPs (Boña Springs and Alifan Peak). Changes to the setting of 24 NRHP-eligible sites with *latte* components could be adverse. There may also be an effect to five potentially eligible sites with *latte* components and two potential TCPs. Indirect impacts from the operation of Alternative 4 could result from additional restrictions on access to four potential TCPs: Almagosa Springs, Dobo Springs, Almagosa Mountain, and a high density area of *latte* sites.

Additional details about this alternative are provided in DSEIS [2014], Section 2.5.4.4 and in Appendix C of this TRRA.

Alternative 5: Northwest Field (NWF)

The Northwest Field (NWF) LFTRC Alternative 5 would encompass approximately 3,981 acres (1,611 ha) in the NWF section of Andersen Air Force Base (AAFB) and in portions of the Ritidian Unit of the Guam National Wildlife Refuge, which is managed by the U.S. Fish and Wildlife Service (USFWS), plus approximately 2 acres (0.8 ha) for the HG Range at Andersen South. Proposed entry to the NWF LFTRC would be through a new entry control point located to the northwest of the current NWF Gate off of

Route 3A. Secondary access would occur via existing access roads on NWF. The proposed site is illustrated in DSEIS [2014], Figure 2.5-6 and in Appendix A of this TRRA. The NWF Alternative would require approximately 265 acres (107 ha) for the construction of the individual ranges, range support building, range towers, range access roads, and a perimeter fence (all within federally controlled land at NWF), as well as the replacement of FWS facilities within the Guam NWR that would be encumbered by the range SDZs. The remaining 3,701 acres (1,498 ha) would include lands and submerged lands within the SDZ, which includes approximately 142 acres (57 ha) of the Ritidian Unit of the Guam NWR and 3,059 acres (1,238 ha) of the submerged lands of the Philippine Sea.

Excavation and soil removal associated with the construction of the NWF Alternative could adversely affect 33 known historic properties, including Pre-Contact artifact scatters, sites containing *latte* components, rock shelters, and WWII military sites (DSEIS [2014], Table 5.5.10-1: Archaeological Sites within the NWF Alternative PDIA and PIIA and TRRA, Table 1).

Indirect adverse effects from the operation of the NWF Alternative could result from changes in the auditory setting of certain site types (effect to site integrity), with small arms live-fire noise being audible near 44 NRHP-eligible archaeological sites that are located within the expanded noise contours. The NRHP-eligible sites consist of Pre-contact artifact scatters, rock shelters, historic military sites, and a portion of the NWF (66-08-1065). All of these NRHP-eligible sites within the PIIA have multiple *latte* components and one NRHP-eligible site is a cave site. Based on the analysis, changes in the setting would not create indirect adverse effects to the integrity of 33 NRHP-eligible artifact scatters, rock shelters, or historic military sites. However, three potentially noise-sensitive NRHP-eligible sites with *latte* components could be subject to indirect adverse effects as a result of substantial changes in the audible environment. Indirect impacts from the operation of the NWF Alternative could result from additional restrictions on access to portions of two NRHP-eligible archaeological sites that are located within the SDZs that overlay portions of the Ritidian Unit (DSEIS [2014], Table 5.5.10-2: Summary of Archaeological Sites Known to be Located within the NWF Alternative PDIA and PIIA and TRRA, Table 1). These sites are currently accessible to the public through tours and public education programs. Under the NWF Alternative, access to these sites would be restricted while the ranges are in use. Access to these sites during those periods when the ranges are not in use is a matter under the management authority of the USFWS.

Additional details about this alternative are provided in DSEIS [2014], Section 2.5.4.5 and in Appendix C of this TRRA.

IV. DETAILED ASSESSMENT OF THE PREFERRED ALTERNATIVE

This section of the TRRA presents a detailed assessment of historic properties and other cultural resources that would be affected if the current preferred alternative is selected in the ROD. The analysis identifies adverse effects and impacts to other cultural resources associated with the preferred LFTRC alternative location at NWF. Should a different alternative be selected in the ROD, then this TRRA will be modified accordingly.

Summary of Resources in the PDIA of the LFTRC Preferred Alternative at NWF

Table 1 in this TRRA (below) lists 33 known archaeological sites located within the NWF Alternative PDIA. Six of these sites are completely contained within the PDIA, while 27 sites lie in both the PDIA and the PIIA. Of the six sites that lie totally within the boundaries of the PDIA, three sites are eligible for listing in the NHRP and three are ineligible for listing in the NRHP. Of the 27 sites that lie in both the PDIA and

PIIA, 15 are eligible for listing in the NRHP and 12 are ineligible for listing in the NRHP. Sites contained within the PDIA include artifact scatters, rock alignments, caves, rock shelters, historic antennae bases, and concrete enclosures.

No historic properties have been identified in the PDIA of the proposed HG Range at Andersen South.

Summary of Resources in the PIIA of the LFTRC Preferred Alternative at NWF

Table 1 (below) lists 83 known archaeological sites located within the NWF Alternative PIIA. Fifty-six of these sites are fully within the PIIA, while 27 sites lie in both the PIIA and the PDIA. Of the fifty-six sites that lie totally within the PIIA, 44 are eligible for listing in the NRHP and 12 are ineligible for listing in the NRHP. Of the 27 sites that lie in both the PDIA and the PIIA, 15 are eligible for listing in the NRHP and 12 are ineligible for listing in the NRHP. Sites contained within the PIIA area include artifact scatters, rock shelters, a WWII-era fuel tank farm, and historic cobble retaining walls.

No historic structures and no TCPs have been identified in the PIIA for the NWF Alternative.

Table 1: Archaeological Sites located within the NWF Alternative PDIA and PIIA

GHPI Number¹	Temporary Site Number/ Map Number	Site Type	Period	NRHP Eligible?	NRHP Criteria	PDIA, PIIA, or Both?	Reference
66-08-0012	T-RIT-100	Latte complex, cave with pictographs, historic church, and antennae bases ²	Latte, Spanish Missionization Chamorro Spanish Wars/Post-WWII/Second American Territorial, Organic Act/Home Rule/ Economic Development	Yes	A, D	Both	Reinman 1977; Dixon et al. 2014a; Dixon et al. 2014b
66-08-0013	T-RIT-001	Rock shelters, cave, artifact scatter, concrete enclosure ²	Latte, Post-WWII/Second American Territorial/Organic Act/Home Rule/Economic Development	Yes	D	PIIA	Reinman 1977; Dixon et al. 2014a; Dixon et al. 2014b
66-08-1065		NWF	Post-WWII/ Second American Territorial	Yes	D	Both	Aaron et al. 2007; Dixon et al. 2011b
66-08-2492	T-A3-1	Rock shelter with midden soil and marine shell	Pre-Contact/Latte	Yes	D	Both	Dixon et al. 2011b
66-08-2493	T-NW-1	Artifact scatter	Organic Act/Home Rule/Economic Development	No	NA	Both	Dixon and Walker 2011
66-08-2494	T-NW-2	Artifact scatter	Pre-Contact/Latte	Yes	D	Both	Dixon and Walker 2011
66-08-2495	T-NW-3	WWII-era fuel tank farm (tanks removed)	WWII (Unspecified)	No	NA	Both	Dixon and Walker 2011
66-08-2496	T-NW-5	Ceramic scatter ²	Pre-Contact/Latte	Yes	D	Both	Dixon and Walker 2011
66-08-2497	T-NW-6	Artifact scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon and Walker 2011
66-08-2498	T-NW-13	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon and Walker 2011
66-08-2499	T-NW-14	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon and Walker 2011
66-08-2500	T-NW-23	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon and Walker 2011
66-08-2501	T-NW-27	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon and Walker 2011
66-08-2502	T-NW-28	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon and Walker 2011
66-08-2503	T-M-01	Concrete pad	Post-WWII/ Second American Territorial	No	NA	PDIA	Dixon et al. 2012
66-08-2504	T-M-02	Concrete slab, artifact scatter	WWII American military, Second American Territorial	No	NA	PIIA	Dixon et al. 2012
66-08-2505	T-M-03	Dump ²	Post-WWII/ Second American Territorial	No	NA	Both	Dixon et al. 2012

Table 1: Archaeological Sites located within the NWF Alternative PDIA and PIIA

GHPI Number¹	Temporary Site Number/ Map Number	Site Type	Period	NRHP Eligible?	NRHP Criteria	PDIA, PIIA, or Both?	Reference
66-08-2506	T-M-04	Concrete pad and foundation	Post-WWII/ Second American Territorial	No	NA	Both	Dixon <i>et al.</i> 2012
66-08-2507	T-M-05	Concrete pad, wooden power poles	Post-WWII/ Second American Territorial	No	NA	Both	Dixon <i>et al.</i> 2012
66-08-2508	T-M-06	Cobble walls	Pre-Contact/Latte	Yes	D	Both	Dixon <i>et al.</i> 2012
66-08-2509	T-M-07	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon <i>et al.</i> 2012
66-08-2510	T-M-08	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon <i>et al.</i> 2012
66-08-2511	T-M-09	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon <i>et al.</i> 2012
66-08-2512	T-M-10	Military refuse/dump	Post-WWII/Second American Territorial	No	NA	PIIA	Dixon <i>et al.</i> 2012
66-08-2513	T-M-11	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon <i>et al.</i> 2012
66-08-2514	T-M-12	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon <i>et al.</i> 2012
66-08-2515	T-M-13	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon <i>et al.</i> 2012
66-08-2516	T-M-14	Cobble wall	Pre-Contact/Latte	Yes	D	PIIA	Dixon <i>et al.</i> 2012
66-08-2517	T-M-15	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon <i>et al.</i> 2012
66-08-2518	T-M-16	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon <i>et al.</i> 2012
66-08-2519	T-M-17	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon <i>et al.</i> 2012
66-08-2520	T-M-18	Military refuse/dump	Post-WWII/ Second American Territorial	No	NA	PIIA	Dixon <i>et al.</i> 2012
66-08-2521	T-M-19	Road bed/tank trail	WWII (unspecified)	No	NA	PIIA	Dixon <i>et al.</i> 2012
66-08-2522	T-RP-01	Ceramic scatter ²	Pre-Contact/Latte	Yes	D	Both	Dixon <i>et al.</i> 2012
66-08-2523	T-RP-02	Concrete foundations and cobble retaining wall (remains of navigation facility) ²	WWII Japanese Military Occupation, Post-WWII/ Second American Territorial	No	NA	Both	Dixon <i>et al.</i> 2012
66-08-2524	T-RP-03	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon <i>et al.</i> 2012
66-08-2525	T-RP-04	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon <i>et al.</i> 2012
66-08-2530	T-PP-01	Artifact scatter ²	Pre-Contact/Latte	Yes	D	Both	Dixon <i>et al.</i> 2012
66-08-2531	T-PP-02	Gas masks	Post-WWII/Second American Territorial	No	NA	PIIA	Dixon <i>et al.</i> 2012
66-08-2532	T-PP-03	Bottles and canteens	Post-WWII/Second American Territorial	No	NA	PIIA	Dixon <i>et al.</i> 2012
66-08-2533	T-J-01	Rockshelter	Pre-Contact/Latte	Yes	D	PIIA	Dixon <i>et al.</i> 2012
66-08-2534	T-J-02	Rockshelter	Pre-Contact/Latte	Yes	D	PIIA	Dixon <i>et al.</i> 2012
66-08-2535	T-J-03	Rockshelter	Pre-Contact/Latte	Yes	D	PIIA	Dixon <i>et al.</i> 2012
	FTX3-1	Artifact scatter	Pre-Contact/Latte	Yes	D	PIIA	Church <i>et al.</i> 2009
	FTX3-2	Artifact scatter	Pre-Contact/Latte	Yes	D	Both	Church <i>et al.</i> 2009

Table 1: Archaeological Sites located within the NWF Alternative PDIA and PIIA

<i>GHPI Number¹</i>	<i>Temporary Site Number/ Map Number</i>	<i>Site Type</i>	<i>Period</i>	<i>NRHP Eligible?</i>	<i>NRHP Criteria</i>	<i>PDIA, PIIA, or Both?</i>	<i>Reference</i>
	T-NW- 4	Ceramic scatter	Pre-Contact/Latte	Yes	D	Both	Dixon and Walker 2011
	T-NW-7	Ceramic scatter	Pre-Contact	Yes	D	PIIA	Dixon and Walker 2011
	T-NW-8	Ceramic scatter, Concrete pad with 1945 inscription, artifact scatter	Pre-Contact/Latte, Post-WWII/Second American Territorial	No	NA	PIIA	Dixon and Walker 2011
	T-NW-9	Artifact scatters	Pre-Contact/Latte, Post-WWII/Second American Territorial	Yes	D	Both	Dixon and Walker 2011
	T-NW-10	Artifact scatter (possible helicopter components)	Organic Act/Home Rule/Economic Development	No	NA	Both	Dixon and Walker 2011
	T-NW-11	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon and Walker 2011
	T-NW-12	Ceramic scatter	Pre-Contact	Yes	D	PIIA	Dixon and Walker 2011
	T-NW-15	Ceramic scatter; Artifact scatter	Pre-Contact; WWII American Military	Yes	D	PIIA	Dixon and Walker 2011
	T-NW-16	Artifact scatter	Post-WWII/Second American Territorial	No	NA	Both	Dixon and Walker 2011
	T-NW-18	Ceramic scatter	Pre-Contact/Latte	Yes	D	PDIA	Dixon and Walker 2011
	T-NW-19	Ceramic scatter	Pre-Contact/Latte	Yes	D	PDIA	Dixon and Walker 2011
	T-NW-20	Artifact scatter	Pre-Contact/Latte	Yes	D	Both	Dixon and Walker 2011
	T-NW-21	Ceramic scatter	Pre-Contact/Latte	Yes	D	Both	Dixon and Walker 2011
	T-NW-22	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon and Walker 2011
	T-NW-24	Ceramic scatter ²	Pre-Contact/Latte	Yes	D	PDIA	Dixon and Walker 2011
	T-NW-25	Artifact scatter ²	Post-WWII/, Second American Territorial	No	NA	Both	Dixon and Walker 2011
	T-NW-26	Ceramic scatter	Pre-Contact/Latte	Yes	D	Both	Dixon and Walker 2011
	T-NW-29	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon and Walker 2011

Table 1: Archaeological Sites located within the NWF Alternative PDIA and PIIA

GHPI Number¹	Temporary Site Number/ Map Number	Site Type	Period	NRHP Eligible?	NRHP Criteria	PDIA, PIIA, or Both?	Reference
	T-NW-32	Firing range embankment	WWII (unspecified)	No	NA	PIIA	Dixon and Walker 2011
	T-NW-34	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon and Walker 2011
	T-NW-36	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon and Walker 2011
	T-NW-37	Artifact scatter	Post-WWII/ Second American Territorial	No	NA	PIIA	Dixon and Walker 2011
	T-NW-38	Artifact scatter	WWII	No	NA	PIIA	Dixon and Walker 2011
	T-NW-39	Ceramic scatter	Pre-Contact/Latte	Yes	D	Both	Dixon and Walker 2011
	T-NW-40	Ceramic scatter ²	Pre-Contact/Latte	Yes	D	Both	Dixon and Walker 2011
66-08-2736	T-NWF-001a	Historic Road	Post-WWII/ Second American Territorial	No	NA	Both	Dixon et al. 2014a; Dixon et al. 2014b
66-08-2737	T-NWF-001b	Historic Bottle Dumps along Rd.	Post-WWII/ Second American Territorial	No	NA	Both	Dixon et al. 2014a; Dixon et al. 2014b
66-08-2738	T-NWF-002	Artifact scatter	Pre-Contact/Latte	No	NA	PDIA	Dixon <i>et al.</i> 2014a
66-08-2742	T-NWF-006	Bottle Dump and Artifacts (Red Bricks and canteen holder)	Post-WWII/Second American Territorial	Yes	D	PIIA	Dixon et al. 2014b
66-08-2657	T-RIT-002	Navy Antennas	Post-WWII/Second American Territorial	Yes	D	PIIA	Dixon et al. 2014b
66-08-2744	T-RIT-105	Ceramic scatter	Pre-Contact/Latte	The visibility is 0-20 percent, shovel test pits (Stps) were placed outside of the site, which indicated nothing in the way of site integrity. Do not concur at this time. (No)	NA	PDIA	Dixon <i>et al.</i> 2014a
66-08-2745	T-RIT-108	Pottery Scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon et al. 2014b
66-08-2746	T-RIT-109	Pottery Scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon et al. 2014b
66-08-2747	T-RIT-110	Rock Shelters	Pre-Contact/Latte	Yes	D	PIIA	Dixon et al. 2014b

Table 1: Archaeological Sites located within the NWF Alternative PDIA and PIIA

GHPi Number¹	Temporary Site Number/ Map Number	Site Type	Period	NRHP Eligible?	NRHP Criteria	PDIA, PIIA, or Both?	Reference
66-08-2748	T-RIT-111	Rock Shelters	Pre-Contact/Latte	Yes	D	PIIA	Dixon et al. 2014b
66-08-2749	T-RIT-112	Rock Shelters	Pre-Contact/Latte	Yes	D	PIIA	Dixon et al. 2014b
66-08-2750	T-RIT-113	Pottery Scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon et al. 2014b
66-08-2751	T-RIT-114	Pottery Scatter	Pre-Contact/Latte	Concur. This site is approximately .02 meter sq. and 8 stps were placed at 5 and 10 meters from the site. However, it would be nice to know the integrity of the site. (Yes)	D	PIIA	Dixon et al. 2014b
66-08-2752	T-RIT-115	Pottery Scatter	Pre-Contact/Latte	Site visibility is 15 to 20 percent. On page 4-70, one Stp was dug along the southern transect line. On Page 4-71, two Stps were excavated along the southern transect line. We do not concur at this time. Please provide archaeological notes as an appendix to this site. (No)	NA	PIIA	Dixon et al. 2014b
66-08-2753	T-RIT-120	Ceramic scatter	Pre-Contact/Latte	Site visibility is 10 to 20 percent; no Stps were placed in the site to show the integrity of the site. Therefore, we cannot concur at	NA	PIIA	Dixon <i>et al.</i> 2014b

Table 1: Archaeological Sites located within the NWF Alternative PDIA and PIIA

GHP Number¹	Temporary Site Number/Map Number	Site Type	Period	NRHP Eligible?	NRHP Criteria	PDIA, PIIA, or Both?	Reference
				this time. (No)			
	T-SP-1	Japanese defensive position	WWII Japanese Military Occupation	Yes	D	PIIA	Dixon and Walker 2011
	T-SP-2	Japanese defensive position	WWII Japanese Military Occupation	Yes	D	PIIA	Dixon and Walker 2011
	T-SP-3	Japanese defensive position	WWII Japanese Military Occupation	Yes	D	PIIA	Dixon and Walker 2011
	T-SP-4	Ceramic scatter	Pre-Contact/Latte	Yes	D	PIIA	Dixon and Walker 2011

- 1 Legend: GHP = Guam Historic Properties Inventory; NRHP = National Register of Historic Places; NA=not applicable. NRHP criterion D = eligible for potential to yield information important in prehistory or history.
- 2
- 3 Notes: ¹Not all sites recorded within the project areas have received official GHP numbers, although they have been documented as part of previous surveys.
- 4 ²Sites are in both the potential direct impact area and the potential indirect impact area.

1 **Summary of Adverse Effects and Other Impacts for the Preferred LFTRC Alternative at NWF**

2 Construction and operation of NWF Alternative would adversely affect historic properties and impact
3 culturally important natural resources. Should this alternative be selected in the ROD, the RMP would
4 define mitigation measures, as well as additional considerations to avoid, minimize, and mitigate
5 adverse effects to historic properties and impacts to other cultural resources, for the construction and
6 operation of the LFTRC.

7
8 Construction of the ranges, support facilities, utilities, and road construction would primarily occur in
9 the NWF area of AAFB (DSEIS [2014], Figure 2.5-6). Construction of replacement USFWS structures
10 would occur on the Ritidian unit of the Guam NWR. Given the substantial development anticipated in
11 the PDIA, it is assumed for purposes of this analysis that 100% of the area within the boundaries of
12 construction would be disturbed. Throughout the design process, alternatives to avoid and minimize
13 adverse effects would be considered, consistent with procedures in the 2011 PA. No construction is
14 proposed in the PIIA. Excavation and soil removal associated with the construction of the NWF
15 Alternative would adversely affect 33 known historic properties, including Pre-Contact artifact scatters
16 and sites containing latte components (See Table 1 above). Of these 33 known historic properties,
17 construction activities would affect 3 NRHP-eligible archaeological sites that are contained within the
18 boundaries of the PDIA, and 15 NRHP-eligible archaeological sites that lie in both the PDIA and PIIA.
19 Construction activities associated with the NWF Alternative would also directly impact culturally
20 important natural resources. This project would require removal of limestone forest where culturally
21 important natural resources may be present.

22
23 There are no historic properties located in the PDIA or PIIA for the proposed HG Range at Andersen
24 South. Therefore, no adverse effects to historic properties are anticipated due to construction or
25 operation of the HG Range.

26
27 Indirect adverse effects to NRHP-eligible archaeological sites from the operation of the NWF Alternative
28 could result from changes affecting site integrity. For many types of archaeological sites (e.g. ceramic
29 scatters, rock alignments), auditory impacts associated with live-fire operations would not affect
30 characteristics that qualify them for the NRHP. However, an increase in noise associated with live-fire
31 operations may adversely affect historic properties for which solitude, quiet, or contemplation
32 contribute to or define their significance, such as TCPs.

33
34 Areas near the proposed LFTRC are currently subject to intermittent noise from aircraft up to 60 dB Day-
35 Night Level (DNL); although most areas currently have average noise levels of less than 60 dB DNL (DSEIS
36 [2014], Section 5.5.4:Noise). Under the NWF Alternative, small arms live-fire noise would be audible
37 near 43 NRHP-eligible sites and that are located within the expanded noise contours (Table 2). Average
38 noise levels during range operations are projected to increase from current levels of less than 60 dB to
39 between 65 dB and 85 dB ADNL due to the introduction of small arms live-fire noise. At the Ritidian Unit
40 of the Guam NWR, noise levels when the ranges are in use are projected to increase from current levels
41 of less than 60 dB to over 80 dB ADNL in some areas, although some attenuation below the cliff line is
42 expected due to topography.

43
44 Based on the analysis, changes in the noise levels would not adversely affect the integrity of 43 NRHP-
45 eligible artifact scatters, rock shelters, or historic military sites. However, three potentially noise-
46 sensitive NRHP-eligible sites with *latte* components could be indirectly adversely affected by the
47 anticipated changes in the audible environment.

<i>Site Type</i>	<i>Period</i>	<i>Number of Sites of this Type in Impact Area</i>	<i>NRHP Eligible?</i>	<i>NRHP Criteria</i>	<i>Adverse Effect</i>
Latte Sites/Complexes	Pre-Contact/Latte	3	Yes	D	Unknown
Pre-Contact Cave	Pre-Contact	1	Yes	D	No
Pre-Contact Artifact Scatters	Pre-Contact	31	Yes	D	No
Rock shelters	Pre-Contact/Latte	3	Yes	D	No
Historic Artifact Scatter	Post-Contact	1	Yes ¹	D	No
WWII Defenses	Japanese Administration	3	Yes	D	No
NWF (Site 66-08-1065)	Second American Administration Territorial	1	Yes	D	No

Legend: NRHP = National Register of Historic Places; NA=not applicable; NRHP criterion D = eligible for potential to yield information important in prehistory or history.

Notes: ¹ *Unevaluated, but considered eligible for Section 106 purposes.*

1

2 Access to cultural resources in the PIIA would be restricted during range operations. Access to cultural
3 resources located on AAFB (confined to the top of the Northern Guam limestone plateau) is currently
4 limited due to Air Force operations; however, portions of the Ritidian Unit of the Guam NWR are
5 currently open to the public along the beaches to the foot of the limestone cliff lines and periodic tours
6 and public education programs are available. Under the NWF Alternative, access to those portions of the
7 Ritidian Unit that lie within the SDZs would be restricted while the ranges are in use. Access to these
8 sites during those periods when the ranges are not in use is a matter under the management authority
9 of the USFWS.

10 Throughout the planning process, to the degree possible, additional consideration will be made to avoid
11 and minimize adverse effects to historic properties and impacts to natural resources of cultural
12 significance in the direct impact area. The RMP will stipulate additional measures to avoid and minimize,
13 as well as measures to mitigate adverse effects. Consistent with the commitment in the 2011 PA to
14 consider treatment measures, the RMP will include a design review process to allow consideration of
15 feedback from the consulting parties. The RMP will also provide provisions for data recovery of
16 archaeological historic properties that cannot be avoided.

APPENDICES

Appendix A: Figures	21-26
Alternative 1: Route 15A	22
Alternative 2: NAVMAG East/West.....	23
Alternative 3: NAVMAG North/South	24
Alternative 4: NAVMAG L-Shaped	25
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Appendix A:

Figures

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LFTRC Route 15 Option A Impacted Areas

Legend

- Impacted Area (379 Ac)*
- Route 15 Realignment
- Cultural Sites/Landmark
- Notional SDZ Boundary
- Existing Hiking Trail
- Archeological Site (Pagat Cave & Village)
- DOD Lands

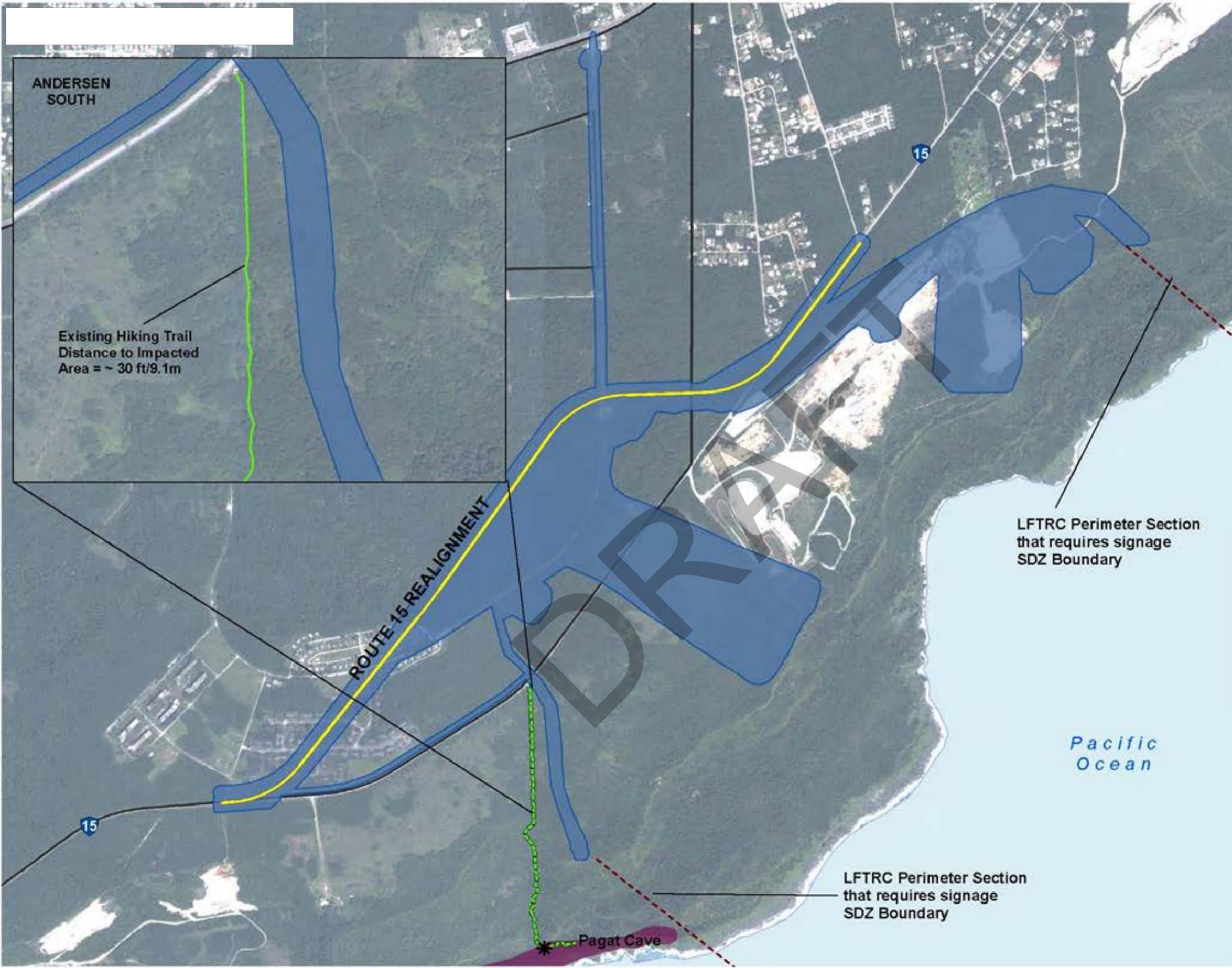
* Impacted Area includes - notional range development features and on-site utilities (water, wastewater, & electric)



Coordinate System: UTM Zone 55 North
 Projection: Transverse Mercator
 Datum: D WGS 1984

PREPARED BY:

 Naval Facilities Engineering Command Pacific Division
 Guam Program Management Office
 DATE: 01 Aug 2013

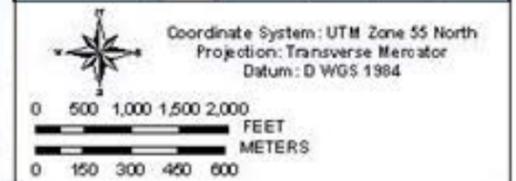


**LFTRC NMS Full Complex
East / West
Impacted Areas**

Legend

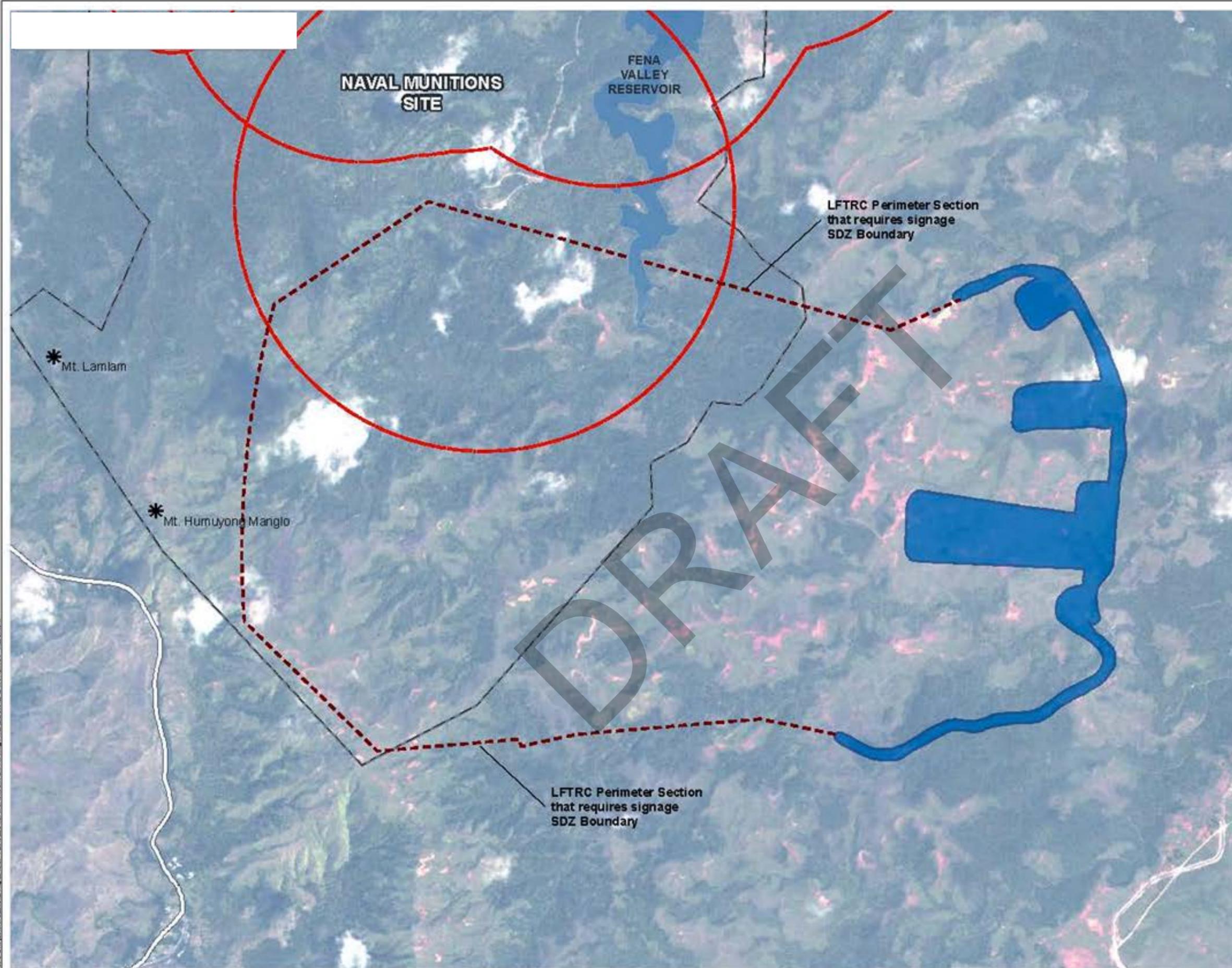
-  Impacted Areas (275 Ac)*
-  Notional SDZ Boundary
-  Cultural Sites / Landmark
-  Highway
-  Existing ESQD Arc
-  DOD Lands

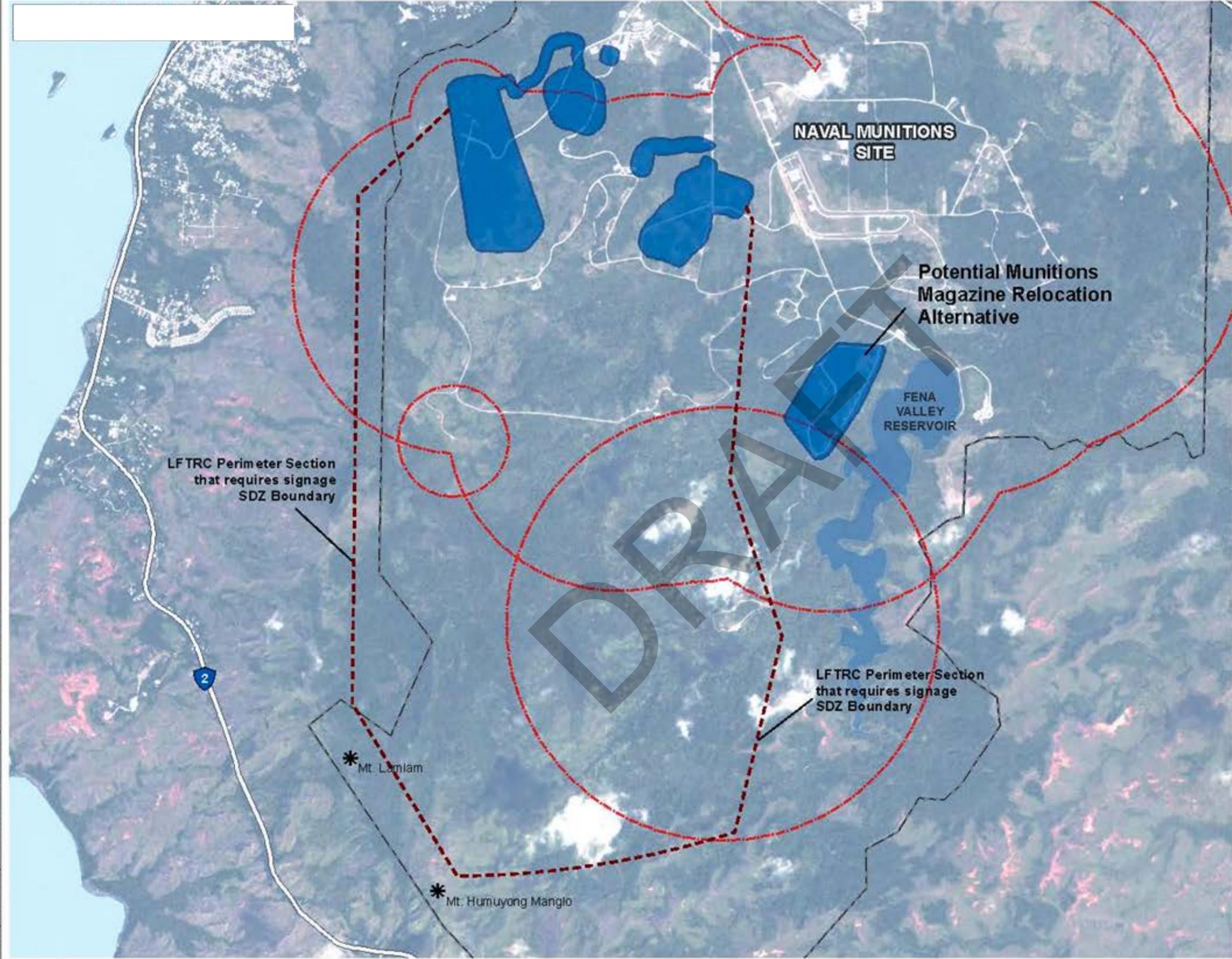
* Impacted Area includes - notional range development features and on-site utilities (water, wastewater, & electric)



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 Naval Facilities Engineering Command Pacific Division
 Guam Program Management Office
DATE: 16 Jul 2013



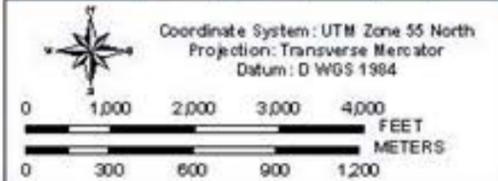


**LFTRC NMS Full Complex
North / South
Impacted Areas**

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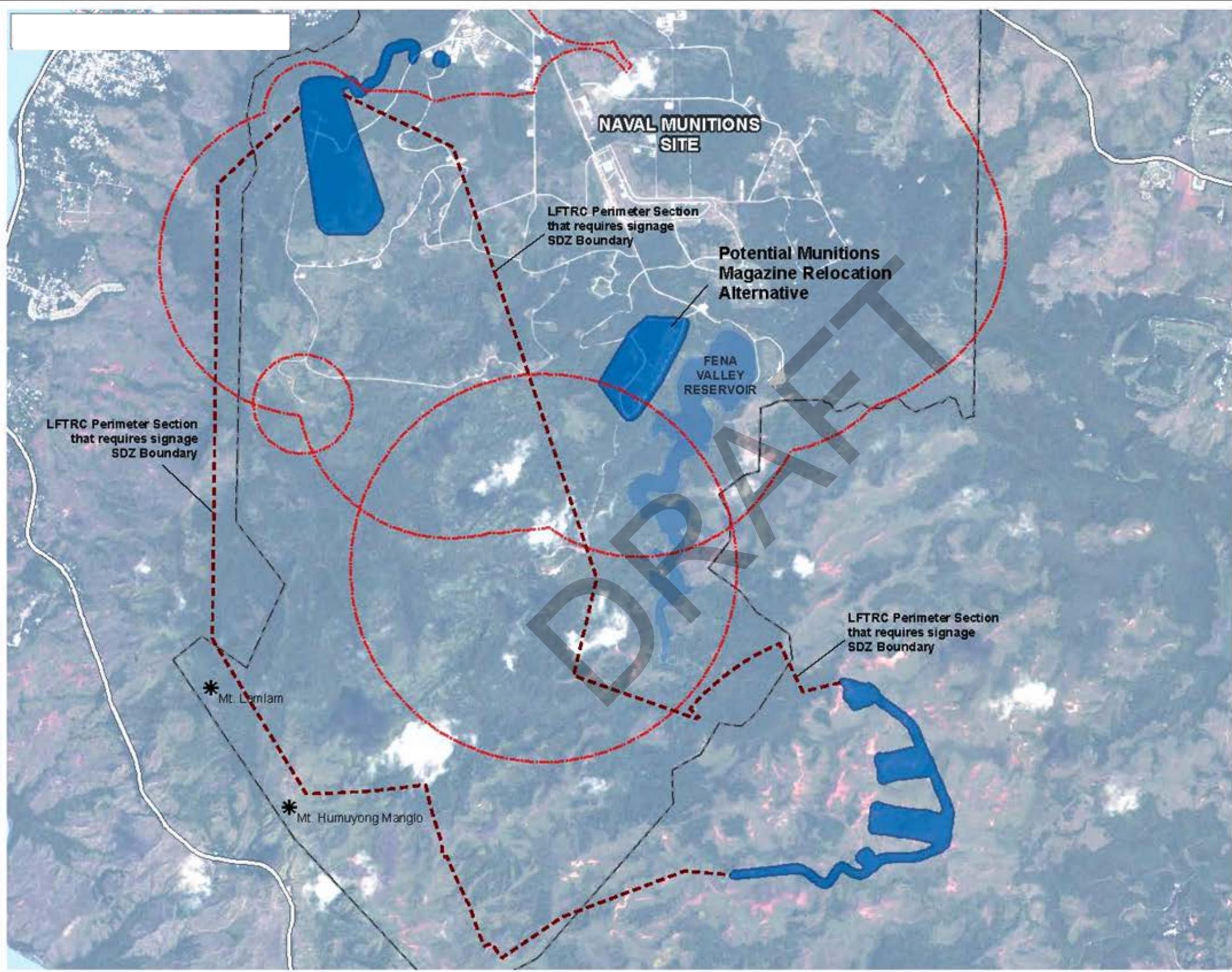
- Impacted Areas (370 Ac)*
- Notional SDZ Boundary
- * Cultural Sites / Landmark
- Highway
- Existing ESQD Arc
- DOD Lands

* Impacted Area includes - notional range development features and on-site utilities (water, wastewater, & electric)



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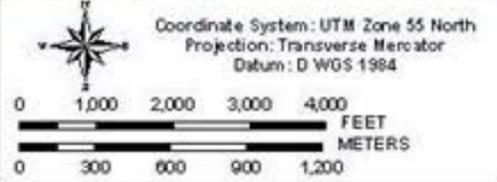


LFTRC NMS L Shaped Impacted Areas

Legend

- Impacted Areas (356 Ac)*
- Notional SDZ Boundary
- * Cultural Sites / Landmark
- Highway
- Existing ESQD Arc
- DOD Lands

* Impacted Area includes - notional range development features and on-site utilities (water, wastewater, & electric)

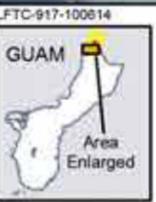
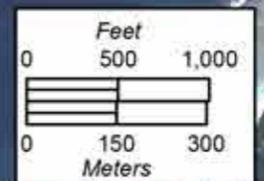


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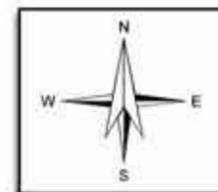
 Naval Facilities Engineering Command
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 DATE: 16 Jul 2013

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-  DoD Boundary
 -  Potential Direct Impact Area
 -  Potential Indirect Impact Area
 -  Potential Indirect Noise Impact (65db+) Area
- NRHP Eligibility, Component**
-  Eligible, Historic
 -  Eligible, Multicomponent
 -  Eligible, Pre-Contact



LFTRC NWF - Impacted Areas



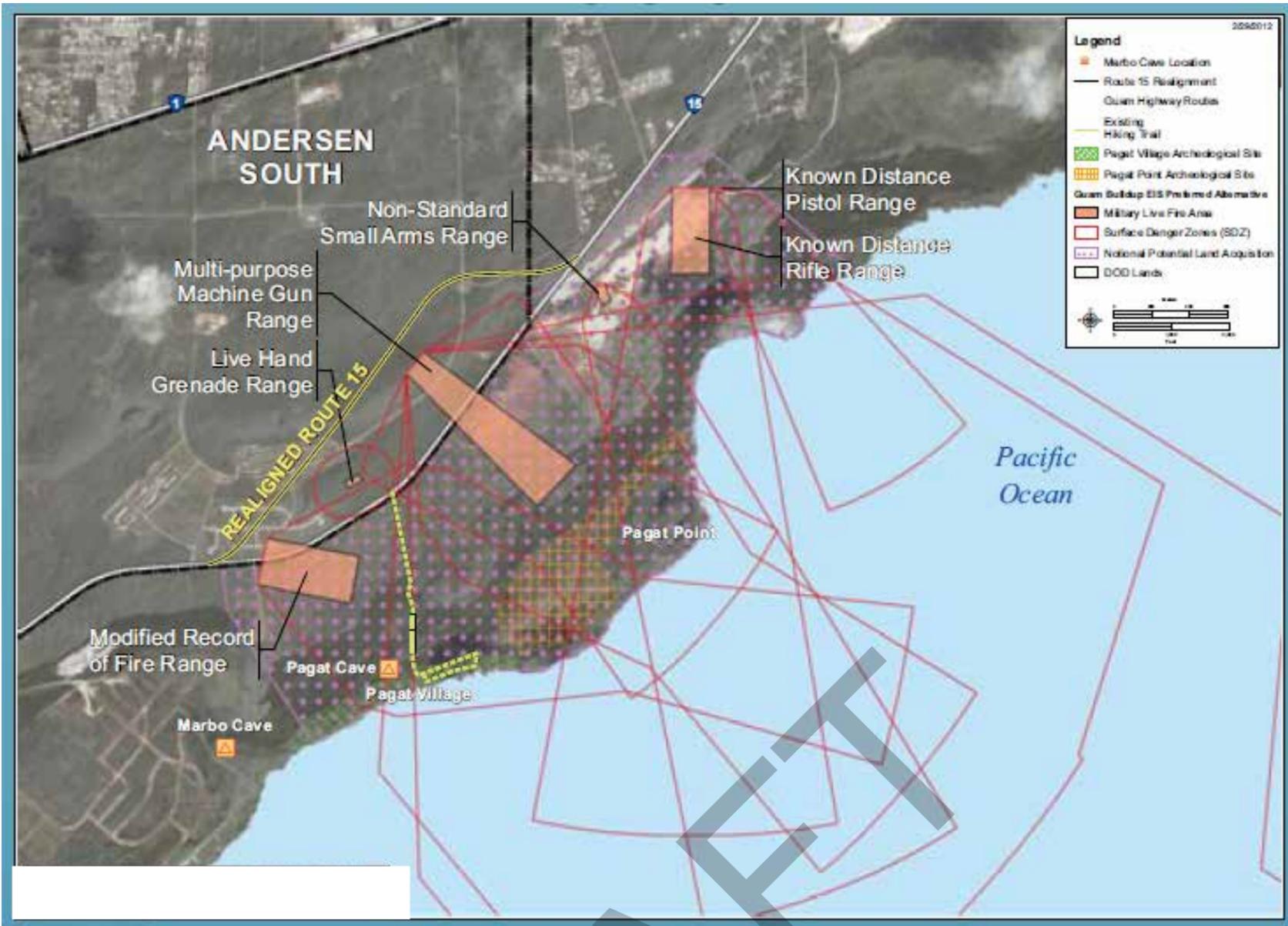
Appendix B:

Surface Danger Zones Models

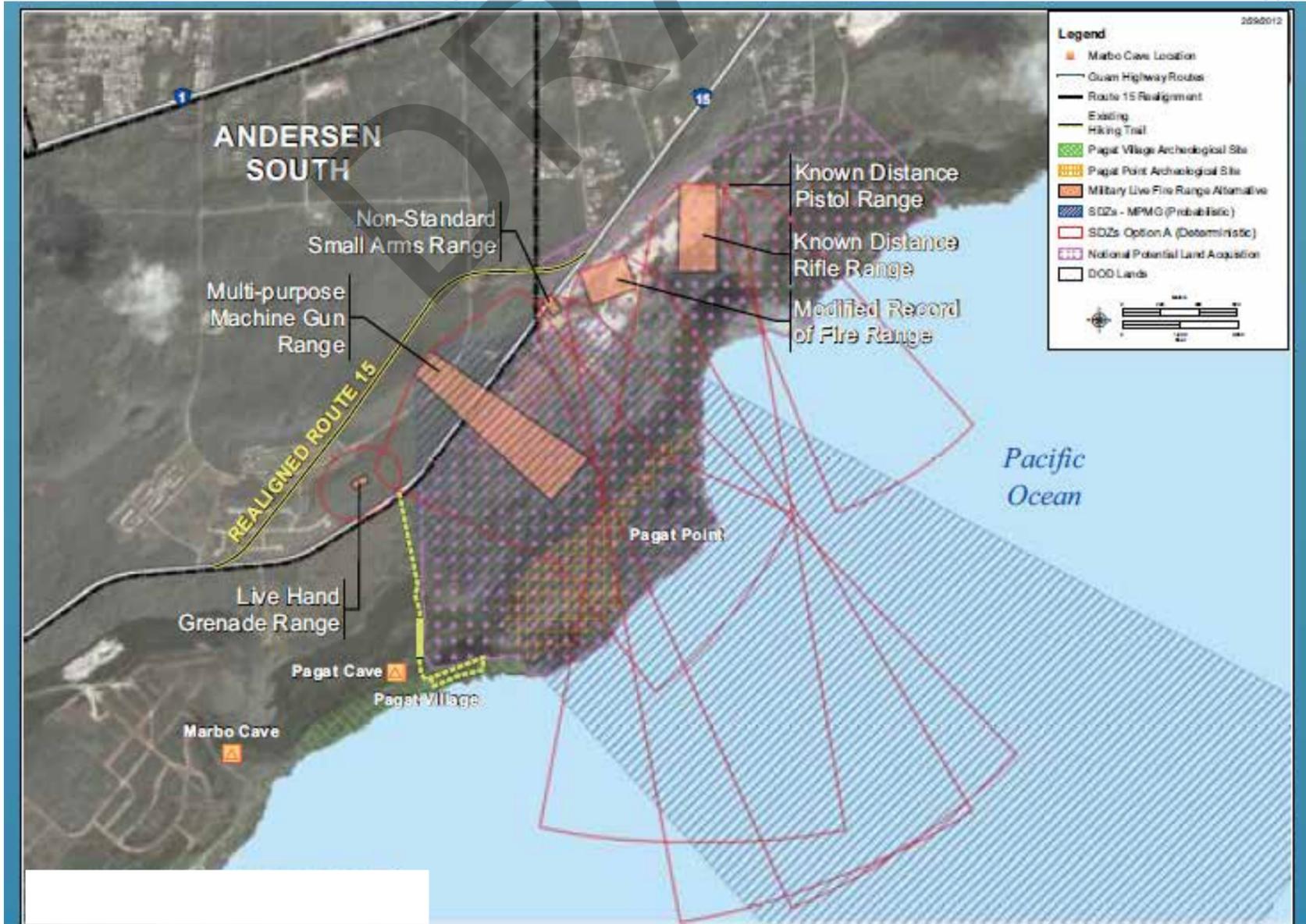
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LFTRC Alternative 1

Multi-Purpose Machine Gun Range Before Application of More Precise Probabilistic Methodology



Multi-Purpose Machine Gun Range After Application of More Precise Probabilistic Methodology



Appendix C:

Summary of Impacts

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Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

CULTURAL RESOURCES				
<i>Route 15 (Alternative 1)</i>	<i>NAVMAG East/West (Alternative 2)</i>	<i>NAVMAG North/South (Alternative 3)</i>	<i>NAVMAG L-Shaped (Alternative 4)</i>	<i>NWF (Alternative 5)</i>
Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts
<p>SI-M Potential direct adverse effects to three historic properties from excavation and soil removal. Potential impacts to culturally important natural resources from vegetation removal.</p> <p>Potential Mitigation Measures Proposed mitigation through 2011 PA process, including development of a RMP, and coordination with SHPO, concurring parties, and knowledgeable traditional practitioners.</p>	<p>SI-M Potential direct adverse effects to nine historic properties. Potential impacts to culturally important natural resources from vegetation removal.</p> <p>Potential Mitigation Measures Proposed mitigation through 2011 PA process, including development of a RMP and coordination with SHPO, concurring parties, and knowledgeable traditional practitioners.</p>	<p>SI-M Potential direct adverse effects to 11 historic properties excavation and soil removal. Undetermined effects to two unevaluated sites and one potential TCP from excavation and soil removal. Potential impacts to culturally important natural resources from vegetation removal.</p> <p>Potential Mitigation Measures Proposed mitigation through 2011 PA process, including development of a RMP, and coordination with SHPO, concurring parties, and knowledgeable traditional practitioners.</p>	<p>SI-M Potential direct adverse effects to 11 historic properties from excavation and soil removal. Potential impacts to culturally important natural resources from vegetation removal.</p> <p>Potential Mitigation Measures Proposed mitigation through 2011 PA process, including development of a RMP and coordination with SHPO, concurring parties, and knowledgeable traditional practitioners.</p>	<p>SI-M Potential direct adverse effects to 20 historic properties. Undetermined effects to one unevaluated site from excavation and soil removal. Potential impacts to culturally important natural resources from vegetation removal.</p> <p>Potential Mitigation Measures Proposed mitigation through 2011 PA process, including development of a RMP, and coordination with SHPO, concurring parties, and knowledgeable traditional practitioners.</p>
Operation Impacts (See next page)	Operation Impacts (See next page)	Operation Impacts (See next page)	Operation Impacts (See next page)	Operation Impacts (See next page)

Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts
<p>SI-M Potential indirect adverse effects to one NRHP-eligible site/potential TCP from changes in use that degrade site integrity. Potential indirect adverse effects to one NRHP-eligible archaeological site/potential TCP from recreational use.</p> <p>Potential Mitigation Measures Proposed mitigation through 2011 PA with implementation of a RMP, coordination with SHPO and concurring parties, and Cultural Resources Awareness briefs.</p>	<p>SI-M Potential indirect adverse effects to one NRHP-eligible site from changes in use that degrade site integrity. Undetermined effects to three unevaluated sites from changes in use that degrade site integrity. Potential indirect effects to one potential TCP from restricted access.</p> <p>Potential Mitigation Measures Proposed mitigation through 2011 PA with implementation of a RMP to include consideration for access and coordination with SHPO and concurring parties.</p>	<p>SI-M Potential indirect adverse effects to 25 NRHP-eligible sites and indirect effects to two potential TCPs from changes in use that degrade site integrity. Potential indirect effects to five potential TCPs from restricted access.</p> <p>Potential Mitigation Measures Proposed mitigation through 2011 PA with implementation of a RMP to include consideration for access and coordination with SHPO and concurring parties.</p>	<p>SI-M Potential indirect adverse effects to 24 historic properties from changes in use that degrade site integrity. Potential indirect effects to four potential TCPs from restricted access. Undetermined effects to five unevaluated sites and two potential TCPs from changes in use that degrade site integrity.</p> <p>Potential Mitigation Measures Proposed mitigation through 2011 PA with implementation of a RMP to include consideration for access and coordination with SHPO and concurring parties.</p>	<p>SI Potential adverse impacts to two NRHP-eligible archaeological sites from restricted access.</p> <p>SI-M Potential indirect adverse effects to three NRHP-eligible sites from changes in use that degrade site integrity.</p> <p>Potential Mitigation Measures Proposed partial mitigation through 2011 PA with implementation of a RMP to include consideration for access and coordination with SHPO and concurring parties.</p>