

## CHAPTER 9.

# RECREATIONAL RESOURCES

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### 9.1 AFFECTED ENVIRONMENT

#### 9.1.1 Definition of Resource

Recreational uses of an area for the purposes of this Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) may include any type of outdoor activity in which area residents, visitors, or tourists may participate. Typically (though not exclusively) focused on weekends or vacation periods, such activities may include hiking, fishing, beachcombing, spelunking, and boating. Recreational opportunities and resources can be a very important component of an area's economy and the lifestyle of its residents. Recreational resources analyzed in this chapter are primarily assets pertaining to the physical geography of Guam, from the mountains to the oceans, and terrains in between; there are various man-made recreational resources in urban and semi-rural settings as well.

Recreational resources have been organized into the following categories with similar uses grouped in parentheses: *trails* (pedestrian hikes, mountain bike trails, "boonie stomping," or hiking through "boonies" of large areas of undeveloped forests and beaches); *historic and cultural attractions* (historic monuments, parks, and cultural sites); *scenic points* (vistas, lookouts, and overlooks); *dive spots* (snorkeling, self contained underwater breathing apparatus, or SCUBA diving, and free diving); *beaches and parks* (also including conservation areas, preserves, and refuges); *spelunking*, or cave exploration; *fishing*; and *others* (golf courses, hunting, sailing, resorts offering day uses, and marine activities not listed above, etc.). However, a particular resource may provide several recreational opportunities. For instance, a resource organized under *trail* may offer hiking as well as swimming, snorkeling, and picnicking at the trail terminus. Due to the volume of recreational resources available on the island of Guam, lists and descriptions are provided in Appendix G, Recreational Resources.

Many of Guam's recreational resources are managed by the Guam Department of Parks and Recreation (GDPR), which administers approximately 70 public parks and recreational facilities, including beach parks, community parks, skate parks, historic parks, baseball fields, a baseball stadium, a sports complex, tennis courts and a public pool. All other community centers and parks fall under the 19 village mayors on the island, who work closely with GDPR. GDPR also runs sports leagues and provides swimming and tennis lessons among others.

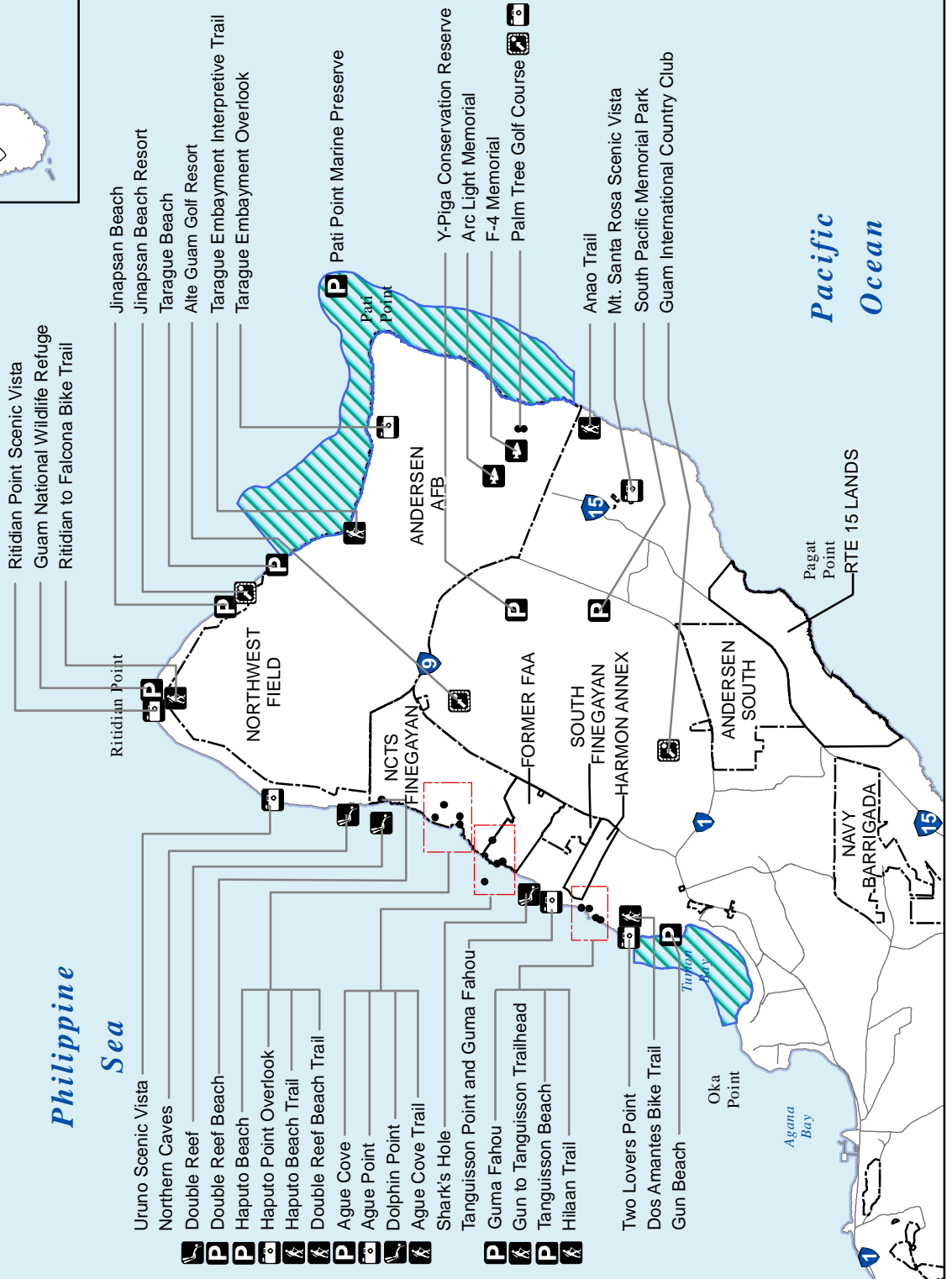
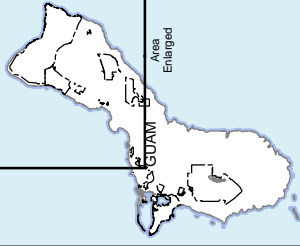
#### 9.1.2 North

##### 9.1.2.1 Andersen Air Force Base (AFB)

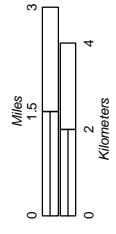
Recreational resources at Andersen AFB are subject to the same access requirements as other on base facilities and are therefore restricted to installation personnel and guests. The exceptions are granting hunting license and special access permit to the general public to control feral pig and deer population on base (Andersen AFB 2009). Recreational resources along the coastal area include scenic vistas, Guam National Wildlife Refuge (managed by the United States Fish and Wildlife Service [USFWS]), trails, beaches and parks, and Pati Point Marine Preserve (Figure 9.1-1 and Table 9.1-1). There are recreational resources at Routes 1 and 15, which include war memorials and the Palm Tree Golf Course.

**Figure 9.1-1**  
Recreational  
Resources  
of Guam - North

- Legend**
- Military Installation
  - Route Number
  - Marine Preserve
  - Recreation Types**
  - Trails
  - Historic/Cultural Attractions
  - Beaches/Parks
  - Other
  - Scenic Points
  - Diving Spots



Source: Lotz and Lotz 2001, 2004



**Table 9.1-1. Recreational Resources and Public Access on Andersen AFB**

<i>Recreational Resource</i>	<i>Public Access</i>
<b>Beaches (Tarague Basin)</b>	
Tarague Beach; Sirena Beach; Scout Beach	Installation personnel and guests only
Pati Beach	Off-limits
Picnic Sites (Family and Individuals)	Installation personnel and guests only
Picnic Sites (Large Groups > 20)	Installation personnel and guests only
<b>Camping Area (Tarague Basin)</b>	
Tarague Beach Campsites; Sirena Beach	Installation personnel and guests only
Scout Beach Campsites	Area is open only to scouting groups
<b>Water Sports</b>	
SCUBA Diving and swimming (Tarague Beach and Sirena Beach)	Installation personnel and guests only
<b>Game Hunting (Feral Pigs and Deer)</b>	Installation personnel and guests only
<b>Fishing (Shoreline Pole and Line)</b>	Access generally open. Restricted public access requires hunting license and special access permit within manageable quotas
<b>Land Crab/Traditional Plant Collecting</b>	Installation personnel and guests only
<b>Hiking Trails</b>	Installation personnel and guests only
<b>Nature Study Sites</b>	Closed access requires special access permit through the installation natural resource planner or conservation officer
<b>Scenic Drives/Overlooks</b>	
Tarague Beach Road; Ritidian Point Overlook	Installation personnel and guests only
<b>Interpretive Centers</b>	Installation personnel and guests only

Source: Air Force 2003.

#### 9.1.2.2 Finegayan

Recreational resources on Naval Computer and Telecommunications Station (NCTS) Finegayan are subject to the same access requirements as other on base facilities and are therefore restricted to installation personnel and guests. Haputo Ecological Resource Area (ERA) is located in the northwestern portion of the base. Recreational resources in this area include hiking trails, swimming, snorkeling, and SCUBA diving (Lotz and Lotz 2001). Although presently restricted due to safety concerns, recreational hunting of feral pigs and deer has been allowed occasionally (Navy 2008). South Finegayan contains a latte stone site (refer to Figure 9.1-1). Table 9.1-2 lists current uses and accessibility of recreational resources available on NCTS Finegayan.

**Table 9.1-2. Recreational Resources and Public Access on NCTS Finegayan**

<i>Recreational Resource</i>	<i>Public Access</i>
<b>Trails</b>	
Haputo Trail; Double Reef Beach Trail	Installation personnel and guests only
<b>Dive Spots</b>	
Shark's Hole; Double Reef	Installation personnel and guests only
<b>Beaches and Parks</b>	
Guam National Wildlife Refuge	Installation personnel and guests only

Source: Lotz and Lotz 2001.

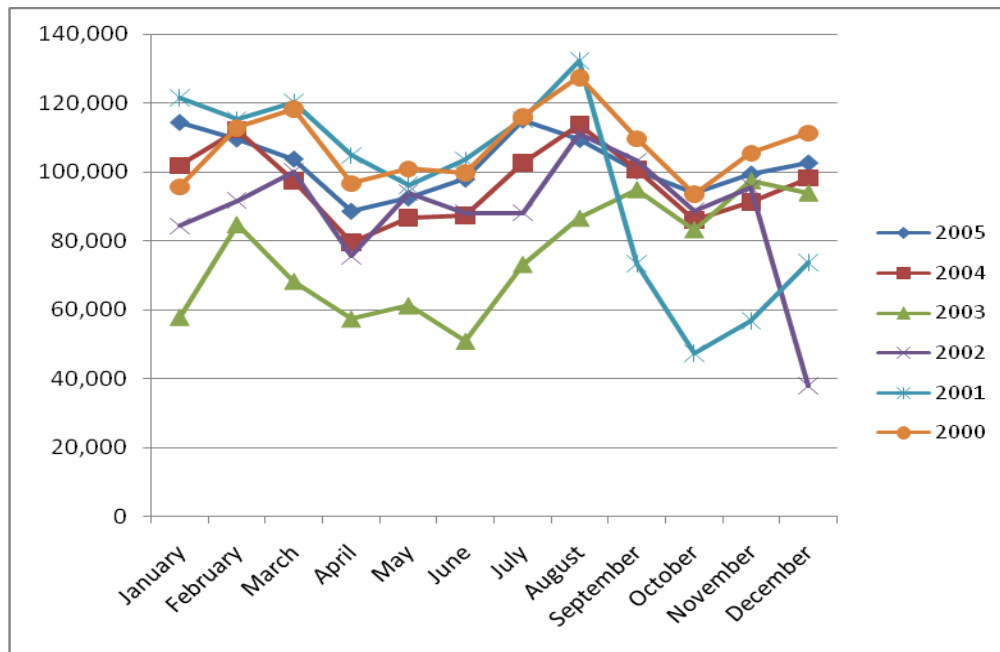
#### 9.1.2.3 Federal Aviation Administration (FAA)

The former FAA housing parcel is mostly undeveloped with the exception of some apparent temporary use. There is a trail that traverses the property in the westward direction from the existing parking area on the parcel near Route 3. The parking area is likely used by persons who visit the site for jogging and/or

walking purposes in the mornings or evenings when the weather is relatively cooler. During site reconnaissance visits, it was noted that the number of cars at the parking lot ranged from 15 to 50 (TEC 2009). Currently, there are no access restrictions at the site.

#### 9.1.2.4 Non-Department of Defense (DoD) Land

Notable recreational resources identified in the Dededo and Yigo villages are: trails, historic and cultural attractions, scenic points, dive spots, beaches and parks, and others (Table 9.1-2 and Figure 9.1-2). Island-wide, between 2000 and 2005 the average number of civilian and military visitors to Guam traveling by air and sea was 1.13 million persons per year (Bureau of Statistics and Plans 2006). As shown in Figure 9.1-2, higher volumes of visitors were recorded for July to March, except for January, with the highest visitor volumes experienced in August, July, and March (in respective order) during this period.



Source: Bureau of Statistics and Plans 2006.

**Figure 9.1-2. Monthly Visitor Arrivals, Air and Sea, Guam: 2000 to 2005**

At present, there is a series of trails connected to the Pagat Trail. The trails are open to the public and feature sinkholes, caves, and rugged limestone formations. On a popular weekend, visitors comprising tourists, local boonie stomp groups, and morale, welfare, and recreation activities generating from Navy Barrigada may attract as much as 60 hikers (Andersen AFB 2009). Visitors have been known to swim at the bottom of a sinkhole where there is a fresh water source (Lotz and Lotz 2001). The Guam International Raceway is also a popular location for recreation (see Appendix G for description of this and other recreational resources assessed in this chapter). Outside of the Guam International Raceway, off-roading is gaining popularity among the residents and the current military population on Guam.

#### 9.1.2.5 Off Base Roadways

The proposed action includes on base roadway construction projects that would be implemented by DoD. An affected environment description for on base roadway construction projects is included beneath the appropriate subheadings in other sections of this chapter. The following section describes the affected

environment for off base roadway construction projects that would be implemented by the Federal Highway Administration (FHWA).

### Regional Setting

Recreational opportunities within the north region of Guam include trails, historic/cultural attractions, beaches/parks, scenic points, diving locations, and others (e.g., golf courses). These recreational opportunities include public and non-public facilities. Non-public facilities include those contained within lands identified as military installation (i.e., DoD). Access and use of these facilities within DoD lands is limited to installation personnel and their guests. Public recreational facilities are generally located on non-DoD lands or include marine preserves. Routes 1, 3, 9, and 15 provide regional access to recreation opportunities within the north region (Figure 9.1-3).

### Project Setting

Most of the non-public recreational facilities located within the north region are contained on Andersen AFB, including the Northwest Field (NWF) area. These include beaches, wildlife reserves, scenic vistas, memorials, a marine preserve, and a golf course. Routes 3 and 9 provide the principal access to these facilities, although access is restricted beyond the base access gates. Public facilities are largely concentrated within the western segment of the north region in the vicinity of Dededo and Finegayan. These are largely comprised of beaches, trails, marine preserve, and scenic vistas. Route 3 provides the principal access to these facilities. A limited number of public facilities is located within the eastern segment of the North Region and include trails, scenic vistas, memorials, and a golf course. Routes 1, 29, and 15 provide principal access to these facilities.

## **9.1.3 Central**

### 9.1.3.1 Andersen South

There are joggers and walkers who use the Andersen South roads in the mornings and evenings when the weather is relatively cooler; access is gained by using the existing base entrance situated along Marine Drive near the northeast corner of the Andersen South property. Currently, there are no access restrictions at the site. More than 30 cars were sighted during one of the site reconnaissance trips associated with the proposed project (TEC 2009).

### 9.1.3.2 Barrigada

The Admiral Nimitz Golf Course is located in NCTS Barrigada, which has active antennae fields as one of the primary base uses. The use of the championship 18-hole golf course is restricted to installation personnel and guests (Figure 9.1-4).

### 9.1.3.3 Non-DoD Land

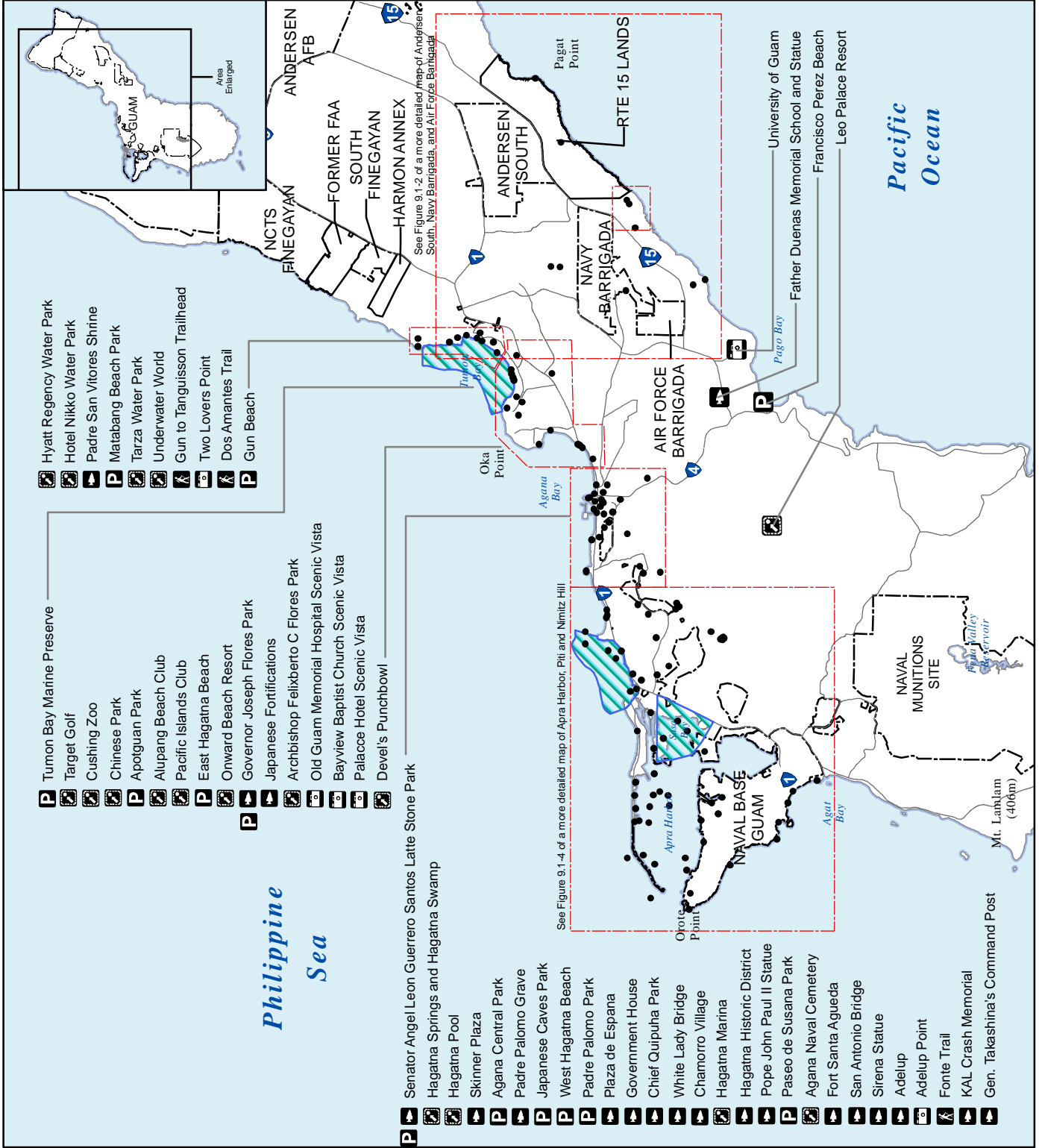
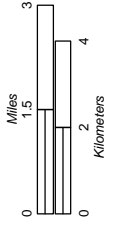
Recreational resources are primarily concentrated along the coastal regions, along the western coast of Tumon-Tamuning, Hagatna, Sinajana, Agana Heights, and Asan villages and along the eastern coast Mangilao village. The western coast, particularly the Tumon-Tamuning and Asan villages contain marine recreational resources and historic/cultural attractions popularly visited by off-island tourists and resident population alike. Other notable recreational resources include: trails, scenic points, and others (Figure 9.1-4). Table 9.1-3 lists current uses and accessibility of public recreational resources on non-DoD in Central Guam. Refer to Appendix G for the descriptions of the recreational resources discussed in this and other sections of the chapter.

**Figure 9.1-3**  
Recreational  
Resources  
of Guam - Central

**Legend**

- Area Enlarged
- Military Installation
- Route Number
- Marine Preserve
- Recreation Types
- Trails
- Historic/Cultural Attractions
- Beaches/Parks
- Other
- Scenic Points
- Diving Spots
- Spelunking

Source: Lotz and Lotz 2001, 2004



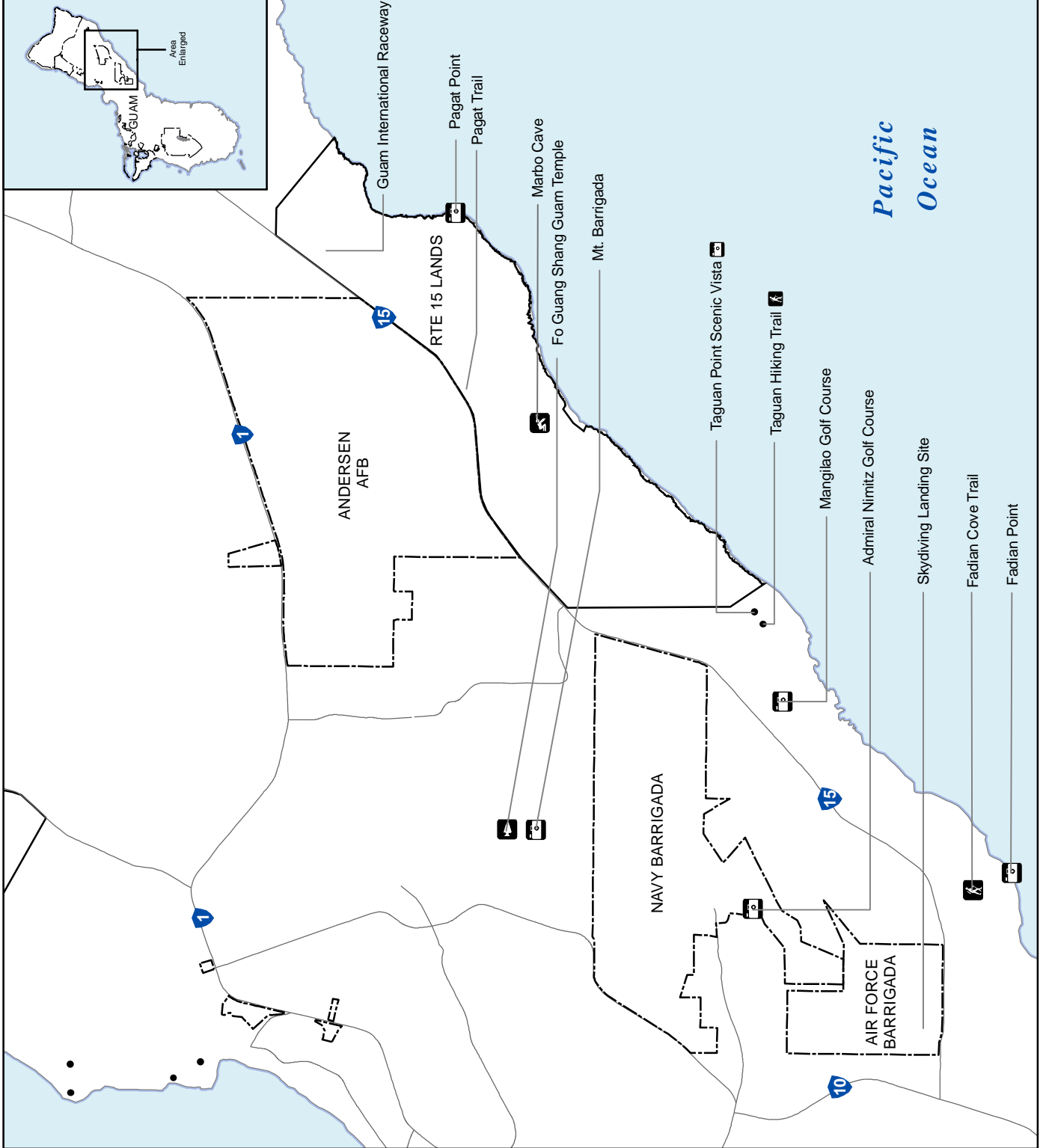
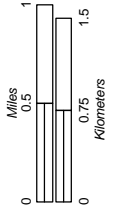
- Tumon Bay Marine Preserve
- Target Golf
- Cushing Zoo
- Chinese Park
- Apotguan Park
- Alupang Beach Club
- Pacific Islands Club
- East Hagatna Beach
- Onward Beach Resort
- Governor Joseph Flores Park
- Japanese Fortifications
- Archbishop Felixberto C Flores Park
- Old Guam Memorial Hospital Scenic Vista
- Bayview Baptist Church Scenic Vista
- Palacce Hotel Scenic Vista
- Devel's Punchbowl
- Senator Angel Leon Guerrero Santos Latte Stone Park
- Hagatna Springs and Hagatna Swamp
- Hagatna Pool
- Skinner Plaza
- Agaña Central Park
- Padre Palomo Grave
- Japanese Caves Park
- West Hagatna Beach
- Padre Palomo Park
- Plaza de Espana
- Government House
- Chief Quipuha Park
- White Lady Bridge
- Chamorro Village
- Hagatna Marina
- Hagatna Historic District
- Pope John Paul II Statue
- Paseo de Susana Park
- Agaña Naval Cemetery
- Fort Santa Agueda
- San Antonio Bridge
- Sirena Statue
- Adelup
- Adelup Point
- Fonte Trail
- KAL Crash Memorial
- Gen. Takashina's Command Post

- Hyatt Regency Water Park
- Hotel Nikko Water Park
- Padre San Vitores Shrine
- Matabang Beach Park
- Tarza Water Park
- Underwater World
- Gun to Tanguisson Trailhead
- Two Lovers Point
- Dos Amantes Trail
- Gun Beach
- Tumor Bay
- Oka Point
- Air Force Barrigada
- Navy Barrigada
- Pagat Point
- University of Guam
- Father Duenas Memorial School and Statue
- Francisco Perez Beach
- Leo Palace Resort
- Naval Munitions Site
- Mt. Lamlam (400m)

**Figure 9.1-4**  
 Recreational Resources on and in the Vicinity of Andersen South, Navy Barrigada, and Air Force Barrigada

- Legend**
- Military Installation
  - Route Number
  - Recreation Types**
  - Trails
  - Historic/Cultural Attractions
  - Beaches/Parks
  - Other
  - Scenic Points
  - Diving Spots
  - Spelunking

Source: Lotz and Lotz 2001, 2004



**Table 9.1-3. Recreational Resources and Public Access on non-DoD Land in Central Guam**

<i>Recreational Resource</i>	<i>Public Access</i>
<b>Trails</b>	
Fadian Cove; Taguan; Gun Beach to Tanguisson; Dos Amantes Biking and Hiking Trail	Open to public
<b>Historic/Cultural Attractions</b>	
Fo Guang Shang Guam Temple; Father Duenas Memorial School and Statue; War in the Pacific National Historic Museum; White Lady Bridge; Korean Air Lines Crash Memorial; Agana Naval Cemetery; Chief Quipuha Park; Chamorro Village; To'lai Acho; Sirena Statue; Plaza de Espana; Pope John Paul II Statue; Skinner Plaza; Hagatna Historic District; Padre Palomo Grave; Adelup Point; Government House; Japanese Fortifications; Padre San Vitores Shrine	Open to public
<b>Scenic Points</b>	
Bayview Baptist Church Scenic Vista; Top O' the Mar; Asan Bay Overlook; Two Lovers Point; Old Guam Memorial Hospital Scenic Vista; Palace Hotel Scenic Vista	Open to public
<b>Dive Spots</b>	
Asan Cut; Camel Rock	Open to public
<b>Beaches/Parks/Marine Preserve</b>	
Francisco Perez Beach; Asan Beach Unit; East Hagatna Beach; West Hagatna Beach; Agana Central Park; Padre Palomo Park; Paseo de Susana Park; Japanese Caves Park; Senator Angel Leon Guerrero Santos Latte Stone Park; Gun Beach; Matabang Beach; Ypao Park; Tumon Bay Marine Preserve; Apotguan Park; Archbishop Felixberto Flores Park; Chinese Park; Cushing Zoo	Open to public
<b>Spelunking</b>	
Marbo Cave	
<b>Others</b>	
Guam International Raceway; Mangilao Golf Course; Leo Palace Resort; Alupang Beach Club; Hagatna Springs and Hagatna Swamp; Hagatna Pool; Target Golf; Hotel Nikko Water Park; Hyatt Regency Water Park; Tarza Water Park; Under Water World; Pacific Islands Club; Onward Beach Resort; Hagatna Marina	Open to public

Source: Lotz and Lotz 2001.

#### 9.1.3.4 Off Base Roadways

The proposed action includes on base roadway construction projects that would be implemented by the DoD. An affected environment description for on base roadway construction projects is included beneath the appropriate subheadings in other sections of this chapter. The following section describes the affected environment for off base roadway construction projects that would be implemented by the FHWA.

#### Regional Setting

Recreational opportunities within the central region of Guam include trails, historic/cultural attractions, beaches/parks, scenic points, diving locations, spelunking, and others (e.g., golf courses). These recreational opportunities include public and non-public facilities. Non-public facilities include those contained within lands identified as military installation (i.e., DoD). Access and use of these facilities within DoD lands is limited to installation personnel and their guests. Public recreational facilities are generally located on non-DoD lands or include public beaches. Routes 1, 10, 15, and 16 provide regional access to recreation opportunities within the Central Region.

#### Project Setting

Most of the non-public recreational facilities located within the central region are contained on Navy Barrigada and Air Force Barrigada. These are limited to a golf course and skydiving landing site. Routes 10 and 15 provide the principal access to these facilities, although access is restricted beyond the base access gates. Public facilities are largely concentrated within the western segment of the central region in the vicinity of Piti, Asan, Hagatna, Mongmong, and Tamuning. These are largely composed of beaches, trails, and scenic vistas. Route 1 provides the principal access to these facilities. Many public facilities are located within the eastern segment of the Central Region and include trails, scenic vistas, beaches, and a golf course. Routes 10 and 15 provide principal access to these facilities.

### 9.1.4 Apra Harbor

Piti and Nimitz Hill offer a wide variety of recreational resources, which includes: trails, scenic points, dive spots, beach activities, camping, picnic, fishing, sailing, and other marine activities (Figure 9.1-5). Table 9.1-4 lists current uses and accessibility of public recreational resources on non-DoD in Central Guam.

**Table 9.1-4. Recreational Resources and Public Access on non-DoD Land in Piti/Nimitz Hill**

<i>Recreational Resource</i>	<i>Public Access</i>
<b>Trails</b>	
Piti Guns; Asan Falls; San Carlos Falls; Lonfit Valley	Open to public
<b>Scenic Points</b>	
Mount Chachao Scenic Vista; Cabras Island Scenic Vista	Open to public
<b>Dive Spots</b>	
Glass Breakwater; Nichiyu Maru; Tokai Maru; S.M.S. Cormoran; Japanese Tugboat; Kitsugawa Maru; The Val; American Tanker; The Scotia; Western Shoals; Hourglass Reef	Open to public
<b>Beaches and Parks</b>	
Dog Leg Pier; Family Beach; Tepungan Beach; Port Authority Beach; Fish Eye Marine Park	Open to public
<b>Fishing</b>	
Piti Bomb Holes Preserve; Masso Reservoir; Sasa Bay Preserve	Open to public
<b>Others</b>	
Marianas Yacht Club; Devil's Punchbowl; Seaplane Ramp	Open to public

Source: Lotz and Lotz 2001.

#### 9.1.4.1 Harbor

Recreational resources at Apra Harbor include: trails, dive spots, historic and cultural attractions, scenic points, sailing, beaches, and other marine activities (refer to Figure 9.1-5). Access to these activities are limited to installation personnel and guests (Table 9.1-5). Access is restricted to shelter military equipment and personnel, and facilitates training and operations. Apra Harbor is also the site of Orote Peninsula ERA.

**Table 9.1-5. Recreational Resources and Public Access on Apra Harbor**

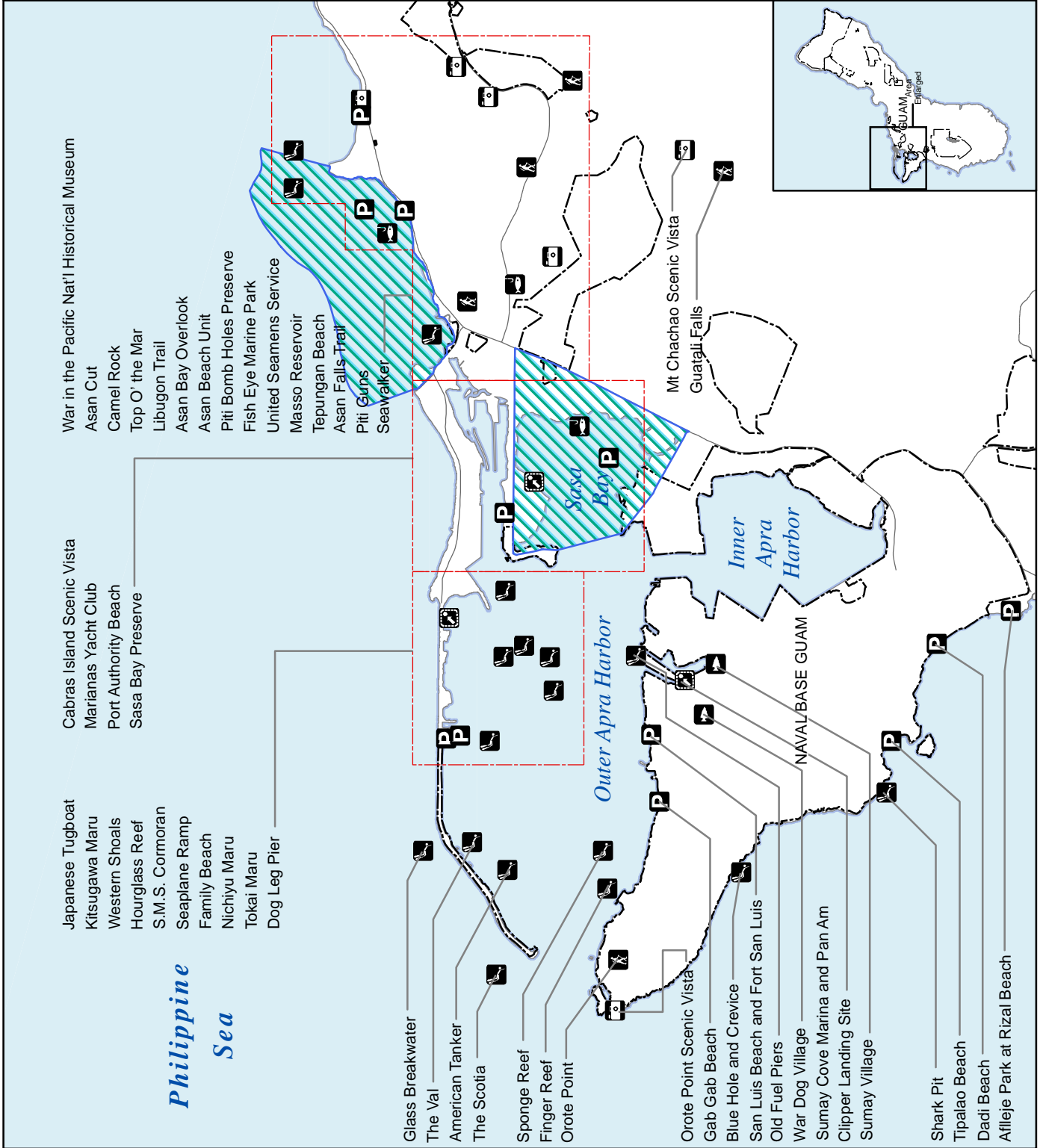
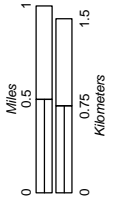
<i>Recreational Resource</i>	<i>Public Access</i>
<b>Trails</b>	Installation personnel and guests only
<b>Historic/Cultural Attractions</b>	
Pan Am Clipper Landing Site, Orote Airfield, Sumay Village, War Dog Cemetery	Installation personnel and guests only
<b>Scenic Points</b>	Installation personnel and guests only
<b>Dive Spots</b>	
Old Fuel Piers, Shark Pit, Blue Hole and Crevice, Sponge Reef, Finger Reef	Installation personnel and guests only
<b>Beaches and Parks</b>	
Picnic Facilities: San Luis Beach, Fort San Luis, Gab Gab Beach	Installation personnel and guests only
Kayaking: Dadi Beach	Installation personnel and guests only
Marina: Sumay Cove Marina	Installation personnel and guests only

Source: Lotz and Lotz 2001.

**Figure 9.1-5**  
**Recreational Resources on Naval Base Guam and in the Vicinity of Apra Harbor**

- Legend**
- Military Installation
  - Route Number
  - Marine Preserve
  - Recreation Types
  - Trails
  - Historic/Cultural Attractions
  - Beaches/Parks
  - Other
  - Scenic Points
  - Diving Spots
  - Spelunking
  - Fishing

Source: Lotz and Lotz 2001, 2004



#### 9.1.4.2 Naval Base Guam

Naval Base Guam covers about 6,200 ac (2,509 ha) on the west-central coast of Guam, covering Apra Harbor and all of Orote Peninsula. Refer to Appendix G for descriptions of the recreational resources discussed in this and other sections of this chapter.

#### 9.1.4.3 Off Base Roadways

The proposed action includes on base roadway construction projects that would be implemented by the DoD. An affected environment description for on base roadway construction projects is included beneath the appropriate subheadings in other sections of this chapter. The following section describes the affected environment for off base roadway construction projects that would be implemented by the FHWA.

#### Regional Setting

Recreational opportunities within the Apra Harbor Region include trails, historic/cultural attractions, beaches/parks, scenic points, diving locations, spelunking, fishing, marine preserves, and others (e.g., sailing). These recreational opportunities include public and non-public facilities. Non-public facilities include those contained within lands identified as military installation (i.e., DoD). Access and use of these facilities within DoD lands is limited to installation personnel and their guests. Public recreational facilities are generally located on non-DoD lands or include public beaches and parks. Routes 1 and 2A provide regional access to recreation opportunities within the Apra Harbor Region (Figure 9.1-5).

#### Project Setting

Most of the non-public recreational facilities located within the Apra Harbor Region are contained on the Apra Harbor Naval Complex. These generally include diving spots, trails, beaches and parks, and historic/cultural attractions. Routes 1 and 2A provide the principal access to these facilities, although access is restricted beyond the base access gates. Public facilities are largely limited to the Sasa Bay area and immediately northwest of Piti, which contain marine reserves and fishing areas. Routes 1 and 11 provide the principal access to these facilities.

### 9.1.5 South

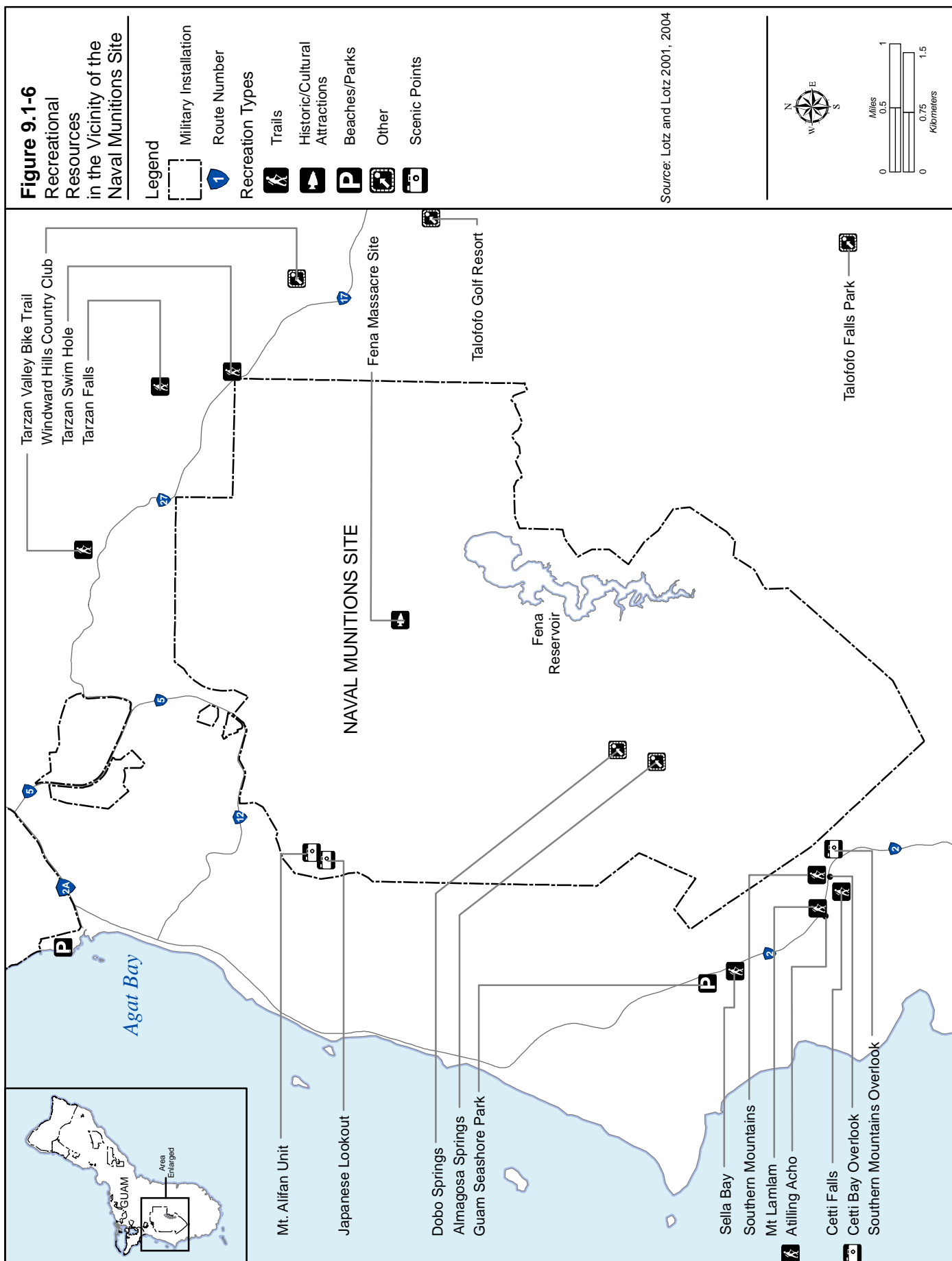
#### 9.1.5.1 Naval Munitions Site

Naval Munitions Site (NMS) is used as an ordnance storage magazine. Approximately 75% of the area is overlaid by explosive safety zones (Tomonari-Tuggle et al. 2005). Known recreational resources are: historic and cultural attractions, scenic points, fishing, and others (Figure 9.1-6). Access to the recreational resources are restricted to installation personnel and guests (Table 9.1-6). Access is restricted to shelter military equipment and personnel, and facilitates training and operations.

**Table 9.1-6. Recreational Resources on Naval Munitions Site and Public Access**

<i>Recreational Resources</i>	<i>Public Access</i>
<b>Historic and Cultural Attractions</b>	
Fena Massacre Site	Installation personnel and guests only
<b>Scenic Points</b>	
Japanese Lookout	Installation personnel and guests only
<b>Fishing</b>	
Fena Reservoir	Installation personnel and guests only
<b>Others</b>	
Deep Springs	Installation personnel and guests only

Source: Lotz and Lotz 2001.



## 9.1.5.2 Non-DoD Land

Non-DoD lands are composed of the villages of Agat, Inarajan, Merizo, Santa Rita, Talofoyo, Umatac, and Yona. Recreational resources in these areas are: trails, historic and cultural attractions, scenic points, dive spots, beaches and parks, spelunking, etc. (Figure 9.1-7). Table 9.1-7 lists current uses and accessibility of public recreational resources on non-DoD in south Guam.

**Table 9.1-7. Recreational Resources and Public Access on non-DoD Land in South Guam**

<i>Recreational Resource</i>	<i>Public Access</i>
<b>Trails</b>	
Sella Bay Trailhead; Tarzan Valley Bike Trail; Atilling Acho; Cetti Falls; Umatac to Toguan Bay; Faha and Tinta; Priest's Pools; Mt. Lamlam; Southern Mountains trails; Mt. Schroeder; Mt. Sasalaguan; Ricky's Beach and Ylig Bay; Paicpouc Cove and Matala Beach; Inarajan Falls; Asiga; Waterfall Valley; Fintasa and Laolao Falls; Sigua Valley Bike Trail; Upper Sigua and Alutom Falls; Sigua River; Upper and Lower Sigua Falls; Lower Sigua Falls-Sinisa Falls-Tank Farm; Maguagua Falls; Mount Chacho and Mt. Tenjo; Guatali Falls; Tarzan Falls; Tarzan Swim Hole	Open to public
<b>Historic/Cultural Attractions</b>	
Gaan Point; Inarajan Village; Malesso Kombento; Merizo Bell Tower	Open to public
<b>Scenic Points</b>	
Cetti Bay Overlook; Fouha Bay Scenic Vista; Talofoyo Bay Scenic Vista; Mt. Alifan Unit; Inarajan Scenic Vista; Pago Bay Overlook; Ylig Bay Scenic Vista; Ija Scenic Vista	Open to public
<b>Dive spots</b>	
The Amtrac; Hap's Reef; Pete's Reef; Japanese Zero; Fouha Bay; Nathan's Dent; Mana Bay Cut; Aratama Maru; Cocos Lagoon	Open to public
<b>Beaches and Parks</b>	
Nimitz Beach Park; Asquiroga Cove; Talofoyo Beach Park; Talofoyo Falls Park; Afleje Park at Rizal Beach; Namo Falls Botanic Park; Togcha Beach; Salinas Beach; Ipan Beach; Umatac Bay Park; I Memorias Para I Lalahita; Agfayan Bay and Bear Rock; Saluglula Pool; Pauliluc Bay; Toguan Bay; Tagachan Beach; Merizo Pier Park; Ylig Bay; Achang Reef Flat Preserve	Open to public
<b>Spelunking</b>	
Gadao's Cave; Talofoyo Caves	Open to public
<b>Others</b>	
Talofoyo Golf Resort; Country Club of the Pacific; Windward Hills Country Club; Ipan Beach Resort; Cocos Island; Bangi Island; Anae Island; Agat Small Boat Harbor; Gef Pa'go	Open to public

Source: Lotz and Lotz 2001.

## 9.1.5.3 Off Base Roadways

The proposed action includes on base roadway construction projects that would be implemented by the DoD. An affected environment description for on base roadway construction projects is included beneath the appropriate subheadings in other sections of this chapter. The following section describes the affected environment for off base roadway construction projects that would be implemented by the FHWA.

Regional Setting

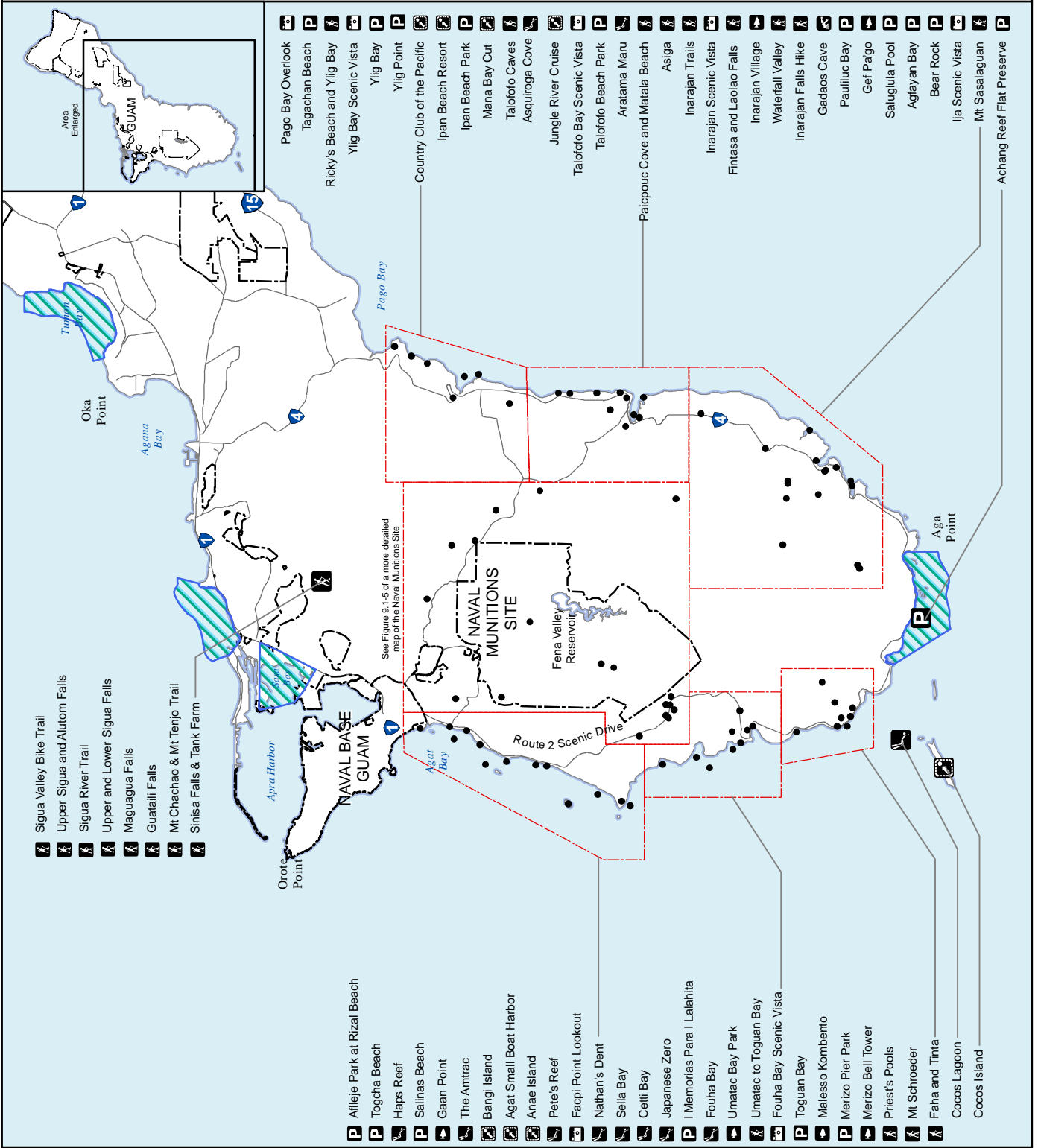
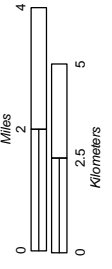
Recreational opportunities within the south region include trails, historic/cultural attractions, beaches/parks, scenic points, and others. These recreational opportunities include public and non-public facilities. Non-public facilities include those contained within lands identified as military installation (i.e., DoD). Access and use of these facilities within DoD lands is limited to installation personnel and their guests. Public recreational facilities are generally located on non-DoD lands or include public beaches and parks. Routes 5, 12, 2, 4, and 17 provide regional access to recreation opportunities within the South Region. Routes 2 and 4 run mostly along the coastline of the South Region, making them the top scenic vista routes of the island.

**Figure 9.1-7**  
Recreational Resources  
of Guam - South

**Legend**

- Military Installation
- Route Number
- Marine Preserve
- Recreation Types
- Trails
- Historic/Cultural Attractions
- Beaches/Parks
- Other
- Scenic Points
- Diving Spots
- Spelunking

Source: Lotz and Lotz 2001, 2004



- Sigua Valley Bike Trail
- Upper Sigua and Alutom Falls
- Sigua River Trail
- Upper and Lower Sigua Falls
- Maguagua Falls
- Guatalli Falls
- Mt Chachao & Mt Tenjo Trail
- Sinisa Falls & Tank Farm

- Atleje Park at Rizal Beach
- Togcha Beach
- Haps Reef
- Salinas Beach
- Gaan Point
- The Amtrac
- Bangi Island
- Agat Small Boat Harbor
- Anae Island
- Pete's Reef
- Facpi Point Lookout
- Nathan's Dent
- Sella Bay
- Cetti Bay
- Japanese Zero
- I Memorias Para I Lalahita
- Fouha Bay
- Umatac Bay Park
- Umatac to Toguan Bay
- Fouha Bay Scenic Vista
- Toguan Bay
- Malesso Kombento
- Merizo Pier Park
- Merizo Bell Tower
- Priest's Pools
- Mt Schroeder
- Faha and Tinta
- Cocos Lagoon
- Cocos Island

- Pago Bay Overlook
- Tagachan Beach
- Ricky's Beach and Ylig Bay
- Ylig Bay Scenic Vista
- Ylig Bay
- Ylig Point
- Country Club of the Pacific
- Ipan Beach Resort
- Ipan Beach Park
- Mana Bay Cut
- Talofoto Caves
- Asquiroga Cove
- Jungle River Cruise
- Talofoto Bay Scenic Vista
- Talofoto Beach Park
- Aratama Maru
- Paicpouc Cove and Matala Beach
- Asiga
- Inarajan Trails
- Inarajan Scenic Vista
- Fintasa and Laolao Falls
- Inarajan Village
- Waterfall Valley
- Inarajan Falls Hike
- Gadaos Cave
- Pauliluc Bay
- Gef Pa'go
- Saluglulia Pool
- Agfayan Bay
- Bear Rock
- Ija Scenic Vista
- Mt Sasalaguan
- Achang Reef Flat Preserve

See Figure 9.1-5 of a more detailed map of the Naval Munitions Site

## Project Setting

Most of the non-public recreational facilities located within the south region are contained on NMS. These generally include scenic vistas, historic/cultural attractions, and others (e.g., springs). Routes 12, 5, and 17 provide the principal access to these facilities, although access is restricted beyond the base access gates. Public facilities are largely limited to hiking trails, scenic vistas, and beaches/parks. Routes 2 and 17 provide the principal access to these facilities.

## **9.2 ENVIRONMENTAL CONSEQUENCES**

This description of environmental consequences addresses all components of the proposed action for the Marine Corps on Guam. The components addressed include: Main Cantonment, Training, Airfield, and Waterfront. There are multiple alternatives for the Main Cantonment, Training-Firing Range, Training-Ammunition Storage, and Training-NMS Access Road. Airfield and Waterfront do not have alternatives. Although organized by the Main Cantonment alternatives, a full analysis of each alternative, Airfield, and Waterfront is presented beneath the respective headings. A summary of impacts specific to each alternative, Airfield, and Waterfront is presented at the end of this chapter. An analysis of the impacts associated with the off base roadways is discussed in Volume 6.

### **9.2.1 Approach to Analysis**

#### 9.2.1.1 Methodology

Information on recreational resources and public access on Guam was collected through stakeholder meetings in April 2007, Geographic Information System (GIS) data compiled and reviewed for this EIS/OEIS, literature review, personal communications, Guam Comprehensive Outdoor Recreation Plan Update (GovGuam 2006), and the limited visitor data that are available for a few specific locations on the island. A comprehensive recreational carrying capacity analysis—assessing the number of individuals who can be supported in a given area within natural resource limits without degrading the natural social, cultural, and economic environment (Global Development Research Center 2009)—was not conducted as part of this EIS/OEIS, but is suggested as a mitigation measure to better quantify potential impacts on recreation resources. Existing baseline data for conducting recreational resource impact analyses are somewhat limited because the Government of Guam (GovGuam), Department of Parks and Recreation does not collect visitor data (e.g. user counts, visitor satisfaction, user conflicts, visitor demands, etc.) for its recreational facilities (Department of Parks and Recreation 2009). Consequently, the analysis in this chapter relied considerably on information obtained through site reconnaissance and communications with natural resource planners at Andersen AFB and park rangers at National Park Service, which manages the War in the Pacific National Historical Park. The analysis of potential impacts to recreational resources is based on the long term (operational) effects – i.e., after construction has occurred and all buildings, facilities, and structures are in place.

#### 9.2.1.2 Determination of Significance

For the purpose of this EIS/OEIS, the proposed action and alternatives would cause a significant impact on recreational resources if they:

- Would impede access to recreational resources;
- Would substantially reduce recreational opportunities;
- Would cause substantial conflicts between recreational users; or
- Would cause substantial physical deterioration of recreational resources.

### 9.2.1.3 Issues Identified during Public Scoping Process

As part of the analysis, concerns that were mentioned by the public, including regulatory stakeholders, during scoping meetings in April 2007 were addressed. These included: the potential impact of the proposed action on civilian access to DoD facilities, recreation areas, Apra Harbor, and other locations, both in terms of construction and operations impacts.

## 9.2.2 Alternative 1

### 9.2.2.1 North

#### Andersen AFB

##### *Construction*

Construction activities associated with the proposed action would occur outside of Andersen AFB. Persons traveling to Andersen AFB may experience increased number of construction-related vehicles on roads. No direct impacts to its recreational resources are expected.

##### *Operation*

Recreational resources at Andersen AFB would generally experience a sharp increase in the number of users due to the increased population associated with the proposed action. Heavier uses of the recreational resources are expected during weekends, holidays, and school vacation days because most persons involved with the proposed action would otherwise be expected to be engaged with work and/or school. Table 9.1-1 shows the 1998 projection for a one-year carrying capacity for swimming at Tarague Beach and Sirena Beach to be 12,900 swimmers; these resources were already projected to experience 10,000 to 17,600 swimmers. This indicates that the waters at these beaches were experiencing near and/or overcapacity, not necessarily the beaches themselves (see Table 9.1-1). Utilization of these resources by the new permanent population would further congest the recreational resources at these and other beaches. Likely effects of increased users at recreational resources at Andersen AFB include reduced opportunities for space, and decreased time for activities. More people in the waters and at the beaches, longer waiting time at museums, etc., are some of the effects of the presence of additional users.

The general wear and tear of the amenities available and the conditions of the recreational resources would likely be accelerated due to the increased presence of potential users at Andersen AFB. Of particular concern is Tarague Beach, within which the environmentally sensitive Tarague Embayment is located. Heightened awareness and education about environmentally sensitive areas would contribute towards minimizing deterioration of resources.

To alleviate the potentially significant impact to the recreational resources at Andersen AFB, the Marine Corps Community Service (MCCS) is proposing a wide range of quality of life (QOL) facilities at the Main Cantonment site on NCTS Finegayan to meet the recreational demands of the Marines, their dependents and guests. Examples of proposed uses include: hobby shop, indoor physical fitness centers, indoor recreational resources (e.g. bowling, skating rink), youth center, theater, and recreational pavilion. By presenting comparable and/or alternate recreational options to the potential users near where the Marines inhabit on Main Cantonment, impacts to the recreational resources at Andersen AFB could be alleviated.

The proposed training activities by the Marines at the Andersen AFB and the Northwest Fields would involve the operation of one transient MV-22 Squadron, field carrier landing practice (FCLP), and field artillery missile (FAM) sorties. Recreational resources at the Tarague Basin—Tarague, Scout, Sirena,

Pati beaches, camping areas, and the resources defined in Table 9.1-1 of this Chapter—are situated in close proximity to the proposed training activities at Andersen AFB. The resultant noise generated from the proposed training activities does not trigger the significance criteria as defined in Section 9.2.1.2 of this Chapter for recreational resources. This notwithstanding, the noise generated from the proposed training activities would be consistent with the existing category of noise generated from the existing operations at the project locations.

Therefore, although the proposed action under Alternative 1 could result in significant impacts, impact-avoidance measures, such as providing QOL facilities near the Main Cantonment by the Marines, would help to reduce the level of impacts to less than significant.

### NCTS Finegayan

#### *Construction*

Construction activities associated with the proposed action would occur at NCTS Finegayan. Although the existing recreational resources are situated outside of the proposed locations within the base, impacts through road detours, congestion due to the presence of construction-related vehicles, and controlled access would likely occur. The increased construction-related vehicles on roads may cause delay for persons attempting to gain access to the recreational resources at NCTS Finegayan; however, direct impacts to recreational resources is not expected.

#### *Operation*

Similar to Andersen AFB, the use of and access to recreational resources at NCTS Finegayan are restricted to installation personnel and guests. Recreational resources that may be directly impacted by the proposed action are Haputo ERA (Haputo Beach included) and Guam National Wildlife Refuge, which together offer a variety of resources such as diving, swimming, beachcombing, cultural resources, hiking, and etc. The 17,600 persons living on main cantonment and South Finegayan associated with the proposed action represent potential users of the recreational resources at NCTS Finegayan. The number of users of recreational resources would likely be greater on weekends, holidays, and school vacation days as most persons would otherwise be engaged at work or school on weekdays. Increased users at recreational resources would lead to reduced opportunity for space and time, leading to diminished user satisfaction. For example, persons who enjoy hiking in solitude may find the presence of additional users a nuisance.

To meet the demands of the Marines, dependents, and civilian workers, the MCCS is proposing a wide range of QOL facilities. Examples of proposed uses include: hobby shop, indoor physical fitness centers, indoor recreational resources (e.g. bowling, skating rink), youth center, theater, and recreational pavilion. By presenting alternate recreational options to the potential users, impacts to the recreational resources at NCTS Finegayan could be lessened.

The general wear and tear of the amenities available and the conditions of the recreational resources would likely be accelerated due to the presence of potential users at NCTS Finegayan. Of particular concern is the Guam National Wildlife Refuge. Heightened awareness and education about environmentally sensitive areas would minimize deterioration of resources. Therefore, Alternative 1 would result in less than significant impacts to recreational resources at NCTS Finegayan.

### Former FAA Parcel

#### *Construction*

Construction activities associated with the proposed project, wherein family housing and community support facilities are planned, would likely inhibit access and the use of the trail at the former FAA parcel by joggers and walkers. The potentially adverse impacts to the access and the use of the trail would further be compounded by the fencing off the property and addition of gates, which would restrict access altogether. However, it is worth noting that the resource lost due to the proposed action is not unique to the region; comparable resources (e.g., jogging and walking trails) would be available in the adjoining properties.

#### *Operation*

Upon completion of construction activities, the use of the existing trail on-site would likely be lost, replaced instead with family housing and community support facilities. Therefore, Alternative 1 would result in impacts to the access and the use of the existing recreational resource at the former FAA parcel. However, it is worth noting that the resource lost due to the proposed action is not unique to the region; comparable resources (e.g., jogging and walking trails) would be available in the adjoining properties. Therefore, Alternative 1 would have less than significant impact on the recreational resource at the former FAA parcel.

### Non-DoD Land

#### *Construction*

The existing recreational resources on non-DoD properties in north Guam are situated along the coastal areas southwest of the main cantonment and to the east of Route 15. The acquisition of the lands along Route 15 for training purposes by the Marines would result in eliminating access to, and therefore, the use of, the recreational resources situated in the affected area.

#### *Operation*

Implementation of the proposed action would result in nearly 17,600 potential users to the existing recreational resources. In addition to this direct population impact, additional in-migration to Guam would occur as a result of indirect and induced economic activity associated with the proposed action (see Volume 2, Chapter 16, Socioeconomic and General Services).

A surge in user population due to the implementation of Alternative 1 may lead to a reduction of recreational opportunities at existing facilities as more users would compete for recreational use (e.g., competing for picnic shelters, long queue at memorial sites, etc.). Residents of Guam recreational users (including the existing military population) would be competing for available recreational opportunities along with tourists from off-island, as well as residents of Guam; this competition is likely to worsen during weekends, holidays, and months of July to March, which experience heavier tourist traffic (Bureau of Statistics and Plans 2006).

The general wear and tear of the amenities available and the conditions of the recreational resources would likely be accelerated due to the presence of potential users. Heightened awareness and education about environmentally sensitive areas would contribute towards minimizing deterioration of resources.

To meet the demands of the Marines dependents, and civilian workers, the MCCS is proposing a wide range of QOL facilities. Examples of proposed uses include: hobby shop, indoor physical fitness centers, indoor recreational resources (e.g. bowling, skating rink), youth center, theater, and recreational pavilion.

By presenting alternate recreational options to the potential users, impacts to the recreational resources on non-DoD lands in north Guam could be lessened.

There are several recreational resources that the public would lose the access to, and the use of the features if the proposed action were implemented: Guam International Raceway, Marbo Cave, Pagat Trail and associated trails near it, cultural gathering activities (*suruhana*), and off-shore fishing near Marbo Cave. Implementation of Alternative 1, regardless of the Training Complex Alternatives A or B, would cause the cessation of the present activities at all the resources mentioned because the Known Distance (KD) Range Complex is proposed in that location. The loss of Guam International Raceway land and use would be an adverse impact. Therefore, Alternative 1 would result in significant impacts to recreational resources.

#### 9.2.2.2 Central

##### Andersen South

###### *Construction*

Construction activities associated with the proposed project would inhibit access and the use of the Andersen South roads by joggers and walkers by fencing off the property and the addition of gates. However, the resource lost due to the proposed action is not unique to the region; comparable resources (e.g., jogging and walking trails) would be available in the adjoining properties.

###### *Operation*

Upon completion of construction activities, the access to, and the use of the existing trail at Andersen South would be lost—a significant impact. However, the resource lost due to the proposed action is not unique to the region; comparable resources (e.g., jogging and walking trails) would be available in the adjoining properties. Therefore, Alternative 1 would have less than significant impact on the recreational resource.

##### Barrigada

###### *Construction*

The construction activities associated with the proposed action occur outside of the recreational resource areas at Barrigada. The increased construction-related vehicles on roads may cause delay for persons attempting to gain access to the recreational resources at Barrigada; however, direct impacts to recreational resources are not expected.

###### *Operation*

The sole recreational resource at Navy Barrigada features one of two golf courses available to installation personnel and guests on Guam—Admiral Nimitz Golf Course. Golf courses on-base tend to offer lower fees than public and private courses: Nimitz Golf Course offers a tee time fee ranging from \$30 to \$49, weekdays and weekends, respectively, while public/private golf courses off-base charge from \$70 to \$160 for weekdays and weekends (Guam Golf Net 2009). The new permanent population associated with the proposed action would potentially increase the number of golf course users at Navy Barrigada. An increase in the number of golfers could potentially lead to reduced availability of tee times at the golf course. To alleviate the impact to the recreational resource, the MCCA is proposing a wide range of QOL facilities at the Main Cantonment site on NCTS Finegayan to meet the recreational demands of the Marines, their dependents and guests. By presenting comparable and/or alternate recreational options to

the potential users near where the Marines inhabit on Main Cantonment, impacts to the recreational resources at Navy Barrigada would result in less than significant impacts.

#### Non-DoD Land

##### *Construction*

The existing recreational resources on non-DoD properties in central Guam are primarily situated along Tumon Bay and Agana Bay, Hagatna, the coastal areas east of Route 15. The increased construction-related vehicles on roads may cause delay for persons attempting to gain access to the recreational resources on non-DoD lands; however, direct impacts to recreational resources are not expected.

##### *Operation*

Within central Guam are the capital city of Hagatna and the tourism center at Tumon; together, a wide spectrum of recreational activities, from trails, to museums, to marine recreational resources, historic and cultural attractions, scenic vistas, and active recreational uses many beaches and parks. These areas are widely popular with tourists who visit Guam for the variety of marine uses offered, as well as recreational opportunities in a more cosmopolitan setting. Currently, users are comprised of the existing visitor population (residents and military) and visitors from off-island.

The addition of 17,600 potential users to recreational resources on non-DoD lands in central Guam would lead to the reduction of opportunities for space and time at existing facilities. Increase in users would lead to increased competition for opportunities at each recreational use. For instance, beaches at Tumon Bay would likely experience crowding as the result of more swimmers in the water and beachcombers on the esplanade; beaches popular with off-island tourists may become even more populous with local users. Similarly, growth in the number of swimmers and/or snorkelers at the Perez Beach may lead to conflicts between users/uses (e.g. conflicts between fishing and snorkeling at the same beach).

Features popular and unique to the region (e.g. outdoor concerts at Ypao Park, snorkeling at the beaches in Tumon Bay, water parks at hotels, day use resorts) would continue to attract users. An example which helps to illustrate this point is the War in the Pacific National Historical Park managed by the National Park Service. In 1998, the Park received 134,067 visitors, and in 2008, 187,005 visitors. In February 2009 alone, the Park received 20,801 visitors (National Park Service 2009).

The general wear and tear of the amenities available and the conditions of the recreational resources would likely be accelerated due to the presence of potential users. Heightened awareness and education about environmentally sensitive areas would contribute towards minimizing deterioration of resources.

To alleviate the potentially significant impact to the recreational resource, the MCCA is proposing a wide range of QOL facilities at the Main Cantonment site on NCTS Finegayan to meet the recreational demands of the Marines, their dependents and guests. By presenting comparable and/or alternate recreational options to the potential users near where the Marines inhabit on Main Cantonment, impacts to the recreational resources on non-DoD lands could be alleviated. Therefore, Alternative 1 would result in less than significant impacts to recreational resources on non-DoD lands in central Guam.

#### 9.2.2.3 Apra Harbor

##### Harbor

##### *Construction*

The construction activities associated with the proposed action occur outside of the recreational resource areas at Apra Harbor. The increased construction-related vehicles on roads may cause delay for persons

attempting to gain access to the recreational resources at Apra Harbor; however, direct impacts to recreational resources are not expected.

### *Operation*

There are several dive spots and beaches/parks at Apra Harbor for exclusive use by installation guests and dependents. The proposed waterfront operation spans over most of the Inner Harbor and may inhibit access to recreational resources situated on in the adjacent area, namely San Luis Beach and Fort San Luis, Old Fuel Piers dive site, War Dog Cemetery, and Sumay Cove Marina. The Outer Apra Harbor hosts a multitude of sunken vessels from World War II and as a result, many dive spots exist today. The proposed dredging activities may cause displacement from recreational uses in the Outer Harbor. Users displaced from dive sites may elect to pursue resources around the proposed channel path, such as Glass Breakwater or Sasa Bay, but only persons with base privileges would be able to access the recreational resources on the Apra Harbor Naval Reservation to the south. Persons without base privileges may elect to pursue similar recreational features at Tumon and Tamuning or the southwest coast of Guam.

The resulting displacement and crowding at these locations would contribute towards a lessened level of satisfaction and enjoyment of recreational uses. Impacts such as delayed or unavailability of uses, crowding, and inadequate facilities (e.g., inadequate mooring facility for increased number of boats) are likely to result. For example, Sasa Bay is a wildlife preserve with little motorized boat traffic; East Agaña is a prime jet ski area. There is a concern that some motorized boats may spill over into the bay. There is no official speed limit in the area, and there is a general concern that wave action generated by motorized boats can contribute to shoreline erosion (Marianas Yacht Club 2009a). Increased numbers of visitors to recreational resources are likely to lead to competition for space and recreational opportunity (e.g., kayakers and jet skiers vying for space/opportunity in the waters).

Although advanced notice of schedule operation times are made available to the public via notice to mariners (NOTMARs), schedules are subject to change up until the date of the operation. NOTMARs advise the public, fishermen, and divers in advance of ongoing military activities that may temporarily relocate civilian and recreational activities (COMPACFLT 2009). NOTMARs may be inadequate for marine recreational activities requiring advanced scheduling, such as sailing events. For instance, a recurring issue has involved the Navy informing the Marianas Yacht Club, which organizes events such as Japanese Regatta, to leave in the middle of the event because of incoming ships despite all permits in place (Marianas Yacht Club 2009b). There are positive attributes to the implementation of project components, however; clubs such as the Marianas Yacht Club and tourism companies offering dives expect to strengthen its membership numbers (Marianas Yacht Club 2009b).

To alleviate the potentially significant impact to the recreational resource, the MCCA is proposing a wide range of QOL facilities at the Main Cantonment site on NCTS Finegayan to meet the recreational demands of the Marines, their dependents and guests. By presenting comparable and/or alternate recreational options to the potential users near where the Marines inhabit on Main Cantonment, impacts to the recreational resources on non-DoD lands could be alleviated. Therefore, Alternative 1 would result in less than significant impacts to recreational resources at Apra Harbor.

### Naval Base Guam

#### *Construction*

The construction activities associated with the proposed action occur outside of the recreational resource areas at the Naval Base Guam. The increased construction-related vehicles on roads may cause delay for

persons attempting to gain access to the recreational resources at Naval Base Guam; however, direct impacts to recreational resources is not expected.

#### *Operation*

Naval Base Guam features many water-related recreational resources (e.g. sailing, dive spots, fishing, beaches) popular with resident, military, and visitor populations alike. The availability of a wide range of water sports use may attract increased users to its resources. The project components would not impede access to the resources, but increased visitor load may mean more time spent on the road to reach the resources, thereby indirectly impeding access.

Implementation of this alternative would lead to the reduction of opportunities at existing facilities because a surge in visitor population would mean more users would be competing for the particular resource (e.g., more boaters competing for water space; jet skiers and divers competing for opportunity in the water).

Implementation of Alternative 1 would not necessarily displace public recreation activities or opportunities since comparable resources are readily available. However, components unique to a particular resource may not meet the visitor demands (e.g., Masso Reservoir offers fishing, camping, and hiking opportunities), resulting in displacement of users who visit specifically for its features.

The general wear and tear of the amenities available and the conditions of the recreational resources would likely be accelerated due to the presence of potential users. Heightened awareness and education about environmentally sensitive areas would contribute towards minimizing deterioration of resources.

Therefore, Alternative 1 would result in less than significant impacts to recreational resources on Naval Base Guam.

#### 9.2.2.4 South

##### Naval Munitions Site

#### *Construction*

The construction activities associated with the proposed action occur outside of the recreational resource areas at NMS. The increased number of construction-related vehicles on roads may cause delay for persons attempting to gain access to the recreational resources at NMS; however, direct impacts to recreational resources are not expected.

#### *Operation*

Access to and use of the recreational resources are restricted to installation personnel and guests. The number of users to the resources may increase as the result of the proposed action. With the exception to the Fena Reservoir, which attracts fishing, most recreational resources at NMS are passive recreational resources (e.g., scenic point, Fena Massacre Site, Alma Gosa and Dobo Springs). Passive activities listed above, except fishing, do not warrant prolonged or extended stays as would by more active uses (e.g., hiking). Therefore, Alternative 1 would result in less than significant to recreational resources on NMS.

#### 9.2.2.5 Summary of Impacts

In general, increased population due to the relocation of Marines and their dependents would create an adverse impact to recreational facilities on base, but this would be offset by the construction and operation of new facilities at the Main Cantonment. Impacts to recreational resources off base would be

significant due to the increase in civilian workers during the construction phase and the loss of recreational opportunities at the proposed Training Range Complex at Route 15.

#### 9.2.2.6 Potential Mitigation Measures

The mitigation measures for recreational impacts may include the following:

- Prepare a Recreational Carrying Capacity Analysis Management Plan that addresses recreational user use, demand, preference, conflicts, and conditions.
- DoD offer resources in form of time and donation or use of equipment to assist the volunteer conservation officer (VCO) at Andersen AFB.
- DoD collaborate with the Guam Division of Aquatic and Wildlife Resources (GDAWR) to establish outreach programs and docent programs for the five marine preserves and other environmentally sensitive areas on Guam.
- Marine Corps could provide for improvement and maintenance of Tanguisson Beach, along with the management of the coastline to the north of Hilaan that contains significant natural, cultural, scenic, and recreational resources.

### 9.2.3 Alternative 2 (Preferred Alternative)

#### 9.2.3.1 North

##### Andersen AFB

###### *Construction*

The effects would be similar to those described under Alternative 1.

###### *Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 2 would have less than significant impacts to recreational resources on Andersen AFB.

##### NCTS Finegayan

###### *Construction*

The effects would be similar to those described under Alternative 1.

###### *Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 2 would have less than significant impacts to recreational resources on NCTS Finegayan.

##### Former FAA Parcel

###### *Construction*

The effects would be similar to those described under Alternative 1.

###### *Operation*

The effects would be similar to those described under Alternative 1.

Non-DoD Land

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

The effects would be similar to those described under Alternative 1.

9.2.3.2 Central

Andersen South

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

The effects would be similar to those described under Alternative 1.

Barrigada

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 2 would have less than significant impacts to recreational resources on Barrigada.

Non-DoD Land

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 2 would have significant but mitigable impacts to recreational resources on non-DoD lands in central Guam.

9.2.3.3 Apra Harbor

Harbor

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 2 would have less than significant impacts to recreational resources on Apra Harbor.

### Naval Base Guam

#### *Construction*

The effects would be similar to those described under Alternative 1.

#### *Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 2 would have less than significant impacts to recreational resources on Naval Base Guam.

#### 9.2.3.4 South

### Naval Munitions Site

#### *Construction*

The effects would be similar to those described under Alternative 1.

#### *Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 2 would have less than significant impacts to recreational resources on the NMS.

#### 9.2.3.5 Summary of Impacts

The summary of impacts resulting from Alternative 2 are similar to those described under Alternative 1.

#### 9.2.3.6 Potential Mitigation Measures

The potential mitigation measures are the same as those proposed under Alternative 1.

### **9.2.4 Alternative 3**

#### 9.2.4.1 North

### Andersen AFB

#### *Construction*

The effects would be similar to those described under Alternative 1.

#### *Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 3 would have less than significant impacts to recreational resources on Andersen AFB.

### NCTS Finegayan

#### *Construction*

The effects would be similar to those described under Alternative 1.

#### *Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 3 would have less than significant impacts to recreational resources on NCTS Finegayan.

Former FAA Parcel

*Construction*

No components of the proposed action under Alternative 3 are planned at the former FAA parcel. No impacts to the existing trail use on-site are anticipated.

*Operation*

No components of the proposed action under Alternative 3 are planned at the former FAA parcel. No impacts to the existing trail use on-site are anticipated.

Non-DoD Land

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

The effects would be similar to those described under Alternative 1.

9.2.4.2 Central

Andersen South

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

The effects would be similar to those described under Alternative 1.

Barrigada

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 3 would have less than significant impacts to recreational resources on Barrigada.

Non-DoD Land

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 3 would have significant but mitigable impacts to recreational resources on non-DoD lands in central Guam.

#### 9.2.4.3 Apra Harbor

##### Harbor

###### *Construction*

The effects would be similar to those described under Alternative 1.

###### *Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 3 would have less than significant impacts to recreational resources at Apra Harbor.

##### Naval Base Guam

###### *Construction*

The effects would be similar to those described under Alternative 1.

###### *Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 3 would have less than significant impacts to recreational resources on Naval Base Guam.

#### 9.2.4.4 South

##### Naval Munitions Site

###### *Construction*

The effects would be similar to those described under Alternative 1.

###### *Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 3 would have less than significant impacts to recreational resources on NMS.

#### 9.2.4.5 Summary of Impacts

The summary of impacts resulting from Alternative 3 are similar to those described under Alternative 1.

#### 9.2.4.6 Potential Mitigation Measures

The potential mitigation measures are the same as those proposed under Alternative 1.

### **9.2.5 Alternative 8**

#### 9.2.5.1 North

##### Andersen AFB

###### *Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 8 would have less than significant impacts to recreational resources on Andersen AFB.

NCTS Finegayan

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 8 would have less than significant impacts to recreational resources on NCTS Finegayan.

Former FAA Parcel

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

The effects would be similar to those described under Alternative 1.

Non-DoD Land

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

The effects would be similar to those described under Alternative 1.

9.2.5.2 Central

Andersen South

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

The effects would be similar to those described under Alternative 1.

Barrigada

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

The effects would be similar to those described under Alternative 1.

Non-DoD Land

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 8 would have significant but mitigable impacts to recreational resources on non-DoD lands in central Guam.

9.2.5.3 Apra Harbor

Harbor

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 8 would have less than significant impacts to recreational resources at Apra Harbor.

Naval Base Guam

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 8 would have less than significant impacts to recreational resources on Naval Base Guam.

9.2.5.4 South

Naval Munitions Site

*Construction*

The effects would be similar to those described under Alternative 1.

*Operation*

All components of this alternative, except for the location of family housing and community support facilities, are identical to Alternative 1. Therefore, Alternative 8 would have less than significant impacts to recreational resources on NMS.

9.2.5.5 Summary of Impacts

The summary of impacts resulting from Alternative 8 are similar to those described under Alternative 1.

9.2.5.6 Potential Mitigation Measures

The potential mitigation measures are the same as those proposed under Alternative 1.

**9.2.6 No-Action Alternative**

Under the no-action alternative, Marine Corps units would remain in Japan and would not relocate to Guam. No construction, dredging, training, or operations associated with the military relocation would occur and the Marine Corps would not meet readiness, mission and international treaty obligations. Existing operations on Guam would continue. Therefore, implementation of the no-action alternative would maintain existing conditions and there would be no impacts associated with the proposed action and alternatives. There would be no change to existing conditions if the no-action alternative were implemented. Implementation of the no-action alternative would not meet the mission, readiness, national security and international treaty obligations of the Marine Corps.

**9.2.7 Summary of Impacts**

Table 9.2-1 summarizes the potential impacts of each Main Cantonment alternative evaluated. Table 9.2-2 summarizes the potential impacts of each Firing Range alternative evaluated. Tables 9.2-3 and 9.2-4 summarize the impacts at NMS for the Ammunition Storage Alternatives and the Access Roads Alternatives respectively. A summary of potential recreation impacts due to Other Training, Airfield, and Waterfront is provided in Table 9.2-5. A text summary follows the summary tables.

**Table 9.2-1. Summary of Main Cantonment Impacts – Alternatives 1, 2, 3 and 8**

<i>Main Cantonment Alternative 1 (North)</i>	<i>Main Cantonment Alternative 2 (North)</i>	<i>Main Cantonment Alternative 3 (North/Central)</i>	<i>Main Cantonment Alternative 8 (North/Central)</i>
<b>Construction</b>			
SI-M <ul style="list-style-type: none"> <li>Reduction of recreational opportunities off base due to increase in the number of users seeking recreational resources from construction workers</li> </ul>	SI-M <ul style="list-style-type: none"> <li>Reduction of recreational opportunities off base due to increase in the number of users seeking recreational resources from construction workers</li> </ul>	SI-M <ul style="list-style-type: none"> <li>Reduction of recreational opportunities off base due to increase in the number of users seeking recreational resources from construction workers</li> </ul>	SI-M <ul style="list-style-type: none"> <li>Reduction of recreational opportunities off base due to increase in the number of users seeking recreational resources from construction workers</li> </ul>
<b>Operation</b>			
LSI <ul style="list-style-type: none"> <li>Some on base resources may already be at or over capacity (Tarague Beach)</li> <li>Reduction of recreational opportunities due to increase in the number of users seeking recreational resources on base</li> <li>Accelerated deterioration of resources</li> <li>Diminished user satisfaction due to reduced recreational opportunities</li> <li>Conflicts between users and uses</li> </ul>	LSI <ul style="list-style-type: none"> <li>Some on base resources may already be at or over capacity (Tarague Beach)</li> <li>Reduction of recreational opportunities due to increase in the number of users seeking recreational resources on base</li> <li>Accelerated deterioration of resources</li> <li>Diminished user satisfaction due to reduced recreational opportunities</li> <li>Conflicts between users and uses</li> </ul>	LSI <ul style="list-style-type: none"> <li>Some on base resources may already be at or over capacity (Tarague Beach)</li> <li>Reduction of recreational opportunities due to increase in the number of users seeking recreational resources on base</li> <li>Accelerated deterioration of resources</li> <li>Diminished user satisfaction due to reduced recreational opportunities</li> <li>Conflicts between users and uses</li> </ul>	LSI <ul style="list-style-type: none"> <li>Some on base resources may already be at or over capacity (Tarague Beach)</li> <li>Reduction of recreational opportunities due to increase in the number of users seeking recreational resources on base</li> <li>Accelerated deterioration of resources</li> <li>Diminished user satisfaction due to reduced recreational opportunities</li> <li>Conflicts between users and uses</li> </ul>

Legend: SI-M = Significant impact mitigable to less than significant, LSI = Less than significant impact.

**Table 9.2-2. Summary of Training Impacts – Firing Range Alternatives**

<i>Firing Range Alternative A (Central)</i>	<i>Firing Range Alternative B (Central)</i>
<b>Construction</b>	
SI-M <ul style="list-style-type: none"> <li>Loss of use of Guam International Raceway, fishing, trails, and gathering activities by <i>suruhana</i></li> </ul>	SI-M <ul style="list-style-type: none"> <li>Loss of use of Guam International Raceway, fishing, trails, and gathering activities by <i>suruhana</i></li> </ul>
<b>Operation</b>	
SI-M <ul style="list-style-type: none"> <li>Lost access and use of recreational resources (Guam International Raceway, Marbo Cave (spelunking and offshore fishing), Pagat Trail and associated trails, <i>suruhana</i> activities)</li> </ul>	SI-M <ul style="list-style-type: none"> <li>Lost access and use of recreational resources (Guam International Raceway, Marbo Cave (spelunking and offshore fishing), Pagat Trail and associated trails, <i>suruhana</i> activities)</li> </ul>

Legend: SI = Significant impact, SI-M = Significant impact mitigable to less than significant, LSI = Less than significant impact, NI = No impact.

**Table 9.2-3. Summary of Training Impacts – Ammunition Storage Alternatives**

<i>Ammunition Storage Alternative A (South)</i>	<i>Ammunition Storage Alternative B (South)</i>
<b>Construction</b>	
NI <ul style="list-style-type: none"> <li>There would be no impacts to recreation.</li> </ul>	NI <ul style="list-style-type: none"> <li>There would be no impacts to recreation.</li> </ul>
<b>Operation</b>	
NI <ul style="list-style-type: none"> <li>There would be no impacts to recreation.</li> </ul>	NI <ul style="list-style-type: none"> <li>There would be no impacts to recreation.</li> </ul>

Legend: NI = No impact.

**Table 9.2-4. Summary of Training Impacts – NMS Access Roads Alternatives**

<i>Access Road Alternative A (South)</i>	<i>Access Road Alternative B (South)</i>
<b>Construction</b>	
NI <ul style="list-style-type: none"> <li>There would be no impacts to recreation.</li> </ul>	NI <ul style="list-style-type: none"> <li>There would be no impacts to recreation.</li> </ul>
<b>Operation</b>	
NI <ul style="list-style-type: none"> <li>There would be no impacts to recreation.</li> </ul>	NI <ul style="list-style-type: none"> <li>There would be no impacts to recreation.</li> </ul>

Legend: NI = No impact.

**Table 9.2-5. Summary of Other Training, Airfield, and Waterfront Component Impacts**

<i>Other Training (North/Central/South)</i>	<i>Airfield (North)</i>	<i>Waterfront (Apra Harbor)</i>
<b>Construction</b>		
LSI <ul style="list-style-type: none"> <li>Congestion due to the presence of construction vehicles.</li> </ul>	LSI <ul style="list-style-type: none"> <li>Congestion due to the presence of construction vehicles.</li> </ul>	LSI <ul style="list-style-type: none"> <li>Displacement of users during dredging.</li> </ul>
<b>Operation</b>		
LSI <ul style="list-style-type: none"> <li>Noise generated from proposed training activities does not trigger significance criteria and is not inconsistent with noise from existing operations.</li> </ul>	LSI <ul style="list-style-type: none"> <li>Noise generated from proposed training activities does not trigger significance criteria and is not inconsistent with noise from existing operations.</li> </ul>	LSI <ul style="list-style-type: none"> <li>Diminished user satisfaction due to displacement;</li> <li>Conflicts between users and uses;</li> <li>Reduction of recreational opportunities.</li> </ul>

Legend: LSI = Less than significant impact.

Adverse impacts to existing recreational resources would be expected due to the sudden and dramatic increase in population on Guam. An increase in users to a wide range of recreational resources discussed in the affected environment of this chapter would occur. The increase in users would lead to competition

for recreational opportunities; this affects not only popular tourist sites visited by off-island tourists, but installation-specific facilities as well. Due to Guam’s year round tropical/holiday weather, most of the already popularly visited recreational resources are anticipated to attract an increased flow of users. Because most persons relocating would be primarily occupied with employment and/or school, the degree of recreational resource uses is likely to be higher on weekends, holidays, and vacation months, mirroring the public school calendar year. As the heavier volume of visitors to the island occurs from July through March (except for January), competition for recreational opportunities is likely to be greater during these months as well.

Military recreational users, off-island visitors, and Guam residents would be competing for recreational use island wide. Increased users at existing recreational facilities would likely lead to conflicts between recreational users; examples include competition between surfers and swimmers for space at a popular beach park; between kayakers and snorkelers; spelunking and underwater cave swimmers; hikers and bike trail riders. Such conditions may already exist; the spike in recreational users may exacerbate the condition beyond current levels. Further, increased user numbers will likely cause an increase in the use of existing recreational facilities such that substantial physical deterioration of the facilities would occur. MCCS is planning for additional recreational facilities on Guam to meet the demands of the Marines and their dependents relocating to the area; this would serve to minimize impacts from increased demand resulting from implementation of the proposed action. Negotiations related to land acquisition of the raceway would mitigate impacts to loss of recreational services.

**9.2.8 Summary of Potential Mitigation Measures**

**Table 9.2-1. Summary of Potential Mitigation Measures**

<i>Alternative 1</i>	<i>Alternative 2</i>	<i>Alternative 3</i>	<i>Alternative 8</i>
<b>Island-wide</b>			
<ul style="list-style-type: none"> <li>• Prepare a Recreational Carrying Capacity Analysis Management Plan that addresses recreational user use, demand, preference, conflicts, and conditions.</li> <li>• DoD would offer resources in time and donation or use of equipment to assist the volunteer conservation officer at Andersen AFB</li> <li>• DoD collaborate with the GDAWR to establish outreach programs for 5 marine preserves</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare a Recreational Carrying Capacity Analysis Management Plan that addresses recreational user use, demand, preference, conflicts, and conditions.</li> <li>• DoD would offer resources in time and donation or use of equipment to assist the volunteer conservation officer at Andersen AFB</li> <li>• DoD collaborate with the GDAWR to establish outreach programs for 5 marine preserves</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare a Recreational Carrying Capacity Analysis Management Plan that addresses recreational user use, demand, preference, conflicts, and conditions.</li> <li>• DoD would offer resources in time and donation or use of equipment to assist the volunteer conservation officer at Andersen AFB</li> <li>• DoD collaborate with the GDAWR to establish outreach programs for 5 marine preserves</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare a Recreational Carrying Capacity Analysis Management Plan that addresses recreational user use, demand, preference, conflicts, and conditions.</li> <li>• DoD would offer resources in time and donation or use of equipment to assist the volunteer conservation officer at Andersen AFB</li> <li>• DoD collaborate with the GDAWR to establish outreach programs for 5 marine preserves</li> </ul>