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## 8.12 HUMAN HEALTH AND SAFETY HAZARDS

### 8.12.1 Affected Environment

The following section describes the affected environment pertaining to human health and safety hazards as a result of military actions on PTA.

#### ***Hazardous Materials and Waste Management***

The US Army maintains a spill prevention control and countermeasure plan for hazardous materials management at PTA. The major facility of concern for the plan is the bulk fuel storage area. Minor facilities include a grease rack used to inspect military vehicles and heating oil tanks (both aboveground and below ground) used for heating water for the kitchens, showers, and officers' quarters.

The US Army also maintains an installation-wide hazardous waste management plan that regulates the storage and disposal of hazardous waste. PTA operates its own TAP site, where it stores hazardous waste for a maximum of 90 days before a contractor picks it up and transports it to the DRMO, where it is shipped off-island for permanent disposal at a certified hazardous waste disposal site (Akasaki 2002b).

#### ***Specific Health and Safety Hazards***

The following sections address specific human health and safety hazards, such as hazardous materials and wastes that may be used, stored, or transported within PTA. Hazardous materials and waste have the potential to affect the environment and often have specific regulations that govern their use, storage, and disposal.

#### ***Ammunition***

As further discussed in Chapter 2, PTA provides the space for infantry and associated support units to maneuver. Under this maneuver, live bullets are not fired, and blanks are used in rifles and small caliber automatic weapons, along with MILES equipment. Chapter 2 also discusses the available range areas, types of ordnance used, and scheduling of the ranges at PTA.

In addition to the dry- and blank-fire maneuver space, PTA provides two types of live-fire ranges. The first is a series of static live-fire ranges used for familiarization, zero, or qualification of weapon systems (The process of setting the sights of a weapon to place the projectile at the point of aim is called zeroing the weapon [FRII 2002]). The other type of live-fire range provides fire teams, through company or larger units, the chance to engage a series of objectives.

During eight or nine months of the year, ammunition is brought from WAAF or Lualualei to PTA via boat or helicopter (Saldivar 2002). If boats are used, the ammunition is driven from Kawaihae Harbor to PTA. There have been no accidents involving the transport of ammunition in the last two years.

During training, ordnance is temporarily stored in ammunition holding areas on PTA. At completion of training, unused ammunition is returned to the ammunition supply point on WAAF. Permanent ammunition storage is not authorized on PTA (Borja 2002a).

Surface danger zones are designated for the ranges at PTA (Sato 1996, 5-8). Their construction is based on information in AR 385-63 and the draft update of this regulation. Increased emphasis is placed on the effects of ricochets at closer ranges in the draft version. During the last 24 months, there were no accidents pertaining to the transporting, storage, or firing of ammunitions at PTA that risked public safety (Kila 2002).

SDZs are configured toward a cumulative ordnance impact area (approximately 51,000 acres) in the central portion of PTA. In addition, although ICMs are no longer used on any Army training land due to the extreme safety risk (HQDA 2001), there is a 16,800-acre (6,799-hectare) ICM impact area within the larger impact area. ICMs, also referred to as cluster bombs, are artillery munitions that contain multiple submunitions. The ordnance impact area and ICM area are not accessible.

The Army conducts nonlive-fire maneuver training on training areas around PTA. UXO is suspected in various training areas and presents a potential threat to Army personnel. UXO is not cleared before maneuvers commence because there is a low level of suspected UXO. As further explained in Section 3.12, Soldiers are taught how to identify UXO and how to properly handle it.

As discussed in Section 3.12, Ammunition, live-fire activities include artillery and mortar training, which requires the use of bags filled with explosive propellant for artillery and similar explosive propellant charges for mortars. Charges that are not used during training are burned, creating a residue. Residues from burned propellant are the only hazardous wastes temporarily stored at the range burn site in a designated HWSSP. Hazardous waste is transferred to the PTA TAP for proper storage until disposal contractors and DRMO coordinate to ensure proper disposal.

The burn site for PTA was selected and constructed in accordance with Section 17-5, the Department of Army Pamphlet 385-64, Ammunition and Explosive Safety Standards. Table 8-31 summarizes the burn pan operating specifications. The burn site is operated under the following restrictions (there are no OB/OD operations on PTA):

- All burn sites have a means of collecting remnants produced by the burning operation.
- Propellants to be burned are unconfined and spread evenly over the burn pan. The depth of the propellant would not exceed 3 inches (7.62 centimeters).
- The burn pan would be used only once per 24-hour period.

**Table 8-31  
Burn Site Specifications**

<b>Burn Site</b>	<b>Estimated Amount in Lbs./Burn</b>	<b>Estimated Frequency of Burns/Week</b>	<b>Type of Propellants</b>	<b>Burn-Pan Dimensions</b>	<b>Pan Quantity</b>
PTA	10-50	2	M1, M8, M9, M10	5'9" by 8'10" by 33"	1 unit

Source: US Army 1999

Results from recent range soil sampling revealed metals, explosives, and SVOC levels above EPA Region IX residential and industrial PRGs on PTA ranges. Although metals such as aluminum and iron occur naturally in Hawaiian soils, byproducts of munitions, such as lead and RDX, contribute contaminants that could create health and safety in the natural environment. Section 8.8, Water Resources, and Section 8.9, Geology, Soils, and Seismology, provide a more detailed discussion of investigation results and effects on surface water and soils. The investigation study is provided in Appendix M1.

#### Installation Restoration Program

PTA was entered into the CERCLA System in July 1992, under the USEPA Identification number HI3214522234, and was inspected in 1997 as a potential hazardous waste site. The IRP investigation is described in detail in Appendix K-2.

#### Lead

The properties of and regulations for lead are described in detail in Section 3.12 of this document. To this date, DPW has not surveyed for lead at any of the structures on PTA. Any future lead survey information for PTA will be maintained on the DPW lead and asbestos database.

#### Asbestos

The properties of and regulations for asbestos are described in detail in Section 3.12 of this document. Asbestos survey information for PTA is maintained on the DPW lead and asbestos database.

To this date, DPW has surveyed for ACM at 35 locations on PTA. Fifteen of the surveys did not find asbestos as part of any structures. Asbestos was detected in 20 surveys; the ACM was friable in one of the surveys and nonfriable in the other surveys. Three of the survey structures were set for demolition (USARHAW 2002d). A total of 122 ACM surveys were contracted to begin the week of September 2, 2002. Results are being obtained by the DPW and will be incorporated upon receipt.

#### Polychlorinated Biphenyls

PRC Environmental Management, Inc., conducted a preliminary assessment/site inspection of four potential contaminant sources (a former pesticide storage area, a fire training area, and two landfills) within the boundaries of PTA during March and April 1993. The analytical results for soil sampling in these areas indicated that PCB concentrations were all below the listed PRG.

Efforts are ongoing to assess and remediate possible PCB contamination sources throughout PTA. The Army is committed to removing or refilling all electrical equipment containing regulated amounts of PCBs. On-line devices containing regulated levels of PCB are to be replaced with non-PCB devices or refilled and reclassified to non-PCB status, in accordance with reclassification requirements outlined in 40 CFR 761.30(a)(2)(v). Off-line devices containing regulated levels of PCB are to be removed from the installation and disposed of (PRC 1995, 4).

#### *Electromagnetic Fields*

Equipment producing EMF that could pose a serious health risk is operated under strict constraints, in site-approved areas, and by qualified personnel per technical publications (Moreno 2002). Mobile radar equipment is owned by Division Artillery and consists of a radar-set designed to detect incoming artillery and projectiles. It is operated and managed by the Forward Area Defense section.

Four remote weather stations on PTA are used for fire indexing, which forecasts the threat of wildfires. The RAWS, typically located in remote wildland areas on installations, requires personnel to be on-site only for maintenance and not for operations. The general public typically is not allowed in areas that could contain EMF hazards from Army equipment, minimizing exposure to potential sources of EMF.

#### *Petroleum, Oils, and Lubricants*

PRC Environmental Management conducted a preliminary assessment and site inspection of PTA in March and April 1993 (PRC 1997, ES-1). Soil samples were obtained across the installation and were analyzed for various constituents, including petroleum products. The results indicated that subsurface soils and bedrock at the fire training area and two landfill areas were contaminated with low concentrations of petroleum-based substances (likely used motor oil and fuel oil, such as kerosene). The former burn pit was in the vicinity of the fire training area and was constructed of rubber plates covered with dirt and surrounded by an earthen berm. Flammable liquids were poured into the burn pit during fire training exercises and may have seeped into the underlying soil and bedrock along the unsealed plate seams. The former burn pit was decommissioned after 1983, and a new fire training facility with a more suitable design was constructed in 1994.

Gross petroleum contamination was not apparent based on field observations and screening. Analytical results indicated that VOCs and SVOCs were below USEPA Region IX PRGs. Site inspection data for soils in these areas indicate the presence of some contaminants of concern, but at concentrations that if left in place, would pose minimal, if any, threat to human health and the environment (PRC 1997, ES-3).

There are four basic maintenance areas on PTA (Ross 2002):

- A 1-acre (0.4-hectare) two-bay motor pool in the building complex T-2 and T-3.
- A 10-acre (4.05-hectare) motor pool by Building T-41. Although this site is inactive, units may bring temporary, full-service maintenance tents during their maneuvers.

- A vehicle maintenance area in the hangar area that units use only during maneuvers.
- A former motor pool at Building T-25, where such materials as lubrication oil, used oil, antifreeze, and waste antifreeze were used. The facility is currently used as a Directorate of Logistics vehicle storage area.

DPW stores heavy equipment at Facility 401. As vehicles and equipment are stored for extended periods of time, petroleum and oils have been observed on the ground (Ross 2002).

#### *Underground Storage Tanks*

The bulk storage facility, which was constructed in early 1982 at Building 343, has eight USTs. POL containers belonging to the bulk fuel facility are stored on a concrete pad with secondary containment.

One UST is included on the LUST list maintained by DPW. This tank was located at the dining facility in Building T-186 and was removed in May 1994. This site has been remediated, and the USEPA issued a clean closure status in December 2001. One UST is in use at this dining facility, though details of the tank are not available.

Appendix K-4 lists all USTs and LUSTs currently in use and permanently out of use on PTA (Bourke 2002a). Additionally, this table provides location, responsible party, construction, and content information for all USTs and inspection and remediation status information for all LUSTs.

#### *Aboveground Storage Tanks*

Several ASTs are used to store diesel fuel and liquid petroleum gas, also known as propane, used for fueling building hot water heaters. Appendix K-4 provides a listing and location, capacity, and content information for all ASTs on PTA (Bourke 2002c). Additionally, this table provides containment and leak protection information.

#### *Oil/Water Separators, Wash Racks, and Grease Traps*

There are no OWSs on PTA, but an oil skimmer, similar to an oil-water separator, is attached to a wash rack used to wash vehicles and equipment. The oil generated from the wash rack is skimmed into this closed-loop device, where it is manually removed to be disposed of by a private contractor or DRMO, coordinated through USAG on O'ahu (Ross 2002).

Grease racks have not been used since November 1996 at any of the motor pool or maintenance areas. All grease racks have been condemned, and such facilities are used as inspection racks (Ross 2002).|

#### *Pesticides/Herbicides*

Pest control operations on PTA cantonment area require only a part-time effort by one person (USARHAW 2000b). Big Island Pest Control, Inc., controls pests under contract. The workload consists of cockroach, ant, filth fly, rodent, and weed control.

An individual pest management plan is not required under AR 200-5, Environmental Quality, Pest Management. In addition to PTA being covered under the USAG-HI pest management plan, a section of the document is dedicated to addressing the specific pest management program for this area.

There is one primary pesticide storage location on PTA, the DPW Natural Resources Department (Building T-93). This entity controls alien species and protects native threatened and endangered species with the use of herbicides and rodenticides on all training areas. Small volumes of pesticides are stored in plastic lockers, with closed plastic containers as secondary containment. Larger volumes are stored in plastic containers on secondary containment pallets. Pest management of the cantonment area is completed under contract. Contractors are not allowed to store hazardous materials, including pesticides, on site (Yamamoto 2002).

According to site visits and interviews by outside consultants with PTA facility personnel during a 1997 hazardous waste inspection, a pesticide storage shed used to be located near the north side of Building T-31. In the 1980s, the pesticide storage shed was moved to the engineer's storage yard along the northwestern side of the cantonment area. The ground surface around the former pesticide storage area may be contaminated from inadvertent spills of pesticides during the formulation and mixing process; however, installation personnel identified no specific instances of spillage. Pesticide formulation and mixing was conducted at a potable water source equipped with a backflow-prevention device. Pesticide-contaminated rinsates from the spray equipment and container rinsing were also reportedly disposed of by applying the rinsate to needed areas. Pesticides may also have spilled within the storage shed and seeped through a pervious wooden floor, contaminating the underlying soils. A gravel driveway now exists north of Building T-31, over the area that is believed to have been occupied by the pesticide storage shed. Later soil analysis in the area positively detected pesticide constituents in the soil, but average pesticide concentrations across the former pesticide storage area were well below the USEPA Region IX PRG for pesticides of interest (PRC 1997, ES-3). As previously mentioned, pesticides are now stored in Building T-93 and are properly contained with an up-to-date spill plan.

Appendix K-5 provides a list of all pesticides used and stored on PTA (Yamamoto 2002).

### Wildfires

PTA is particularly susceptible to fire for numerous reasons (USARHAW and 25<sup>th</sup> ID[L] 2001b, 78). First, there is a history of ordnance-induced fires because several ranges are used year-round for live firing of a wide variety of ordnance. Also, there is a high risk of wildfire ignition from the use of aerial flares and similar pyrotechnics. Fire suppression is difficult in the impact area's rugged habitat, and UXO makes it difficult for helicopters to drop water in the impact area. Vehicles with catalytic converters, which pose a potential fire threat, are used on PTA. Highly flammable fuels and unique weather conditions also lead to high ignition rates. However, fires may also originate from other sources, such as arson, cigarettes, or campfires, within or adjacent to training areas.

Military live fire activities start many of the fires in the ordnance impact area (USARHAW and 25<sup>th</sup> ID[L] 2001b, 149). Most of these fires and other fires that start on PTA are prevented from leaving the boundaries of the installation; however, some fires have burned onto adjacent lands. Also, fires can come onto the installation from off-post. For example, a wildfire in 1994 affected about 4,670 acres (1,890 hectares) on the installation and originated in the Pu'u Anahulu Game Management Area, and a wildfire in 1999 that affected 3,560 acres (1,441 hectares) originated along Māmalahoa Highway (Highway 190).

The PTA Fire Chief is responsible for ensuring that wildland fire responses are in accordance with the IWFMP (USARHAW and 25<sup>th</sup> ID[L] 2001b, 149-151). Figure 8-40 shows the location of fire management facilities. Four remote weather stations on PTA are used for fire indexing. An auxiliary wildland firefighting force provides an initial attack on a fire before the fire department arrives. The Hawai'i County Fire Department, DLNR, and Hawai'i Volcanoes National Park assist with wildland fire suppression.

Historically, fire in the area of PTA was most likely rare and of little significance, limited to volcanically started fires and occasionally lightning (USARHAW and 25th ID[L] 2003, 7-51). Military use for live-fire exercises and target practice has increased ignition frequency dramatically and resulted in numerous small fires, though it appears that much of the threat to endangered species populations is a result of off-post ignitions. Fire history at PTA was inferred as best as possible from existing fire records and documentation provided by various agency sources. Fire records were numerous for PTA but most were incomplete. Many records included a date, time, and location for each fire but very little information was available about the size of fires or the weather conditions during the fires.

The number of fires per month peaks from March to July (Beavers et al. 2002b, 12, 13). However, because PTA is dry throughout the entire year and the amount of precipitation received during the winter is probably not enough to change the probability of fire by any significant amount, an annual cycle in fire frequency was not expected. Therefore, the main cause of monthly variation in the data is probably the frequency and intensity of use by the military.

Fire frequency by time of day illustrates that fires occur most frequently during the early afternoon and least frequently at night (Beavers et al. 2002b, 13). Eighty percent of all recorded fires between 1987 and 1999 started between 9:00 AM and 5:00 PM.

PTA Ranges 1, 10, and 12 were the most common locations for fires between 1987 and 1999 (Beavers et al. 2002b, 14 and 15). Ranges 1 and 10 are both assault courses designed for squad- and platoon-size units, respectively. There are several possible reasons why these ranges are the most common locations for fires. First, they are the most frequently used areas at PTA. Second, it is common for a large number of rounds from a wide variety of weapons systems to be expended during training.

[Figure 8-40](#)

Fire Management Facilities at Pōhakuloa Training Area

Fires caused by tracer ammunition is by far the largest cause of fires at PTA (USARHAW and 25th ID[L] 2003, 7-51). This comes as no surprise because tracers easily start fires and are one of the most commonly used munitions. Unknown ignition sources also account for a large number of fires (Beavers et al. 2002b, 16).

It is important to note that fires originating from nonmilitary sources have caused the overwhelming majority of the acres burned at PTA (USARHAW and 25th ID[L] 2003, 7-51). Since July 1990, over 8,000 acres (3,238 hectares) have burned. Of these, over 7,700 acres (3,116 hectares), or 91 percent of all acres burned, were burned by fires caused by lightning, arson, or carelessly discarded cigarettes, and the largest of these started on Army lands and later burned into PTA.

Based on fire history for PTA, the data show that the western and the northern sections of PTA potentially face the greatest threat of wildfire (USARHAW and 25th ID[L] 2003, 7-51). Military training activities have been the leading cause of past fires. The high risks inherent in military training activities, the existence of heavy loads of readily ignitable fuel, and the prevalent dry conditions of the area present significant fire management problems for the training area and adjoining lands.

Five wildfire areas have been designated, based on existing and planned fuel management corridors (USARHAW and 25th ID[L] 2003, 7-56). The ordnance impact area is not considered because prevention activities there are not possible and resources at risk are largely unknown. Each area was assigned an ignition potential, fuels hazard, and habitat value, based on the best currently available information. Representatives of the USFWS and USARHAW agreed on the ratings. The Kipuka Kalawamauna, Mauna Kea, and Kipuka Alala areas have a high wildfire prevention priority. The West PTA land acquisition area and southwestern PTA area have a moderately high wildfire prevention priority.

According to the IWFMP, fire protection in the fire management area includes firebreaks and fuels modification (USARHAW and 25th ID[L] 2003, 7-57 to 7-62). Given the weather, topography, and fuel conditions, which make fire suppression at PTA difficult, implementing adequate prevention measures is all the more important for minimizing fire loss. Serviceable access roads and firebreaks should be of highest priority, as they can be reasonably implemented and provide an effective fire management tool when properly planned and maintained.

Existing roads will serve as firebreaks (USARHAW and 25th ID[L] 2003, 7-57 to 7-62). Pre-constructed firebreaks need to be negotiable by four-wheel drive vehicles to facilitate fire and management access. All firebreak/fuelbreak measurements are additive (e.g., a 30-foot [9-meter] firebreak, combined with an 82-foot [25-meter] fuelbreak results in firebreak/fuelbreak combination of 112 feet [34 meters] in width). Most firebreaks at PTA will be combined with a fuelbreak to increase their effectiveness.

Firebreaks are or will be constructed at PTA (USARHAW and 25th ID[L] 2003, 7-57 to 7-62). These include the western firebreak, northern firebreak, Twin Pu'us firebreak, Keamuku firebreak, Keamuku Pu'us firebreak, Mamalahoa Highway firebreak, and Old Saddle Road

firebreak. The Mamalahoa Highway firebreak and Old Saddle Road firebreak will be established in Keamuku.

Grasses are the primary fuel-related concern because their spread and accumulation increase ignition potential and provide contiguous fine fuel beds (USARHAW and 25th ID[L] 2003, 7-57 to 7-62). Implementing road/firebreak improvement and developing recommendations will reduce flashy fuels along high ignition risk roads and will break up contiguous fuel beds.

Six fuel management corridors will be established and maintained, providing areas through which fire will not carry (USARHAW and 25th ID[L] 2003, 7-57 to 7-62). These corridors will be aligned so as to provide several distinct areas of PTA within which fire may be contained. Each corridor will be approximately 328 to 984 feet (100 to 300 meters) wide, though terrain, safety concerns, or protected resources may constrain the width in some areas. Fuel specifications within the corridor require that canopy cover not exceed 20 percent, which will be estimated on-site.

All of these corridors are in locales with little or no fuel (USARHAW and 25th ID[L] 2003, 7-57 to 7-62). They will be monitored once every five years, beginning in 2005, to determine whether fuels management needs to be initiated. If so, these corridors will be monitored biannually and treated whenever necessary to remain within specifications.

Prescribed burning will also be considered as a future fuels management option (USARHAW and 25th ID[L] 2003, 7-57 to 7-62). It will be focused on areas dense in exotic grasses, such as far western Kipuka Kalawamauna and the Twin Pu'us.

Grazing will be considered as an option to control fuels within fuelbreaks (USARHAW and 25th ID[L] 2003, 7-57 to 7-62). It will also be considered to control fuels throughout the Keamuku Parcel, should that land be acquired by USARHAW.

A fire danger rating system designed specifically for PTA has been developed by the US Forest Service and Colorado State University, based on analysis of PTA's fire history, fuels, fire behavior models, and weather (USARHAW and 25th ID[L] 2003, PTA-11 and PTA-29). National fire danger rating indices, as recommended by the US Forest Service and Colorado State University, are applied to the predominant fire carrying vegetation in each of six fire danger rating areas. The fire danger rating system uses the following five colors to characterize fire conditions at PTA:

- Blue (indicating low fire danger). No training restrictions.
- Green (indicating moderate fire danger). No training restrictions.
- Yellow (indicating high fire danger). No tracers or white phosphorus are allowed.
- Red (indicating very high fire danger). No pyrotechnics, smoking, or cooking/warming fires are allowed.

- Orange (indicating extreme fire danger). No live-fire, except ball and blank ammunitions, which are allowed only at fixed ranges. Maneuver training is limited to fixed ranges, TAs 7-9, 12-16, 21.

A supplemental system using wind speed criteria is in place for the restriction and use of pyrotechnics at PTA.

## 8.12.2 Environmental Consequences

### ***Summary of Impacts***

This section is a discussion of the potential impacts on human health and safety hazards under the Proposed Action and alternatives at PTA.

Significant and mitigable impacts are as follows:

- Due to a 25 percent increase in munitions under these alternatives and the results of recent soil analyses on PTA, ammunition presents a significant risk of soil contamination in the range areas. Remedial cleanup would take place when the training areas are permanently closed.
- Potential UXO exposure during maneuvers and construction, creating a significant threat to workers and Army personnel.
- Construction and demolition at PTA could expose workers to lead-based paint or lead-containing construction materials, creating a significant health and safety risk. In addition, construction of the AALFTR and BAX, as well as QTR2 under the RLA, would involve moving soils that could release lead to the environment, creating a significant impact.
- Construction and demolition at PTA could expose workers to asbestos-containing materials, which could be a significant health and safety risk.
- Adding two live-fire ranges under the Proposed Action and three ranges under the RLA Alternative and constructing a highway between PTA and Kawaihae Harbor would result in increased travel, occasionally involving hazardous and combustible materials; this presents a significant wildfire risk.

These impacts could be reduced to less than significant through mitigation. All other human health and safety hazard issues were considered either to have less than significant impact or to have no impact at all. Impacts, methodology, and factors determining significance are discussed in Section 4.12.1. Table 8-32 summarizes the potential impacts for PTA that have been identified in this analysis. No ordnance impact areas are being introduced to this installation. Each impact is a continuation and a possible insignificant augmentation of existing conditions.



increased level of training could elevate contamination levels in range soils by 25 percent over the contamination generated by current force training. However, the analysis showed that the areas where the contamination occurs is in areas where the contamination is not running off-site. In addition, the Soldiers will not be conducting foot maneuvers in this area and will not be exposed to the contaminants. Only government personnel or government contractors specifically trained and certified to travel safely in the impact area access the contaminated areas on a regular basis.

Management of the increased quantity of ammunition and other ammunition-related issues associated with PTA are discussed under less than significant impacts.

The regulatory and administrative measures defined below will reduce the significant impacts from contaminants associated with ammunitions to less than significant.

Regulatory and Administrative Mitigation 1. All government personnel or government contractors accessing ordnance impact areas will continue to follow OSHA and Army standards and guidelines to minimize health and safety impacts from exposure to any contaminants or ordnance. The general public will be allowed in or near impact areas only at times and in group sizes approved by USARHAW Command. Army trained and certified personnel would escort the general public at all times. Access is limited to only those areas deemed safe by USARHAW Range Control.

The Army will undertake additional risk-based investigations as appropriate in the event any active range is closed and transferred out of DoD control. Based on the results of this health risk-based analysis, all remediation necessary to mitigate an imminent threat to human health and the environment would be undertaken at such time.

Additional Mitigation 1. No additional mitigation has been identified.

Impact 2: Unexploded ordnance. Of the 25 percent increase in ammunition under the Proposed Action, 1.3 percent of the total increase would be from UXO-producing munitions (mortars, artillery, and grenades). The WPAA is part of the Former Waikoloa Maneuver Area, which is a Formerly Used Defense Site (FUDS) and has supported live-fire in the past. Based on an engineering evaluation/cost analysis conducted for the entire Waikoloa area, which includes a risk-based analysis for human health and the environmental, WPAA was assessed as low probability of UXO exposure. No live-fire training would be conducted on WPAA under the Proposed Action. The PTA trail would also be constructed through the former Waikoloa Maneuver Area. The same risk-based analysis assessed the area of the trail alignment as a medium to high risk of UXO exposure. Because this property would continue to be used for DoD operations, the trail alignment would not be eligible for FUDS UXO clearance prior to trail construction. However, construction would be preceded by Army-sponsored surface and subsurface clearance and if necessary followed by ordnance health and safety monitoring during construction in order to reduce potential exposure and impacts from this project.

Presence of UXO has the potential to affect the construction of the proposed AALFTR and BAX. The AALFTR and BAX would involve movement of soils that may be potentially contaminated with UXO from prior activities in the ordnance impact area that could present

a significant safety risk. The SDZs for these proposed ranges would overlay the existing range impact and ICM areas. These areas are, however, inaccessible to Army personnel, thus preventing exposure to existing or future UXO. In addition, maneuver training would continue to be conducted on existing training areas, excluding the 1,500-acre (607-hectare) MPRC area, under the Proposed Action. When PTA is in full use in support of brigade-level training exercises, which currently occurs twice per year, company-sized units would typically train in these areas. Although this would not include live-fire training, which could introduce new UXO, UXO is suspected due to past training, which presents a potential threat to Army personnel. UXO would not be cleared prior to maneuvers because of the suspected low occurrence of UXO. In addition to the below mitigation measures, the Army would continue to educate Soldiers on how to identify UXO and in proper safety procedures for handling UXO, as explained in Section 3.12. The mitigation measures below would reduce the significant impact to less than significant.

Regulatory and Administrative Mitigation 2. Before construction begins, the Army will employ qualified personnel to conduct a UXO survey of the proposed construction area. If the risk of encountering UXO is low, then UXO construction support will be used. If the risk of encountering UXO is high, then UXO clearance will be performed to ensure the safety of the site. The Army will document UXO surveys and removal actions in full accordance with applicable laws, regulations, and guidance. The Army will perform UXO clearance activities if rounds are fired outside of designated ordnance impact areas or present an immediate threat to human health or safety.

Additional Mitigation 2. No additional mitigation has been identified.

Impact 3: Lead. Construction activities associated with the Proposed Action could involve the exposure of workers to airborne lead particulates at project sites on PTA. The workers could be exposed to lead-based paint and pipes during demolition or soil excavation or grading at specific sites within PTA. There are three buildings proposed for demolition in conjunction with the construction of the Range Maintenance Facility: T17, T19, and T20. There have been no lead surveys conducted on these buildings. Implementation of the below mitigation would reduce the impacts to less than significant.

Construction of the AALFTR and BAX would redistribute the material from the berms at the current locations and redistribute the material onto retained firing range berms. In this manner, the material would be readily available for re-establishment of the berms at a future point to be determined. The berms used to stop projectiles fired at the ranges are expected to contain significant quantities of lead, and potentially UXO. Recent soil studies of the PTA ranges confirmed this, revealing elevated levels of lead in the soils, above USEPA Region IX residential and industrial PRGs (see Appendix M1 for the investigation report). The presence of lead may cause additional soils to become contaminated due to vehicle and equipment movement and soil deposition. Additional contamination would increase the volume of soil that needs to be remediated in the future.

Regulatory and Administrative Mitigation 3. The Army will expand existing programs for LBP to any SBCCT-related activities that would affect older structures where LBP might have been

used. Lead is managed in place for existing structures. In the event of demolition or renovation projects affecting such structures, a survey is required prior to demolition/renovation and appropriate actions must be taken to prevent the release of LBP into the environment. Construction workers must be properly trained/certified to handle LBP, and any debris must be tested by TCLP and disposed of according to the results.

The Army will retain lead-contaminated soils from existing berms on-site and will use the soils in the construction of new berms associated with the AALFTR and BAX. If lead-contaminated soils were not reused at the site for new berm construction, the soils would be remediated for lead, in accordance with applicable federal and state standards.

Additional Mitigation 3. No additional mitigation has been identified.

Impact 4: Asbestos. Construction activities associated with the Proposed Action could involve the exposure of workers to asbestos at PTA. The workers could be exposed to asbestos during demolition or grading at project sites within PTA. Asbestos surveys have been conducted on each of the above-mentioned buildings proposed for demolition for the construction of the Range Maintenance Facility, and ACM was found in the roof sealant of Building T20. No ACM would be used under the Proposed Action, so there would be no significant impacts from asbestos and no mitigation would be required when using materials during construction. Implementation of the following mitigation would reduce the impacts to less than significant.

Regulatory and Administrative Mitigation 4. The Army will expand existing programs for asbestos to any SBCT-related activities that would affect older structures where ACM might have been used. Asbestos is managed in place for existing structures. In the event of demolition or renovation projects affecting such structures, a survey is required prior to demolition/renovation, and appropriate actions must be taken to prevent the release of these substances into the environment. Construction workers must be properly trained/certified to handle ACM, and any debris must be tested by TCLP and disposed of according to the results.

Additional Mitigation 4. No additional mitigation has been identified.

Impact 5: Wildfires. PTA is particularly susceptible to fire for numerous reasons. Two ranges are proposed to be built on PTA, the BAX and AALFTR. These ranges would be located in previously disturbed sites and oriented towards pre-existing ordnance impact areas. The proposed WPAA would be used for maneuver training and would remain a nonlive-fire area. As a result, both live- and nonlive-fire training would increase, resulting in the potential to increase the frequency of wildfires. I

The military vehicle trail would be improved and extended to provide off-highway transport of vehicles, personnel, and equipment between Kawaihae Harbor and PTA. Improving the military vehicle trail between Kawaihae Harbor and PTA would increase the trail's use, resulting in the potential to increase the frequency of wildfires along the trail. Transporting personnel and using flammable or combustible materials could increase the potential for

starting a wildfire, especially in areas not previously used frequently. However, the IWFMP does not address fire management actions for the trail. The use of the trail by the Army would increase potential sources of wildfire ignition from Army training in areas that don't have established fire management actions, such as fire prevention and fire suppression. Unlike training activities conducted at PTA, the trail would not always be near an installation where access to Army fire suppression resources would be readily available. A wildfire along the trail or at the ranges could damage animal and plant communities, damage cultural resources, and contribute to soil erosion by removing vegetation.

Regulatory and Administrative Mitigation 5. The IWFMP, which includes the fire management areas and standing operating procedures, would be updated to address proposed activities along the trail. These updates will be completed before activities associated with the Proposed Action commence. Additionally, ITAM geographic information systems will be used to monitor the effectiveness of wildfire management activities. Army personnel will practice BMPs in operations, and trained personnel and equipment will be on hand during training activities to respond to wildfires.

IWFMP wildfire management infrastructure, such as the two dip tanks proposed for PTA, would be constructed before SBCT training commenced. During training, appropriate personnel and equipment will be assigned to water resources for responding to a wildfire.

Under this mitigation, there would be less than significant impacts involving wildfires.

Additional Mitigation 5. The IWFMP Pōhakuloa and O'ahu Training Areas was updated in October 2003. The Army will fully implement this plan for all existing and new training areas to reduce the impacts associated with wildland fires. Public and firefighter safety is the first priority in every fire management activity. The plan considers the potential need for firebreaks and/or fuel breaks at each installation, along with other safety concerns. The plan is available upon request.

#### Less than Significant Impacts

Hazardous materials management. The Proposed Action would not significantly increase hazardous materials usage at PTA. Impacts on hazardous materials management at PTA would be similar to those at SBMR, as discussed in Section 5.12.2. No new procedures would need to be implemented to store or use construction-related hazardous materials. The additional quantities of hazardous materials would be removed at the completion of construction.

In addition to general construction materials used for infrastructure, petroleum asphalt would be used in extending and upgrading the runway at BAAF. This project is depicted on Figure D-24. Although PTA Trail would primarily be composed of gravel, road grades steeper than 10 percent would be paved with asphalt or concrete to ensure all-weather safety conditions. These materials would also be used to install supporting provisions such as guardrails and signage.

The MSDSs for both asphalt and concrete are summarized in Section 4.12. Although OSHA does not categorize either of these materials as specifically carcinogenic to humans, serious health problems can result from extended exposure. Skin contact and breathing of mists, fumes, or vapors would be avoided by the construction team. Construction and disposal activities would be conducted in accordance with federal, state, and local regulations.

Hazardous materials would be handled in accordance with existing regulations and installation-wide hazardous materials management and SOPs. Hazardous materials for use during training are brought to PTA with the individual units and stored within temporary motor pools set up for each deployment operation. PTA personnel, the DPW, and Range Division manage and store the majority of hazardous materials within designated locations established to store these resources. Unused materials are brought back to O'ahu with the units. The Hazardous Substance Material System (HSMS) at PTA controls and tracks all base maintenance (Akasaki 2002b).

A new chemical would be used in conjunction with the proposed Stryker training as part of the JBPDS. A sodium azide ( $\text{NaN}_3$ ) solution will be used to preserve suspected biological agent samples during combat maneuvers. Only simulated biological agents will be used during training in Hawai'i. The use of the chemical solution is considered a less than significant impact as stated in Sections 4.12 and 5.12.

Hazardous materials would not pose a significant impact at PTA. Mitigation would not be necessary.

*Hazardous waste management.* Activities related to the Proposed Action would not significantly affect hazardous waste management. Impacts on hazardous waste management on PTA would be similar to that on SBMR, as discussed in Section 5.12.2. The US Army follows strict regulations and SOPs for the temporary storage and disposal of hazardous waste. Temporary hazardous waste storage would be designated and operated through satellite accumulation point (SAP) facilities located at various facilities throughout PTA according to RCRA and state regulations. The Army would be required to manage and dispose of hazardous waste generated by operations through DRMO in accordance with existing regulations and installation-wide protocol regarding storage, use, and disposal. Hazardous waste associated with construction activities would cease being generated at the completion of construction.

The Range Maintenance Facility proposed to be constructed at PTA includes a carpentry shop, welding shop and target and raw material storage. These activities could potentially yield hazardous waste, in which case containment and disposal would be handled in accordance with the USAG-HI hazardous waste management plan.

[The additional hazardous waste generated by the Proposed Action would not result in a significant increase to the total amount of hazardous waste managed at and disposed from the installation. Therefore, there would be no significant construction-related or operational impacts, and no mitigation would be required.

Ammunition. Several projects included in the Proposed Action could pose less than significant impacts on PTA due to the increased presence or use of ammunition. Complete descriptions of each proposed project are included in Appendix D; however, a brief explanation of relevant proposed projects are as follows:

- A 6,750-square-foot (627.1-square-meter) ammunition storage facility would be collocated with existing ammunition igloos;
- A BAX designed for live-fire, maneuver gunnery training and qualification requirements of weapons systems would be constructed; and
- A modified standard AALFTR would be constructed overlying Ranges 1, 3, and 8 on the east side of the installation.

The SDZs for the BAX and AALFTR would overlap the existing ordnance impact and ICM areas, but these areas are inaccessible to Army personnel; the firing points are beyond the ordnance impact area borders. Targetry and security devices would be funded by OPA. Environmental mitigation and UXO clearance is required at these ranges and would be separately funded by OMA prior to construction commencement. A consolidated Range Maintenance Facility would be constructed under the Proposed Action within the PTA cantonment area, as seen in Figure D-23. This facility would provide a centralized command to monitor and control all range activities and operations, including ordnance use, throughout PTA and the island of Hawai'i. There are no live-fire activities or artillery firing points on the proposed WPAA.

The 105mm cannon on the Stryker mobile gun systems and the 120mm mortar are the only new weapons to be introduced at PTA as a part of the Proposed Action. Both weapons, however, would be used at PTA under the Proposed Action. The amounts of other weapon systems would also be increased with the elevated level of training proposed in the transformation. Although the Proposed Action would generate a significant increase of ammunition use (an additional four million rounds) due to the elevated level of training and expansion in military force, the impact of this increase would not be significant, as management of artillery and ammunition would not change. Handling and storage methods, disposal protocols, and safety procedures would continue to be conducted in accordance with existing regulations. No new conventions would need to be instated, thus there would be a less than significant impact from the increase in ammunition and ordnance.

The Army follows strict SOPs when handling ammunition. The disposal of ordnance is regulated by RCRA as explained in Section 3.12. Excess ammunition not used during training is either brought back with the unit or by commercial carrier to be stored at the permanent ASP on WAAF. Residues from the manual burn activity, discussed in Section 8.12.1, Ammunition, are stored in hazardous waste receptacles and brought to a temporary SAP facility set up during maneuvers for disposal by DRMO. Additionally, the Army conducts routine inspections of all facilities containing hazardous materials to ensure compliance. The WPAA has never supported live-fire training, and no live-fire training would be conducted on the WPAA under the Proposed Action, so there would be no significant impacts from ammunition, and no mitigation would be required.

Range sampling and contamination impacts are discussed under the significant impact section, above.

General training. Activities under the Proposed Action relevant to this class or type of activity include military training on training lands outside of developed (e.g., cantonment) areas. Such training would include nonlive-fire mounted maneuver training and other nonlive-fire dismounted military training. A slight increase in transformed live-fire training would occur on current force-era ranges. The increase would be maintained and managed in accordance with federal and USAG-HI protocol, therefore creating no additional significant impact. General training issues associated with the AALFTR and BAX would not likely result in any significant impacts. The SDZs for these proposed ranges overlie the existing range impact and ICM areas, but these areas are inaccessible to personnel and are not believed to present a safety risk. In addition, these training activities may expose additional areas to potential military training equipment leaks, spills, or drips to the environment. During any on-site operational activities within a specific project area, USARHAW will implement SOPs to minimize the potential for spills or other harm to the environment.

As further explained in Section 4.12, in order to protect the public during range training, SDZs have been and would continue to be included in the range design, in accordance with Army Pamphlet 385-64, *Ammunition and Explosive Safety Standards*. Additionally, in order to protect Army personnel during range training, Soldiers and officers are given safety manuals, operation-specific field manuals, and range-specific briefings before training exercises, with a complete discussion of safety procedures while training. Therefore, there would be no significant impacts from training operations, and no mitigation would be required.

Electromagnetic fields. The proposed FTI sites could potentially introduce EMF to PTA. Two of the FTI sites would be outside the proposed boundaries of the installation. The general public is typically not allowed in areas that could contain EMF hazards from Army equipment and, therefore, would not be inadvertently exposed to EMF on the installation. All FTI sites would be appropriately fenced to prevent trespassing and exposure to any harmful EMF. Signs would be posted around the perimeter of all potentially harmful EMF sources on- and off-post to warn people about the EMF source. DOD Instruction 6055.11 and Army Pamphlet 385-64, as well as other Army regulations pertaining to EMF, would be followed in the operation of the new facilities to protect personnel, as is the current practice. Only trained personnel would work with equipment emitting EMF. There would be no significant impact on the public from exposure to EMF, and no mitigation would be necessary.

Petroleum, oils and lubricants. O'ahu-based military vehicles accumulate soils and nonnative species that may be tracked onto roads when they return to SBMR. A tactical vehicle wash facility is proposed to be designed to accommodate an 18.3-meter-long by 3.7-meter-wide vehicle and would have four wash stations. Treatment would include oil and grease removal, grit removal, and organic control. An oil-water separator would be provided to treat any residual water that did not go through the main system before wastewater is directed into the sewer main along Kawaihae Road. This project is discussed in detail in Appendix D.

In addition to the proposed infrastructure, the Proposed Action includes the construction of a runway extension and a turnaround area at BAAF. The runway, taxiway, and apron area would also be strengthened to accommodate C-130 and C-17 aircraft. Asphalt would be used in completing these construction/upgrade projects.

Although the proposed PTA Trail would be primarily composed of gravel, road grades steeper than 10 percent would be paved with asphalt or concrete to ensure all-weather safety conditions. These materials would also be used to install supporting provisions such as guardrails and signage.

Construction issues would not likely result in any specific hazardous materials and waste impacts. These construction activities may expose additional areas to potential construction equipment leaks, spills, or drips. USARHAW would, during any on-site construction activities within a specific project area, implement the SOP measures summarized in Section 5.12 to minimize the potential for spills or other harm to the environment.

Specific project construction details are included in Chapter 2 and Appendix D. There would be no significant impacts from construction of the Proposed Action projects, and no mitigation would be necessary.

Stryker vehicles would be used at PTA under the Proposed Action. Maintenance and handling of the vehicles would continue under existing SOPs. Operations would practice BMPs and follow USEPA and USAG-HI protocol for use and handling of hazardous materials such as POLs. DPW maintains a spill contingency plan and an SOP plan. These plans outline proper operating and emergency response procedures and responsibilities. Additionally, the Army conducts routine inspections of all facilities containing hazardous materials to ensure compliance. Therefore, there would be no significant impacts from POLs, and no mitigation would be required.

Pesticides/Herbicides. The proposed land acquisition would generate a slight increase in the amount of pesticides/herbicides used on PTA in order to maintain the maneuver training area. Pest control would continue to be maintained by DPW in accordance with the existing USAG-HI IPMP. Pesticides would continue to be stored at the centralized Environmental Shop located on PTA in Building T-93. Therefore, there would be no significant impacts from pesticides/herbicides, and no mitigation would be required.

#### No Impacts

Installation Restoration Program. Construction and operational activities associated with this alternative would not affect IRP sites, as there are no proposed projects within IRP boundaries. A detailed description of the IRP program for PTA, including specific projects and locations, is provided in Appendix K-2. Activities at PTA under the Proposed Action would not conflict with the restoration progress of IRP sites. Therefore, there would be no impact, and no mitigation would be required.

Polychlorinated biphenyls. Construction and operational activities associated with the Proposed Action would not generate impacts from PCBs. The Army has committed to removing or

retrofilling all electrical equipment containing regulated amounts of PCBs. No PCB-containing equipment is believed to exist within the project boundaries, however if PCBs are encountered, the devices would be properly handled in accordance with USEPA regulations. As per subsection 6(e) of the TSCA of 1976, no new PCB-containing equipment would be installed as part of this alternative. For that reason, there would be no impacts, and no mitigation would be required.

### ***Reduced Land Acquisition Alternative***

Under the RLA Alternative, impacts at PTA would generally be very similar to the Proposed Action, except QTR2 would not be built on the SBMR SRAA, but rather on the Range 8 site at PTA.

### ***Significant Impacts Mitigable to Less than Significant***

Significant impacts associated with the RLA Alternative projects would be identical to significant impacts associated with the Proposed Action except in three areas.

*Unexploded Ordnance (UXO).* Construction of QTR2 at PTA Range 8 would likely involve movement of soils that may be potentially contaminated with UXO from prior activities in the range area. This would potentially present a significant adverse safety hazard. The SDZ for the proposed QTR2 range would overlie the existing ordnance impact and ICM areas, but these areas are inaccessible to Army personnel, thus preventing exposure to existing or future UXO. Mitigation for this impact would be the same as the mitigation identified for UXO impacts under the Proposed Action.

*Lead.* The potential for lead contamination due to the re-distribution of lead-contaminated soils at PTA Range 8 may cause additional soils to become contaminated due to vehicle and equipment movement and soil deposition. Additional contamination would increase the volume of soil that needs to be remediated. Mitigation for this impact would be the same as the mitigation identified for lead impacts under the Proposed Action.

*Wildfires.* Construction of QTR2 would likely increase the amount of live-fire training at PTA, thereby potentially increasing the frequency of wildfires at PTA, and presenting a significant adverse safety hazard. Mitigation for this impact would be the same as the mitigation identified for wildfire impacts under the Proposed Action.

### ***Less than Significant Impacts***

Less than significant impacts associated with the RLA Alternative projects would be largely identical to impacts associated with the Proposed Action. The only difference would be that due to the relocation of proposed range, QTR2, from the SRAA to PTA, this installation would undergo an increase in ammunition used and training conducted at the installation as well as an increase in hazardous materials and waste used and generated to construct and maintain the range. In addition, the SDZ for the proposed QTR2 range would overlie the existing ordnance impact and ICM areas, but these areas are inaccessible to Army personnel, thus preventing exposure to existing or future UXO.

**No Action Alternative**

The current baseline of impact conditions would continue under No Action. No increase in hazardous material use or waste generation would occur. Less than significant impacts under No Action would primarily be due to continued practices at existing levels and would involve ammunition, UXO, general training, lead, EMF, and wildfires.

Training Related Impacts. As training would continue by current forces at PTA, impacts from the training and munitions use would continue to affect the land. Existing types and quantities of ammunition and ordnance would continue to be used. The 105mm cannon and the 120mm mortar would not be used. As UXO would remain a potential presence, EOD specialists would continue to implement abatement procedures to minimize potential exposure of current forces to UXO during training. Potential UXO in the former Waikoloa Maneuver Area would remain and not be cleared as the proposed PTA Trail would not be constructed. USARHAW would continue following existing SOPs to minimize the potential for spills or other harm to the environment resulting from training efforts. Current forces would continue to train at PTA, which would distribute lead and other contaminants resulting from training from small ammunition firearms into retained firing range berms. The presence of these contaminants may further contaminate soils due to vehicle and equipment movement and soil deposition. Finally, continued use of Army land for training under No Action would prolong the threat of wildfires. The WFMP and its FMAs and wildland fire SOPs, all of which are designed to prevent and manage wildfires, would continue to be followed. These impacts from continued training at existing levels would remain a less than significant impact, and no new mitigation would be required.

Electromagnetic Fields. EMF sources would not be introduced to the installation or areas outside the installation under No Action, but existing sources of electromagnetic radiation as well as future projects containing EMF would remain a risk. SOPs would continue to be followed in order to prevent exposure to the public or the environment.