

CHAPTER 18.

PUBLIC HEALTH AND SAFETY

18.1 AFFECTED ENVIRONMENT

This section discusses the potential public health and safety issues related to implementation of the proposed action and alternatives on the Mariana Islands. The region of influence (ROI) for public health and safety concerns includes the island of Tinian. Public health and safety issues include potential hazards inherent in military training activities and the potential presence of unexploded ordnance (UXO). Safety of construction workers would be the same as outlined in Volume 2. Proposed construction activities on Tinian would be minimal and conducted in accordance with federal and local safety guidelines to ensure a safe work environment.

With respect to the proposed training and land use requirements on Tinian, there are no intended permanent personnel additions; therefore, the temporary increases in personnel during training exercises would not be expected to have an impact on the public health and safety of the residents of Tinian from notifiable diseases, mental illness, or traffic incidents.

18.1.1 Definition of Resource

18.1.1.1 Environmental/Social Safety

Environmental/Social safety impacts are potential impacts to public health and safety as a result of environmental (e.g., noise, water quality, air quality, and hazardous substances) or social (e.g., health care services, public services) impacts. For example, an increase in air pollution could have adverse health effects on sensitive populations including children, older adults, people who are active outdoors, and people with heart or lung diseases, or an increase in population without a corresponding increase in public safety officials could result in reduced response times resulting in more serious harm or possibly death of a victim.

18.1.1.2 Training

Sustainment training is training that enables Marine Corps forces to maintain combat readiness. The training operations proposed on Tinian would provide sustainment training for individuals, crews, and small units of Marine Corps forces. The training that would take place on Tinian is the next developmental step in the training progression and is essential to the end-state of sustaining combat readiness of Guam-based Marines. The proposed Tinian ranges are for training Marines with use of weapons, but in tactical scenarios. Training in tactical scenarios requires greater geographic distances and breadth of scope than available on Guam.

18.1.1.3 UXO

The Island of Tinian was an active battlefield during World War II (WWII). As a result of the occupation by Japanese forces and the assault by Allied/American forces to retake the island, unexploded military munitions may still remain. Unexploded military munitions have been discovered periodically since the end of the war and may still be present on Tinian. Unexploded military munitions can be classified into two main categories: UXO, these are ordnance items that were fired from a weapon and failed to function properly (i.e., explode). These items are fused and are considered more sensitive than the second category of unexploded military munitions, Discarded Military Munitions (DMM). DMM consists of munitions that were not fired but abandoned and were not properly disposed. DMM items could include munitions

that were left behind by military personnel; intentionally buried (i.e., weapons cache) or unintentionally buried as a result of combat on the island; or munitions that were discarded/left behind by military personnel. Additionally, the retaking of Tinian by Allied/American forces required amphibious landings; therefore, UXO and DMM may also be present in waters off the assault beaches.

UXO and DMM items include, but are not limited to: aerial bombs, Naval and field artillery projectiles, aerial and barrage rockets, mortar rounds, bazooka rounds, hand grenades, landmines, flares, and other pyrotechnic devices. The aforementioned munitions would vary in size (e.g., 105-millimeter or 5-inch projectiles) and explosive hazard (e.g., high explosive, incendiary filler).

Clearances for unexploded military munitions have been conducted in the past to remove this hazard and unexploded military munitions have been found and reported periodically since the end of the war. Although over 60-years have passed since the battle for Tinian and portions of the island have been developed, unexploded military munitions may still be present.

In accordance with Naval Ordnance Safety and Security Activity (NOSSA) Instruction 8020.15B, Explosives Safety Submission (ESS) documentation must be prepared that details how explosive safety standards are applied to munitions responses. The ESS also addresses how a project will comply with applicable environmental requirements related to the management of munitions and explosives of concern (MEC) and material potentially presenting an explosive hazard (MPPEH). At munitions response sites, no site operations may begin unless NOSSA and the Department of Defense (DoD) Explosive Safety Board have reviewed and approved the ESS. An ESS is prepared for on-site construction support where the likelihood of encountering UXO is determined to be moderate or high and where ground-disturbing or other intrusive activities, including dredging may occur in areas known or suspected to contain UXO. The ESS outlines specific measures to be taken to ensure the safety of workers and the public.

18.2 ENVIRONMENTAL CONSEQUENCES

This chapter discusses the potential effects to public health and safety from environmental (e.g., noise, water quality, air quality, and hazardous substances) or social (e.g., health care services, public services) impacts, the hazards inherent in military training activities, and UXO associated with implementation of the alternatives within the ROI.

18.2.1 Approach to Analysis

18.2.1.1 Methodology

Potential effects to public safety from implementation of the alternatives were derived based upon information detailed in the descriptions of each alternative. Several factors were considered in evaluating the effects of the activities on public health and safety. These factors include proximity to the public, access control, scheduling, public notification of events, frequency of events, duration of events, range safety procedures, operational control of training events, and safety history. The analysis did not differentiate between construction and operation activities, as the public health context contains both simultaneously.

With construction activities, there is a potential for standing water and water based vectors such as mosquitoes and related diseases. Most mosquitoes require quiet, standing water or moist soil where flooding occurs to lay their eggs. Removal of standing water sources and/or promotion of drainage would eliminate potential breeding sites. To limit the amount of standing water at construction sites, stagnant water pools, puddles, and ditches would be drained or filled; containers that catch/trap water (e.g., buckets, old tires, cans) would be removed; and if necessary, pesticide application (e.g., *Bacillus*

thuringensis) could be used to help control mosquitoes. Implementing these Best Management Practices (BMPs) would reduce the opportunities for an outbreak of water-related diseases.

Potential health and safety concerns on Tinian result primarily from proposed training activities.

Information regarding the possible presence of UXO was obtained from various military and public sources. Information specific to the proposed training activities on Tinian was obtained from military sources.

18.2.1.2 Determination of Significance

Public health and safety impacts are considered significant if the general public is substantially endangered as a result of training activities. Several factors were considered in evaluating the effects of the activities on public health and safety. These factors include proximity to the public, access control, scheduling, public notification of events, frequency of events, duration of events, range safety procedures, and operational control of training events.

For proposed military training events conducted on or around Tinian, there would be specific and documented procedures in place to ensure that construction contractors and the public are not endangered by proposed military training activities.

18.2.1.3 Issues Identified during Public Scoping Process

As part of the analysis, concerns related to public health and safety that were mentioned by the public, including regulatory stakeholders, during the public scoping meetings were addressed. A general account of comments submitted regarding the overall military relocation includes the following:

- Potential increases in diseases including:
 - Acquired Immune Deficiency Syndrome (AIDS)
 - Cholera
 - Dengue
 - Hepatitis C
 - Malaria
 - Measles
 - Rubella
 - Sexually Transmitted Diseases other than AIDS
 - Tuberculosis (TB)
 - Typhoid Fever
- Potential increases in mental illness
- Potential increases in traffic incidents
- Potential contact with UXO.

18.2.2 Alternative 1 (Preferred Alternative)

18.2.2.1 Environmental/Social Safety

Noise

Noise associated with construction and training activities on Tinian is discussed in Chapter 6. Construction noise would attenuate to about 60 dB L_{max} at the nearest receptor. This is well below the threshold for sensitive receptors or continuous exposure and is less than significant. Aviation and live-fire training would be located well within the military area and noise associated with these activities would

not likely be heard from off-base receptors. Therefore it is anticipated that overall impacts associated with noise to human health and safety would be less than significant.

Water Quality

Construction and operational activities associated with training activities on Tinian would be implemented in accordance with Standard Operating Procedures (SOPs) and BMPs, and in accordance with applicable regulations. Therefore, no impacts to water quality from construction and training activities are anticipated.

Air Quality

As discussed in Volume 3, Chapter 5, increased pollutants associated with training activities on Tinian would be less than significant. Although increased emissions would be less than significant, construction and operational activities would result in pollutant emissions, which could result in health impacts to individuals on Tinian that could increase the use of health care services. Air pollution can harm individuals when it accumulates in the air in high enough concentrations. People exposed to high enough levels of certain air pollutants may experience:

- Irritation of the eyes, nose, and throat
- Wheezing, coughing, chest tightness, and breathing difficulties
- Worsening of existing lung and heart problems
- Increased risk of heart attack

In addition, long-term exposure to air pollution has been linked to certain types of cancer and damage to the immune, neurological, reproductive, and respiratory systems.

Some groups of people are especially sensitive to common air pollutants such as particulates and ground-level ozone. Sensitive populations include children, older adults, people who are active outdoors, and people with heart or lung diseases, such as asthma. Because air emission increases would be less than significant, it is anticipated that the Tinian clinic would have adequate staffing to handle air quality-related illnesses; therefore, less than significant impacts would be anticipated as a result of emissions from construction and training activities.

Hazardous Substances

Activities associated with training activities on Tinian would result in an increase in the use, handling, storage, transportation, and disposition of hazardous substances. These activities would be conducted in accordance with applicable hazardous material and waste regulations, and established BMPs and SOPs to ensure the health and safety of workers and the general public is maintained. Because hazardous substance management activities would be conducted in accordance with applicable regulations and established BMPs and SOPs, no impacts to public health and safety are anticipated.

Health Care Services

Volume 3, Chapter 16 discusses staffing requirements for health care services necessary to cope with population increases associated with training activities on Tinian. A small number of medical personnel would accompany military training units, and would be expected to assist civilian medical personnel in the event of emergencies; therefore, no impact to health care services on Tinian is anticipated.

Public Services

Volume 3, Chapter 16 discusses staffing requirements for public services necessary to cope with population increases associated with training activities on Tinian. An increase in the number of construction workers would likely require the addition of one police officer. Tinian police anticipate few operation phase public safety impacts, if training units are accompanied by military police, as they historically have been. The Tinian fire department also expects no impact from training. No impact to public services is anticipated.

18.2.2.2 Training

The safety of the public as well as personnel participating in training events is a primary consideration for all training activities. The fundamental guidance adhered to during training is that the range must be able to safely contain the hazard footprints of the weapons and equipment employed. The Range Safety Officer ensures that these hazardous areas are clear of personnel during training activities. After a live-fire event, the participating unit ensures that all weapons are safe and clear of live rounds.

Training activity would be scheduled and public notices would be provided in newspapers/otherwise posted at least 1 week prior to training events. Prior to conducting training activities, the public and non-participating personnel would be cleared from the area so that the only public health and safety issue would be if a training event exceeded the safety area boundaries. The range area would not be accessible by non-participating personnel during training, including sufficient lead-time before training to ensure range area clearance. Training periods would be scheduled in advance with signs posted and published on a regular basis. To facilitate range safety, ground access would be controlled by traffic control points on existing roads. This would safeguard the public by keeping them out of any areas where there are potential dangers while simultaneously maintaining access to areas where training is not being conducted. Prior to training, range flags would be raised and traffic control points would be established and manned continuously throughout the duration of training. Interior portions of the range area (those affected by SDZs) would be inspected and watches would be posted at a range observation site for boats and aircraft, with positive observation of the sea and air space and having positive communications with range control. Risks to public health and safety are reduced by confirming that the training area is clear. The Marine Corps would also notify the public of training activities through public notices.

The Marine Corps would notify the Saipan International Airport air traffic control tower when firing is about to commence, monitor Saipan International Airport and Tinian International Airport (West Field) departure/arrivals information, and coordinate check firing procedures as required.

Public notification of training activities, use of established training areas, compliance with appropriate range safety procedures, and avoidance of non military vessels and personnel would reduce the potential for interaction between the public and personnel that are training. Specific and documented procedures would be in place to ensure the public is not endangered by training activities; therefore, training activities associated with Alternative 1 would result in less than significant impacts to public health and safety.

18.2.2.3 UXO

The Island of Tinian was an active battlefield during WWII. As a result of the invasion, occupation, and defense of the island by Japanese forces and the assault by Allied/American forces to retake the island, unexploded military munitions may still remain. Excavation for building foundations, roads, underground utilities, and other infrastructure could encounter unexploded military munitions in the form of UXO, DMM and/or MPPEH. Exposure to these MEC could result in the death or injury to workers, Marines or

to the public. To reduce the potential hazards related to the exposure to MEC, in accordance with DoD Directive 6055.9 (DoD Ammunition and Explosive Safety Standard) and NOSSA Instruction 8020.15B, ESS documentation would be prepared that outlines specific measures that would be implemented to ensure the safety of workers and the public. BMPs that would be implemented include having qualified UXO personnel perform surveys to identify and remove potential MEC items prior to the initiation of training activities and ground disturbing activities. Additional safety precautions could include; UXO personnel supervision during earth moving and training activities, providing MEC awareness training to Marines prior to initiating activities on Tinian, and providing MEC awareness training to construction personnel involved in grading and excavations prior to and during ground-disturbing activities. The identification and removal of MEC prior to initiating construction activities and training construction personnel as to the hazards associated with unexploded military munitions would ensure that potential impacts would be minimized. Therefore, Alternative 1 would result in less than significant impacts to public health and safety (from UXO).

18.2.2.4 Summary of Alternative 1 Impacts

Table 18.2-1 summarizes Alternative 1 impacts.

Table 18.2-1. Summary of Alternative 1 Impacts

<i>Area</i>	<i>Project Activities</i>	<i>Project Specific Impacts</i>
Tinian	Construction	No impacts to water quality, hazardous substances, health care services, and protective services Less than significant impacts from increased noise, air pollution, training, and potential encounter with UXO
	Operation	No impacts to water quality, hazardous substances, health care services, and protective services Less than significant impacts from increased noise, air pollution, training, and potential encounters with UXO

18.2.2.5 Alternative 1 Mitigation Measures

No mitigation measures would be needed for Alternative 1.

18.2.3 Alternative 2

18.2.3.1 Environmental/Social Safety

Potential impacts to environmental/social safety (i.e., public health and safety concerns associated with noise, water quality, air quality, hazardous substances, health care services and public services) would be the same as discussed under Alternative 1. Less than significant impacts to public health and safety are anticipated from increases in noise and air quality emissions. No impact to public health and safety are anticipated from water quality concerns, management of hazardous substances, and requirements for health care services and public services.

18.2.3.2 Training

Potential impacts to public health and safety from training activities would be the same as discussed under Alternative 1. Possible interactions between the public and training activities in near shore areas within the SDZ of Alternative 2 would be minimized by ensuring the area is cleared. Public notification of training activities, use of established training areas, compliance with appropriate range safety procedures, and avoidance of non military vessels and personnel would reduce the potential for interaction between the public and personnel that are training. Specific and documented procedures would be in place to

ensure the public is not endangered by training activities; therefore, training activities associated with Alternative 2 would result in less than significant impacts to public health and safety.

18.2.3.3 UXO

Potential impacts to public health and safety from UXO and measures to be implemented to ensure public safety would be the same as discussed under Alternative 1. The identification and removal of MEC prior to initiating construction activities and training construction personnel as to the hazards associated with unexploded military munitions would ensure that potential impacts would be minimized. Therefore, Alternative 2 would result in less than significant impacts to public health and safety (from UXO).

18.2.3.4 Summary of Alternative 2 Impacts

Table 18.2-2 summarizes Alternative 2 impacts.

Table 18.2-2. Summary of Alternative 2 Impacts

<i>Area</i>	<i>Project Activities</i>	<i>Project Specific Impacts</i>
Tinian	Construction	No impacts to water quality, hazardous substances, health care services, and protective services Less than significant impacts from increased noise, air pollution, training, and potential encounter with UXO
	Operation	No impacts to water quality, hazardous substances, health care services, and protective services Less than significant impacts from increased noise, air pollution, training, and potential encounters with UXO

18.2.3.5 Alternative 2 Proposed Mitigation Measures

No mitigation measures would be needed for Alternative 2.

18.2.4 Alternative 3

18.2.4.1 Environmental/Social Safety

Potential impacts to environmental/social safety (i.e., public health and safety concerns associated with noise, air quality, water quality, hazardous substances, health care services and public services) would be the same as discussed under Alternative 1. Less than significant impacts to public health and safety are anticipated from increases in noise and air quality emissions. No impact to public health and safety are anticipated from water quality concerns, management of hazardous substances, and requirements for health care services and public services.

18.2.4.2 Training

Potential impacts to public health and safety from training activities would be the same as discussed under Alternative 1. Public notification of training activities, use of established training areas, compliance with appropriate range safety procedures, and avoidance of non military vessels and personnel would reduce the potential for interaction between the public and personnel that are training. Specific and documented procedures would be in place to ensure the public is not endangered by training activities; therefore, training activities associated with Alternative 3 would result in less than significant impacts to public health and safety.

18.2.4.3 UXO

Potential impacts to public health and safety from UXO and measures to be implemented to ensure public safety would be the same as discussed under Alternative 1. The identification and removal of MEC prior

to initiating construction activities and training construction personnel as to the hazards associated with unexploded military munitions would ensure that potential impacts would be minimized. Therefore, Alternative 3 would result in less than significant impacts to public health and safety (from UXO).

18.2.4.4 Summary of Alternative 3 Impacts

Table 18.2-3 summarizes Alternative 3 impacts.

Table 18.2-3. Summary of Alternative 3 Impacts

<i>Area</i>	<i>Project Activities</i>	<i>Project Specific Impacts</i>
Tinian	Construction	No impacts to water quality, hazardous substances, health care services, and protective services Less than significant impacts from increased noise, air pollution, training, and potential encounter with UXO
	Operation	No impacts to water quality, hazardous substances, health care services, and protective services Less than significant impacts from increased noise, air pollution, training, and potential encounters with UXO

18.2.4.5 Alternative 3 Proposed Mitigation Measures

No mitigation measures would be needed for Alternative 3.

18.2.5 No-Action Alternative

Under the no-action alternative, no new construction or new training activities associated with the Marine Corps relocation to Guam would occur on Tinian, and the Marine Corps would not meet training needs and requirements in support of the proposed action. The purpose and need for training on Tinian as described in Chapter 1 would not be met.

18.2.5.1 Environmental/Social Safety

Noise

No new impacts to public health and safety associated with noise would result from construction or training activities on Tinian. Therefore, no impacts to public safety from noise would be expected from the no-action alternative.

Water Quality

No new impacts to public health and safety associated with water quality would result from construction or training activities on Tinian. Therefore, no impacts to public safety from water quality would be expected from the no-action alternative.

Air Quality

No new impacts to public health and safety associated with air quality would result from construction or training activities on Tinian. Therefore, no impacts to public safety from air emissions would be expected from the no-action alternative.

Hazardous Substances

No increase in the types or quantities of hazardous substances would be anticipated under the no-action alternative. Management of hazardous substances would continue to be conducted in accordance with applicable hazardous material and waste regulations, and established BMPs and SOPs to ensure the health

and safety of workers and the general public is maintained. Therefore, no impacts to management of hazardous substances would be expected from the no-action alternative.

Health Care Services

No increases in demand for health care services would occur as a result of training activities on Tinian. Therefore, no impacts to health care services would be expected from the no-action alternative.

Public Services

No increases in demand for public services would occur as a result of training activities on Tinian. Therefore, no impacts to public services would be expected from the no-action alternative.

18.2.5.2 Operation

Under the no-action alternative, no new training activities associated with the Marine Corps relocation to Guam would occur on Tinian. As a result, there would be no potential risk to the public from training activities. Therefore, the no-action alternative would result in no impacts to public health and safety.

18.2.5.3 UXO

The Island of Tinian was an active battlefield during WWII. As a result of the invasion, occupation, and defense of the island by Japanese forces and the assault by Allied/American forces to retake the island, unexploded military munitions may still remain. Under the no-action alternative, no excavation for building foundations, roads, underground utilities, and other infrastructure would occur in support of proposed Marine training requirements. As a result, there would not be an increase in the likelihood of encountering unexploded military munitions. Therefore, the no-action alternative would result in no impacts to public health and safety (from UXO).

18.2.6 Summary of Impacts

Table 18.2-4 summarizes the potential impacts of each action alternative and the no-action alternative. A text summary is provided below.

Table 18.2-4. Summary of Impacts

<i>Alternative 1</i>	<i>Alternative 2</i>	<i>Alternative 3</i>	<i>No-Action Alternative</i>
Construction and Operation			
Environmental/Social Safety			
• LSI	• LSI	• LSI	• NI
Training			
• LSI	• LSI	• LSI	• NI
UXO			
• LSI	• LSI	• LSI	• NI

Legend: LSI = Less than significant impact, NI = No impact.

The potential increase in noise and air quality emissions would be less than significant; therefore, overall potential impacts to human health and safety would be less than significant. Health care professionals and public service personnel are anticipated to maintain existing service conditions; therefore, no impact to health care, police, or fire service is anticipated. No impact to public health and safety are anticipated from water quality concerns and management of hazardous substances.

Prior to conducting training activities, range areas would be cleared of non-participating personnel and the public so that the only public health and safety issue would be if a training event exceeded the safety area boundaries. Public notification of training activities, use of established training areas, compliance

with appropriate range safety procedures, and avoidance of non military vessels and personnel would reduce the potential for interaction between the public and personnel that are training. Therefore, less than significant impacts to public health and safety from training activities are anticipated.

Excavation for building foundations, roads, underground utilities, and other infrastructure could encounter unexploded military munitions in the form of UXO, DMM, and MPPEH. To reduce the potential hazards related to the exposure to MEC, in accordance with DoD Directive 6055.9 and NOSSA Instruction 8020.15B, ESS documentation would be prepared that outlines specific measures that would be implemented to ensure the safety of workers and the public. BMPs that would be implemented include having qualified UXO personnel perform surveys to identify and remove potential MEC items prior to the initiation of ground disturbing activities. UXO supervision during earth moving activities and providing MEC awareness training to construction personnel prior to and during ground-disturbing activities could also occur. The identification and removal of MEC prior to initiating construction activities and training construction personnel regarding hazards associated with MEC would ensure that potential impacts would be minimized. Therefore, less than significant impacts to public health and safety from UXO are anticipated.

18.2.7 Summary of Proposed Mitigation Measures

Table 18.2-5 summarizes the proposed mitigation measures.

Table 18.2-5. Summary of Proposed Mitigation Measures

<i>Alternative 1</i>	<i>Alternative 2</i>	<i>Alternative 3</i>
Environmental/Social Safety		
• None	• None	• None
Training		
• None	• None	• None
UXO		
• None	• None	• None