4.10 CULTURAL RESOURCES

4.10.1 Impact Methodology

AR 200-1 defines the term cultural resource as any of the following:

A building, structure, site, district, or object eligible for or included in the NRHP maintained under Section 101(a) of the NHPA (16 USC 470a[a]);

Cultural items, as that term is defined in Section 2(3) of NAGPRA (25 USC 3001[3]). These include human remains, associated and unassociated funerary remains, sacred objects, and cultural patrimony objects;

American Indian, Eskimo, Aleut, or Native Hawaiian sacred sites for which access is protected under AIRFA (42 USC Section 1996);

Archaeological resources, as that term is defined in Section 3(1) of the ARPA of 1979 (16 USC 470bb[1]). These include any material remains of human activities that are of archaeological interest, as determined under ARPA regulations; and,

Archaeological artifact collections and associated records, as defined under 36 CFR Part 79: Curation of Federally Owned and Administered Archaeological Collections. Under these guidelines, collections include material remains, such as artifacts, objects, specimens, and other physical evidence, that are excavated or removed during a survey, excavation, or other study of a prehistoric or historic resource. Associated records include original records (or copies thereof) that document efforts to locate, evaluate, record, study, preserve, or recover a prehistoric or historic resource.

In addition to cultural resources defined by federal statute, regulation, and executive order for consideration and protection, additional sites and areas important to Native Hawaiian culture and religion may exist on Army lands. These ATIs are described in detail in Section 3.10.4.

To identify cultural resources in the ROI, historic and current maps, aerial photographs, cultural resources reports, public meetings, oral history interviews, and archival records were used. In addition, the NRHP and state and local inventories of historic places were reviewed for prehistoric and historic resources within the ROI. Native Hawaiian organizations and individuals were consulted, and public meetings were held (see Section 1.7) to identify and locate ATIs. Surveys were also conducted in the field.

Cultural resources that are determined NRHP-eligible are subject to protection under the NHPA; however, additional protection for cultural

resources is provided under ARPA, AIRFA, and NAGPRA. ATIs and cultural landscapes at MMR and PTA have not yet been formally evaluated. Resources that are pending evaluations for NRHP eligibility have been and would be treated as eligible until formal determinations are made. In consultation with the Hawai'i SHPO and other agencies, Native Hawaiian organizations and individuals, in compliance with Section 106 of the NHPA of 1966, the Army is testing known sites at MMR and PTA to determine eligibility and is collecting additional information on ATIs.

The various types and levels of training discussed in Chapter 2 and the locations of these proposed exercises were used to evaluate impacts on each site or group of sites. Impacts were assessed by identifying the nature and locations of the proposed training activities in relation to the locations of sensitive cultural resources.

The method for assessing potential impacts on cultural resources involves identifying sensitive cultural resources in the ROI for all alternatives, identifying project activities that could affect those resources, and determining the type and magnitude of potential direct and indirect impacts on those resources.

Mitigation measures presented for the impacts identified below would avoid all known resources and would provide protection for sites in their present condition, including making sensitive areas off-limits during training, creating buffer zones around sites, and constraining certain activities during training exercises in particular areas.

4.10.2 Factors Considered for Determining Significance of Impacts

Cultural Resources

Section 106 of the NHPA requires federal agencies to consider the effects of their actions on properties listed on or eligible for listing on the NRHP. These properties also include those ATIs that have been evaluated and determined eligible. Pending formal evaluations, the Army is treating all cultural resources and cultural landscapes as though they are eligible.

An adverse effect on a historic property, as defined by the NHPA, is not necessarily a significant impact under NEPA. While mitigation under the NHPA does not necessarily negate the adverse nature of an effect, mitigation measures under NEPA can reduce the significance of an impact. NHPA and NEPA compliance are separate and parallel processes, and the standards and thresholds of the two acts are not precisely the same.

Section 106 and its implementing regulations, 36 CFR 800, state that an undertaking has an effect on a historic property (i.e., NRHP-eligible

resource) when it could alter those characteristics of the property that qualify it for inclusion on the NRHP. An undertaking is considered to have an adverse effect on a historic property when it diminishes the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Section 106 adverse effects include, but are not limited to, the following:

- Physical destruction, damage, or alteration of all or part of the property;
- Isolation of the property or alteration of the character of the property's setting when that character contributes to the property's qualifications for the NRHP;
- Introduction of visual, audible, or atmospheric elements that are out of character with the property or changes that may alter its setting;
- Neglect of a property, resulting in its deterioration or destruction; and
- Transfer, lease, or sale of a property without adequate provisions to protect its historic integrity.

Native Hawaiian sites, including sacred sites, burials, and cultural items, whether or not they are considered eligible for the NRHP, may also be protected under AIRFA, ARPA, or NAGPRA. Factors considered in determining whether an action would have a significant impact on cultural resources include the extent to which its implementation would result in an adverse effect on a historic property, including a property of traditional religious and cultural importance (PTRCI), as defined under Section 106 of the NHPA, or Native Hawaiian ATIs, and the extent to which it would violate the provisions of AIRFA, ARPA, or NAGPRA.

Also, NEPA mitigation measures for other resource areas, such as cultivating land, clearing UXO, or revegetating a plant species, may involve undertakings that could create adverse effects on cultural resources under the NHPA. Before being implemented, these actions would also undergo review to determine if they would require additional Section 106 review.

Cultural resources would incur significant impacts if there were loss of or major damage to these resources. If archaeological sites cannot be avoided and protected, mitigation through data recovery, such as archaeological excavation, would also be considered a form of destruction and would constitute a significant impact.

ATIs would incur significant impacts if they were damaged or destroyed. Access to ATIs by Native Hawaiian groups and individuals would be significantly affected if training reduced the number of available visitation days below current levels.

Paleontological Resources

Paleontological sensitivity or potential is a qualitative measure of the density and scientific value of a site's fossils. It also gauges the probability that site development would directly or indirectly destroy a unique scientifically significant paleontological resource. Such a resource is generally considered to consist of vertebrate remains; unusual, useful, or exceptionally well-preserved trace fossils or invertebrate/plant remains; or exceptionally rich or diverse fossil assemblages. A three-part classification of paleontological sensitivity is outlined by the Society of Vertebrate Paleontology (1995) and is used by many paleontologists. It includes high sensitivity, low sensitivity, and undetermined sensitivity rankings. Within this classification scheme, a high sensitivity site is one that has one of the following characteristics:

- It is underlain by or contains exposures of sedimentary rocks or some types of volcanic rocks that are of the right age, origin, and location to *potentially* contain significant fossils;
- It is underlain by or contains exposures of sedimentary rock or some types of volcanic rocks that are *known* to contain significant fossils; or
- It contains potentially datable remains older than the historic period, including nests and middens (a deposit of shells, bones, and other artifacts that suggest previous human settlement).

Paleontological resources would incur significant impacts if important fossil resources were damaged or destroyed.

As discussed in Section 3.10.7, no fossil resources are expected to be present in Mākua and Kahanahāiki or at PTA, and because the area does not exhibit the characteristics listed above, MMR and PTA are not considered paleontologically sensitive. Given the above, no impacts are expected.

4.10.3 Mitigation Common to All Alternatives

Much mitigation discussed below references additional consultation. To the extent that archeological sites, ATIs, or other cultural resources are determined to be eligible for listing on the National Register, such consultation would be completed by developing a PA, in accordance with Section 106 of the NHPA. Additional requirements for surveys to identify and evaluate sites for historic significance and application of mitigation

and treatment measures would be set forth in that agreement. USAG-HI would continue consultation with Native Hawaiian groups and individuals and interested parties outside of the Section 106 process for unanticipated impacts on other cultural resources of importance. The foregoing mitigation would be applicable to all alternatives, and a determination as to adoption and commitment to implementation would be included in the Record of Decision.

4.10.4 Summary of Impacts

Summary of Potential Cultural Resources Impacts

Impact Issues	No Action Alternative	Alternative 1 MMR (Reduced Capacity Use with Some Weapons Restrictions)	Alternative 2 MMR (Full Capacity Use with Some Weapons Restrictions)	Alternative 3 MMR (Full Capacity Use with Fewer Weapons Restrictions)	Alternative 4 PTA (Full Capacity Use with Fewer Weapons Restrictions)
Impacts on archaeological resources	⃠	⊗	⊗	⊗	⊗
Impacts on cultural resources from vehicles	⃠	⊙	⊙	⊙	⊙
Impacts on paleontological resources	○	○	○	○	○
Impacts on Areas of Traditional Importance	⃠	⊗	⊗	⊗	⊗
Access to Areas of Traditional Importance and archaeological sites	⊗	⊗	⊗	⊗	○

LEGEND:
⊗ = Significant impact ⃠ = Significant impact mitigable to less than significant ⊙ = Less than significant impact
○ = No impact + = Beneficial impact

Cultural Resources

Mākua Military Reservation

There are 121 identified cultural sites within or bordering the MMR training area. In addition, there are two historic pipelines within MMR that run from springs in the mountains into the valley. Records indicate that there are also 29 LCAs and two land grants within or near MMR (see Figure 3.10-1). Because these LCAs are locations where families engaged in subsistence farming and other activities for a number of generations, they are culturally and historically important and are considered ATIs that may be determined to be PTRCIs following formal evaluation. Archaeological sites also may be considered ATIs, especially when their locations coincide with LCAs, religious sites, or other places associated with Hawaiian traditional practices.

As required by the 2001 Settlement Agreement, specific research was conducted to identify ATIs, potential PTRCIs, and impacts on these properties from continued military use of MMR. Data gathering methods included a survey (distributed to Wai‘anae coast residents) and oral interviews with a number of interested local community members. Based on the responses from the survey, there appears to be a general lack of knowledge of specific ATIs within MMR boundaries, although the area in general can be described as culturally important.

Pōhakuloa Training Area

In general, archaeological resources at PTA consist of modified natural features, such as lava tubes, lava shelters, and lava blisters. A 1998 review of previous archaeological studies concluded that lava tubes made up 70 percent of all recorded sites at PTA (Eidsness et al. 1998), and they remain one of the most common site types found in more recent surveys. Other site types include cairn sites, trails, volcanic glass quarries, excavated pits, and lithic workshops. Within these sites, material remains include grinding tools, charred wooden torches, gourds, cordage and matting, woven ti leaf sandals, kukui nuts, ‘opihi shells, and other faunal remains. Surface features include stone-lined hearths, cupboards, rock-paved areas, low walls and platforms, rock-filled crevices, ramps, cairns, shrines, open-air shelters, and trails. The region has much value for archaeological research and has produced important information concerning bird hunting, trail systems, and short-term living conditions at higher elevations. Figure 3.10-4 shows archaeological sensitivity areas at PTA.

Reinman et al. (1998a) claim the cultural resources at PTA are important for addressing issues about Hawaiian prehistory and history in the uplands region, as well as the development of Native Hawaiian society.

The existence of approximately seven stone shrines attest to the likely ritual activity that went on at PTA. With prayers and ritual permeating traditional Hawaiian life, some of the structures at PTA may be occupational shrines (Buck 1957, cited in McEldowney 1982). Cairns (ahu) have been recorded at various terrains, either associated with trail systems or boundary markers, or as just isolated features. There appears to be no pattern to the distribution of cairns across the PTA landscape, and they have been quantified as representing between 10 and 15 percent of known sites. Cairns have also been constructed for military purposes, although the trained eye can usually differentiate military cairns from prehistoric ones. It is also possible that some cairns were constructed for rituals.

Archaeological Resources

There have been over 350 archaeological sites reported at PTA, including both prehistoric and historic Native Hawaiian sites (see Tables 8-24 and 8-25 of the 2004 SBCT EIS). The only site listed on the NRHP is the Bobcat Trail Habitation Cave (Site 50-10-30-5004), which is located in Training Area 22.

Most relevant to the Proposed Action are the archaeological sites found along the MPRC Access Road, those located to the west of the Red Leg Trail within the impact area, those within Training Areas 17, 18, 19, 20, and the northeastern part of Training Area 22 (see Figure 3.10-5).

There are lava tube systems, or caves, located along Red Leg Road on the eastern perimeter of the impact area that may be impacted by the Proposed Action associated with Alternative 4. Caves, including the Bobcat Trail Habitation Cave on the northwestern section of the ROI, may also be impacted by wildfires.

Impacts

In general, training components and activities that could disturb or damage cultural resources include foot traffic, machine gun fire, ordnance projectiles, explosions, UXO demilitarization, and wildfires. Direct impacts, such as the physical disturbance of sites, may lessen the integrity of the sites. Impacts may also include reduced access to cultural sites due to mission schedules and public safety.

The primary difference between the alternatives with regard to impacts is the greater intensity and destructive force of live-fire weapons and the increased frequency of training exercises. High explosive weapons have greater potential to cause unintentional damage if a weapon is misfired, or to ignite wildfires from a ricochet or off-target impact. Increased frequency of CALFEXs would increase the number of troops and equipment, and potentially cause foot traffic damage and increased vandalism.

No Action Alternative

Significant Impacts

Impact 1: Impacts on archaeological resources. The use of MMR for non-live-fire training including UAVs and aerial lasing could result in damage to archaeological sites including the potential for damage through crashes and potentially associated fire. The placements of targets and foot traffic could also result in damage to archaeological sites.

Regulatory and administrative mitigation. The Army designs training exercises to avoid archaeological sites and ATIs. Measures to protect

cultural resources during training include cultural resource avoidance training and site protection, including but not limited to installing fencing or other types of buffering. Any UXO detonation that could damage sites would be subject to further Section 106 consultation.

Additional mitigation. Potential mitigation measures for this impact include the Army relocating any targets or training activities that could disturb or damage known cultural resources. Other protective measures that would be used to preserve sites include sand bagging, which has proven effective in site preservation. In addition, paths would continue to be aligned to avoid damage to cultural resources.

The Army would continue to seek, identify, and evaluate cultural resources on MMR based on its identification and evaluation plan and in accordance with Section 106 of NHPA and a new PA would be developed for such purposes as discussed above.

Cultural resources would be monitored to identify effects from training. The Army would inspect cultural sites quarterly. Monitoring records and photographic documentation would be included in annual reports submitted to the Hawai‘i SHPO.

Other measures include continued communication between the cultural resource and fire managers to develop acceptable strategies for fire containment and control and for the protection of cultural resources. This coordination would occur during site planning preparation and preseason fire suppression operations.

Impact 2: Impacts on Areas of Traditional Importance. Training under the No Action Alternative could affect or damage Native Hawaiian ATIs, including landscapes, shrines, archaeological sites, and burial sites. For example, foot soldiers could accidentally trample some archaeological resources that may be considered ATIs or burial sites. Intrusion of modern activities and landscape alteration may affect the integrity of setting for resources that are eligible for listing on the NRHP.

During training exercises, UAV or other aircraft may crash and may be accompanied by fire which would cause a significant impact to ATIs.

Regulatory and administrative mitigation 2. The Army avoids or protects all areas where ATIs have been reported. The Army continues to identify Native Hawaiian organizations, groups, families, and individuals that may ascribe traditional religious and cultural importance to areas, landscapes, or historic properties at MMR. Paths would continue to be aligned to avoid moving over cultural resources.

Additional mitigation 2. Potential mitigation measures for this impact include avoidance training and site protective measures. The Army would avoid sensitive areas for all types of training and would relocate target areas if they were considered to be too close to ATIs. The Army would conduct quarterly inspections of cultural sites.

The Army would conduct cultural resource awareness and protection training, which includes procedures to avoid cultural resources during training. Instruction would include field trips, classroom training, and printed literature. This information is also included in the cultural resource annex of the range SOPs. Before each exercise, senior officers would be briefed about cultural and natural resources. Soldiers would be briefed at MMR before training. If identified ATIs could not be avoided because of interference with the military mission or risk to public safety, the Army would reinitiate appropriate consultation with Native Hawaiian groups before training, in conjunction with implementing other measures.

Impact 3: Access to Areas of Traditional Importance and archaeological sites. Nonlive-fire training at MMR would limit and significantly reduce the number of days when ATIs and archaeological sites could be accessed. This would be a significant impact because restricting the days sites can be visited may not accommodate the Native Hawaiians' need to visit sacred or traditional areas during specific Native Hawaiian traditional periods. Because the Ukanipō *Heiau* is geographically removed from the training area, the proposed training would not affect access to the *heiau* or conflict with the provisions of the Ukanipō *Heiau* PA.

Regulatory and administrative mitigation 3. The Army would continue to provide cultural access to ATIs and archaeological sites. Under the PA for the Ukanipō *Heiau*, access is coordinated through cultural representatives on an advisory council.

The Ukanipō *Heiau* PA has provisions for access based on military activities, site safety, and advance notification. In accordance with the Ukanipō *Heiau* PA, members of the Native Hawaiian community can access Ukanipō *Heiau* for appropriate uses.

The impact of decreased number of access days due to training may be lessened through consultation, which would include Native Hawaiian groups. Consultation results may include developing long-term scheduling goals that could facilitate access and traditional use of resources during non-training periods and provide access to additional ATIs. However, consultation would not likely be able to reduce the impacts below the significance threshold, so the No Action alternative would result in a significant impact.

Less Than Significant Impacts

Impacts on cultural resources from vehicles. Vehicles driven by Soldiers and maintenance crews would have an impact on cultural resources by tire or track depressions or from soil erosion. This impact is less than significant because all Army vehicles are required to stay on existing or improved roads, and maintenance of security fencing would prevent unauthorized vehicle access to the reservation.

No Impacts

Impacts on paleontological resources. A formal survey has not been conducted for paleontological resources at MMR. Within the ROI, the geology present is not normally known for fossil finds, archaeologists have not reported fossil remains, and there are no known paleontological resources. Because these resources are not known and are not likely to be present, no impacts are expected.

Alternative 1 (Reduced Capacity Use with Some Weapons Restrictions)

Significant Impacts

Impact 1: Impacts on archaeological resources. Potentially significant impacts on archaeological resources include damage from ground troops. The presence of large numbers of personnel could affect resources through foot traffic, vandalism, or accidental damage. Trampling may damage artifacts or alter stone structures, which would reduce the potential information these sites contain. These impacts may affect the site's eligibility for listing on the NRHP. During CALFEXs, stray ammunition rounds from guns, mortars, and artillery could damage cultural properties, as could squad and platoon live-fire training and other types of training. Mortar and artillery shells, if they stray off target and hit eligible resources, may damage artifacts or alter stone structures, which would reduce the information these sites could contain. In addition, UXO clearance after training exercises could damage sites. These impacts may affect the site's eligibility for listing on the NRHP. Mitigation measures have been identified to reduce these impacts, but they may not be sufficient to reduce impacts below the significance threshold.

Regulatory and administrative mitigation 1. The Army designs training exercises to avoid archaeological sites. Measures to protect cultural resources during training include cultural resource avoidance training and site protection, including but not limited to installing fencing or other types of buffering. Any UXO detonation that could damage sites would be subject to further Section 106 consultation.

Additional mitigation 1. Potential mitigation measures for this impact include the Army relocating any targets or training activities that could

disturb or damage known cultural resources. Other protective measures that would be used to preserve sites include sand bagging, which has proven effective in site preservation. In addition, firing points and paths would continue to be aligned to avoid shooting at cultural resources.

The Army would continue to seek, identify, and evaluate cultural resources on MMR based on its identification and evaluation plan and in accordance with Section 106 of NHPA and a new PA would be developed for such purposes as discussed above.

Cultural resources would be monitored to identify effects from training. The Army would inspect cultural sites quarterly. Monitoring records and photographic documentation would be included in annual reports submitted to the Hawai‘i SHPO.

Other measures include continued communication between the cultural resource and fire managers to develop acceptable strategies for fire containment and control and for the protection of cultural resources. This coordination would occur during site planning preparation and preseason fire suppression operations.

Impact 2: Impacts on Areas of Traditional Importance. Training under Alternative 1 could affect or damage Native Hawaiian ATIs, including landscapes, shrines, archaeological sites, and burial sites. For example, foot soldiers could accidentally trample some archaeological resources that may be considered ATIs or burial sites. Intrusion of modern activities and landscape alteration may affect the integrity of setting for resources that are eligible for listing on the NRHP.

During training exercises, stray ammunition rounds from guns, mortars, and artillery could damage or destroy cultural properties, as could squad and platoon live-fire training, air assault, aviation support, and other proposed training activities. Landscape alteration caused by live-fire exercises may affect the integrity of setting of resources that are eligible for the NRHP. Live-fire training would increase the threat of wildfires, which could damage or remove landscapes, flora, and fauna associated with traditional practices. In addition, UXO clearance after training exercises could damage sites. Mitigation measures identified to reduce these impacts may not be sufficient to reduce impacts below the significance threshold.

Regulatory and administrative mitigation 2. The Army avoids or protects all areas where ATIs have been reported. The Army continues to identify Native Hawaiian organizations, groups, families, and individuals that may ascribe traditional religious and cultural importance to areas, landscapes,

or historic properties at MMR. Firing points and paths would continue to be aligned to avoid shooting over cultural resources. Demolitions training would occur in the designated ordnance impact area.

Additional mitigation 2. Potential mitigation measures for this impact include avoidance training and site protective measures. The Army would avoid sensitive areas for all types of training and would relocate target areas if they were considered to be too close to ATIs. Detonation of any ordnance outside the training area or close to existing sites would be subject to additional consultation among the Army, the SHPO, Native Hawaiian organizations, individuals and interested parties on historic properties and would comply with any additional stipulations developed through a PA, as discussed above. The Army would conduct quarterly inspections of cultural sites.

The Army would conduct cultural resource awareness and protection training, which includes procedures to avoid cultural resources during training. Instruction would include field trips, classroom training, and printed literature. This information is also included in the cultural resource annex of the range SOPs. Before each exercise, senior officers would be briefed about cultural and natural resources. Soldiers would be briefed at MMR before training. If identified ATIs could not be avoided because of interference with the military mission or risk to public safety, the Army would reinitiate appropriate consultation with Native Hawaiian groups before training, in conjunction with implementing other measures.

Impact 3: Access to Areas of Traditional Importance and archaeological sites. Training at MMR would limit and significantly reduce the number of days when ATIs and archaeological sites could be accessed. This would be a significant impact because restricting the days sites can be visited may not accommodate the Native Hawaiians' need to visit sacred or traditional areas during specific Native Hawaiian traditional periods. The effects of UXO clearance following training events on access to sites cannot be determined because the presence of surface UXO changes over time, unrelated to future training activities. Because the Ukanipō *Heiau* is geographically removed from the training area, the proposed training would not affect access to the *heiau* or conflict with the provisions of the Ukanipō *Heiau* PA.

Regulatory and administrative mitigation 3. The Army would continue to provide cultural access to ATIs and archaeological sites. Under the PA for the Ukanipō *Heiau*, access is coordinated through cultural representatives on an advisory council.

The Ukanipō *Heiau* PA has provisions for access based on military activities, site safety, and advance notification. In accordance with the

Ukanipō *Heiau* PA, members of the Native Hawaiian community can access Ukanipō *Heiau* for appropriate uses.

The impact of decreased number of access days due to training may be lessened through consultation, which would include Native Hawaiian groups. Consultation results may include developing long-term scheduling goals that could facilitate access and traditional use of resources during non-training periods and provide access to additional ATIs. However, consultation would not likely be able to reduce the impacts below the significance threshold, so Alternative 1 would result in a significant impact.

Less Than Significant Impacts

Impacts on cultural resources from vehicles. Vehicles could have an impact on cultural resources by tire or track depressions or from soil erosion. This impact is less than significant because all vehicles are required to stay on existing or improved roads.

No Impacts

Impacts on paleontological resources. A formal survey has not been conducted for paleontological resources at MMR. Within the ROI, the geology present is not normally known for fossil finds, archaeologists have not reported fossil remains, and there are no known paleontological resources. Because these resources are not known and are not likely to be present within the training area, training is not expected to affect them. A paleontological survey is recommended to determine the presence or potential for these resources in the ROI and to allow development of avoidance measures to ensure protection of these resources.

Alternative 2 (Full Capacity Use with Some Weapon Restrictions)

Significant Impacts

Impact 1: Impacts on archaeological resources. Significant impacts on archaeological sites are similar to those described under Alternative 1. In addition to the activities proposed under Alternative 1, Alternative 2 would involve an increased number of CALFEXs and the use of tracers. Additional CALFEXs would create a greater risk of accidental damage due to increased frequency of exercises. In addition, UXO clearance after training exercises could damage sites. The use of tracers would increase the wildfire potential and associated wildfire-related damage to archaeological sites.

Regulatory and administrative mitigation 1. Mitigation measures are the same as those described under Alternative 1.

Additional mitigation 1. Mitigation measures are the same as those described under Alternative 1.

Impact 2: Impacts on Areas of Traditional Importance. As described under Alternative 1, training activities could destroy or damage Native Hawaiian ATIs, including landscapes, shrines, archaeological sites, or burials. The primary difference between Alternatives 1 and 2 is the increased number of CALFEXs and the use of tracers. Additional CALFEXs would create a greater risk of accidental damage due to increased frequency of exercises. In addition, UXO clearance after training exercises could damage sites. The use of tracers would increase the wildfire potential and associated wildfire-related damage to ATIs. These activities would result in physical damage and loss of *mana* for the Native Hawaiian culture.

Regulatory and administrative mitigation 2. Mitigation measures are the same as those described under Alternative 1.

Additional mitigation 2. Mitigation measures are the same as those described under Alternative 1.

Impact 3: Access to Areas of Traditional Importance and archaeological sites. Impacts under this alternative would be similar to those described for Alternative 1. The greater number of CALFEXs would further restrict access to these resources, so Alternative 2 would have greater impacts than Alternative 1.

Regulatory and administrative mitigation 3. Mitigation measures are the same as those described under Alternative 1.

Additional mitigation 3. No additional mitigation measures have been identified.

Less Than Significant Impacts

Impacts on cultural resources from vehicles. Impacts would be the same as those described under Alternative 1.

No Impacts

Impacts on paleontological resources. Impacts would be the same as those described under Alternative 1.

Alternative 3 (Full Capacity Use with Fewer Weapons Restrictions)

Significant Impacts

Impact 1: Impacts on archaeological resources. This impact is similar to that described under Alternative 2. The additional weapons systems under this alternative would increase the potential for wildfires and for errant projectiles that may strike archaeological sites. UXO clearance after training exercises could damage sites. In addition, Alternative 3 would include use of the ridge between the northern and southern lobes.

Regulatory and administrative mitigation 1. Mitigation measures for this impact are the same as those described under Alternative 1. Additional consultations may be required among the Army, the SHPO, and Native Hawaiian groups to assess increased potential impacts.

Additional mitigation 1. Mitigation measures are the same as those described under Alternative 1.

Impact 2: Impacts on Areas of Traditional Importance. This alternative would have impacts similar to those described under Alternative 2. In addition, the wildfire potential and associated damage to ATIs would be greater due to the use of illumination munitions, inert TOW missiles, and 2.75-caliber rockets.

Errant inert TOW missiles and 2.75-caliber rockets could damage ATIs, resulting in physical damage and loss of *mana* for the Native Hawaiian culture. UXO clearance after training exercises could damage sites. In addition, Alternative 3 would include use of the ridge between the northern and southern lobes.

Regulatory and administrative mitigation 2. Mitigation measures are the same as those described under Alternative 1. In addition, the Army would likely enter into additional consultations with the SHPO and Native Hawaiian groups to assess increased potential impacts.

Additional mitigation 2. Mitigation measures are the same as those described under Alternative 1. Any additional area used for training would require surveying, site evaluation, and consultation.

Impact 3: Access to ATIs and archaeological sites. This impact would be similar to that described under Alternative 2.

Regulatory and administrative mitigation 3. Mitigation for this impact would include the same measures listed for Alternative 1.

Additional mitigation 3. No additional mitigation measures have been identified.

Less Than Significant Impacts

Impacts on cultural resources from vehicles. Impacts would be the same as those described under Alternative 1.

No Impacts

Impacts on paleontological resources. Impacts would be the same as those described under Alternative 1.

Alternative 4 (Full Capacity Use with Fewer Weapons Restrictions), Pōhakuloa Training Area

The construction of the Twin Pu'u range and the SDZ for the range all fall within the existing impact area which has had little cultural resource survey; therefore, potential impacts on unidentified archaeological sites and ATIs are unknown.

Significant Impacts

Impact 1: Impacts on archaeological resources. Impacts would be similar to those described under Alternative 3. The use of additional weapons systems under this alternative would increase the potential for wildfires and for errant projectiles that may strike archaeological sites. Additionally, UXO clearance after training exercises could damage sites.

Regulatory and administrative mitigation 1. Mitigation measures for this impact are the same as those described under Alternative 1. Additional consultation may be required among the Army, the SHPO, and Native Hawaiian groups to assess increased potential impacts.

Additional mitigation 1. Mitigation measures are the same as those described under Alternative 1.

Impact 2: Impacts on Areas of Traditional Importance. This alternative would have impacts similar to those described under Alternative 3 including the greater potential for wildfire and associated damage to ATIs due to the use of illumination munitions, inert TOW missiles, and 2.75-caliber rockets.

Errant inert TOW missiles and 2.75-caliber rockets could damage ATIs, resulting in physical damage and loss of *mana* for the Native Hawaiian culture. UXO clearance after training exercises could damage sites.

Regulatory and administrative mitigation 2. Mitigation measures are the same as those described under Alternative 1. In addition, the Army would

likely enter into additional consultation with the SHPO and Native Hawaiian groups to assess increased potential impacts.

Additional mitigation 2. Mitigation measures are the same as those described under Alternative 1. Any additional area used for training would require surveying, site evaluation, and consultation.

Impact 3: Access to ATIs and archaeological sites. This impact would be similar to that described under Alternative 2. There is currently no access to cultural sites in the impact area at PTA.

Regulatory and administrative mitigation 3. Mitigation for this impact would include the same measures listed for Alternative 1.

Additional mitigation 3. No additional mitigation measures have been identified.

Less Than Significant Impacts

Impacts on cultural resources from vehicles. Impacts would be the same as those described under Alternative 1.

No Impacts

Impacts on paleontological resources. Impacts would be the same as those described under Alternative 3.