3. Affected Environment

Throughout the EIS, the affected environment on both Saipan and Tinian are referred to as the "Project Area." The term "Project Area" encompasses those locations described under Alternative 1, Alterative 2, and Alternative 3 in **Sections 2.4.1, 2.4.2**, and **2.4.3**, respectively. Specifically, the Project Area on both Saipan and Tinian includes the airport and associated infrastructure proposed for construction or improvements, and the surrounding area, when applicable. The Project Area also includes locations at the harbor proposed for construction or improvements, and the proposed truck routes and surrounding areas.

3.1 Noise

3.1.1 Differences Between the 2012 Draft EIS and Revised Draft EIS

Some information in the Noise section has changed since the release of the 2012 Draft EIS based on the Modified Alternatives presented in **Section 2.4**, and provides a more thorough and in-depth analysis of impacts. These changes include updates on information presented in the 2012 Draft EIS and additional analysis beyond that done in the 2012 Draft EIS. A summary of the changed information is presented below.

Noise Contours. The Revised Draft EIS includes an additional set of noise contours based upon the Average Annual Day (AAD) methodology. The AAD noise contours were added to maintain noise analysis consistency across USAF EIS documents. Since the baseline noise analysis was estimated using 365 days per year, noise from proposed military aircraft operations was also estimated using 365 days per year to be able to compare noise impacts directly to the baseline. AAD contours and acreage under the Proposed Action scenarios were then compared to the baseline scenario. The Average Busy Day (ABD) noise contours shown in the 2012 Draft EIS remain in the Revised Draft EIS to depict the increased, temporary noise exposure that would occur during an exercise activity.

Noise Software Programs. In the 2012 Draft EIS all of the aircraft operations were modeled in Noisemap, the DOD software program for aircraft noise. The FAA requested that civilian operations be modeled in the Integrated Noise Model (INM). Consequently, in the Revised Draft EIS the civilian operations were modeled in INM, military operations were modeled in Noisemap, and the contours were combined in NMPlot to illustrate a unified set of noise contours.

Civilian Aircraft. After the 2012 Draft EIS was completed, the *Draft Aeronautical Study in the CNMI* was released. This study contained updated information about the types of civilian aircraft that operate out of Saipan and Tinian and the number of operations. Consequently, the aircraft mix and the number of operations were updated in the Revised Draft EIS. However, baseline data may differ slightly in the Aeronautical Study based on information obtained during in-person interviews; this difference is negligible and does not affect the airport operations or noise analysis in the EIS.

Proposed Civilian Aircraft Operational Increase. The projected increase in civilian aircraft operations under the Proposed Action was changed from 15 percent in the 2012 Draft EIS to 1 percent in the Revised Draft EIS. The projected 1 percent increase was estimated based upon the FAA's Terminal Area Forecast. Additionally, the noise analysis was conducted using aircraft operation data from 2011 when operations were less than more recent data from 2011-2014 which shows an increase in operations (FAA 2011). The 2011 data was used to project civilian aircraft operations to maintain a conservative estimate of future baseline operations in the event that operations level off to more historic numbers.

Military Aircraft Assumptions. Information regarding the percentage of day-night operations was revised based upon better available information than presented in the 2012 Draft EIS. The analysis in the Revised Draft EIS reflected these changes.

3.1.2 Definition of Resource

Sound is defined as a particular auditory effect produced by a given source, for example the sound of rain on a rooftop. Noise and sound share the same physical aspects, but noise is considered a disturbance while sound is defined as an auditory effect. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Noise can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. It can be readily identifiable or generally nondescript. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day. How an individual responds to the sound source will determine if the sound is viewed as music to one's ears or as annoying noise. Affected receptors are specific (e.g., schools, churches, or hospitals) or broad (e.g., nature preserves or designated districts) areas in which occasional or persistent sensitivity to noise above ambient levels exists.

Noise Metrics and Regulations. Although individual human response to noise varies, projected noise levels and zones can be modeled to predict typical human responses. dBA is used to characterize sound levels that can be sensed by the human ear. "A-weighted" denotes the adjustment of the frequency range to what the average human ear can sense when experiencing an audible event. The threshold of audibility is generally within the range of 10 to 25 dBA for normal hearing. The threshold of pain occurs at the upper boundary of audibility, which is normally in the region of 135 dBA (USEPA 1981b). **Table 3.1-1** compares common sounds and shows how they rank in terms of the effects of hearing. As shown, a whisper is normally 30 dBA and considered to be very quiet while an air conditioning unit 20 feet away is considered an intrusive noise at 60 dBA. Noise levels can become annoying at 80 dBA and very annoying at 90 dBA. To the human ear, each 10 dBA increase seems twice as loud (USEPA 1981a).

Under the Noise Control Act of 1972, the Occupational Safety and Health Administration (OSHA) established workplace standards for noise. The minimum requirement states that constant noise exposure must not exceed 90 dBA over an 8-hour period. The highest allowable sound level to which workers can be exposed to over a specified length of time is 115 dBA and exposure to this level must not exceed 15 minutes within an 8-hour period. The standards limit instantaneous exposure, such as impact noise, to 140 dBA. If noise levels exceed these

Table 3.1-1. Sound Levels and Human Response

Noise Level (dBA)	Common Sounds	Effect
10	Just audible	Negligible*
30	Soft whisper (15 feet)	Very quiet
50	Light auto traffic (100 feet)	Quiet
60	Air conditioning unit (20 feet)	Intrusive
70	Noisy restaurant or freeway traffic	Telephone use difficult
80	Alarm clock (2 feet)	Annoying
90	Heavy truck (50 feet) or city traffic	Very annoying Hearing damage (8 hours)
100	Garbage truck	Very annoying*
110	Pile drivers	Strained vocal effort*
120	Jet takeoff (200 feet) or auto horn (3 feet)	Maximum vocal effort
140	Carrier deck jet operation	Painfully loud

Source: USEPA 1981a and *HDR extrapolation

standards, employers are required to provide hearing protection equipment that will reduce sound levels to acceptable limits.

Sound levels, resulting from multiple single events, are used to characterize noise effects from aircraft or vehicle activity and are referred to as a Day-Night sound level (DNL). The DNL noise metric incorporates a “penalty” for nighttime noise events to account for increased annoyance. DNL is the energy-averaged sound level measured over a 24-hour period. To account for the perception of increased noise during normally quiet times, an additional 10-dBA is added to noise events occurring between 10:00 p.m. and 7:00 a.m. DNL is the designated noise metric of the FAA, U.S. Department of Housing and Urban Development (HUD), USEPA, and DOD for modeling airport environments.

Land use guidelines identified by the Federal Interagency Committee on Urban Noise (FICUN) and the FAA, Part 150–Airport Noise Compatibility Planning regulation (14 CFR Part 150), are used to determine compatible types of land use surrounding airports within the 65 to 80+ dBA DNL noise contours (FICUN 1980). The DOD, USEPA, FAA, and HUD use these guidelines in their noise policies and programs. For outdoor activities, the USEPA recommends 55 dBA DNL as the sound level below which there is no reason to suspect that the general population would be at risk from any of the effects of noise. For indoor activities, the USEPA recommends 45 dBA DNL (USEPA 1974).

Ambient Sound Levels. Noise levels vary depending on the housing density and proximity to parks and open space, major traffic areas, or airports. As shown in **Table 3.1-2**, the noise level in a normal suburban area is about 55 dBA DNL, which increases to 60 dBA for an urban residential area, and to 80 dBA in the downtown section of a city (USEPA 1974). Most people are exposed to sound levels of 50 to 55 dBA or higher on a daily basis.

Table 3.1-2. Typical Outdoor Noise Levels

dBA DNL	Location
50	Residential area in a small town or quiet suburban area
55	Suburban residential area
60	Urban residential area
65	Noisy urban residential area
70	Very noisy urban residential area
80	City noise (downtown of major metropolitan area)
88	3rd floor apartment in a major city next to a freeway

Source: USEPA 1974

Construction Sound Levels. Building demolition and construction work can cause an increase in sound that is well above the ambient level. A variety of sounds are emitted from loaders, trucks, pavers, and other work equipment. **Table 3.1-3** lists noise levels associated with common types of construction equipment. Construction equipment usually exceeds the ambient sound levels by 20 to 25 dBA in an urban environment and up to 30 to 35 dBA in a quiet suburban area.

Table 3.1-3. Noise Levels Associated with Construction Equipment

Construction Equipment	Predicted Noise Level at 50 feet (dBA)
Backhoe	72–93
Concrete mixer	74–88
Crane	75–87
Front loader	72–83
Grader	80–93
Jackhammer	81–98
Paver	86–88
Pile driver	95–105
Roller	73–75
Truck	83–94

Source: USEPA 1971

3.1.3 Existing Conditions

3.1.3.1 Saipan

The majority of Saipan has a noise environment comparable to a rural setting; however, there are a few major noise sources. These sources include vehicle traffic, a quarry adjacent to the airport, and aircraft operations. Major roadways on Saipan include Middle Road and Beach Road, with those near the airport including Flame Tree Road, Airport Road, As Perdido Road, and Naftan Road. The dominant noise sources near the airport are from quarry and airport operations. Hawaiian Rock Quarry is approximately 0.75 miles southeast of the runway and 1 mile south of Dandan. This company supplies asphalt, concrete, and aggregates. The facility near the airport includes a quarry and main concrete plant.

Annual aircraft operations at Saipan International Airport were obtained from FAA Air Traffic Activity System database to develop a noise Baseline Scenario (FAA 2011). Daily operations at Saipan International Airport are shown in **Table 3.1-4**. An operation is defined as an aircraft arrival or an aircraft departure; therefore, the landing and takeoff of the same aircraft would count as two operations. It was assumed that aircraft fly out of Saipan International Airport 365 days a year. The number of annual operations from the FAA Air Traffic Activity System database was divided by the number of flying days per year to obtain the number of average daily operations.

Table 3.1-4. Baseline Scenario Aircraft Operations at Saipan International Airport

Aircraft Category[1]	Aircraft2	Average Daily Operations1
Air Carrier	A-330	2.00
	A-321	2.00
	B-757	4.00
	B-767	2.00
Air Taxi/ General Aviation[3]	ATR-42	22.00
	C-172	15.00
	SD3-60	4.00
	Piper Cherokee	88.64
Military	C-130H	0.72
	F-16C	0.35
	Total	**140.71**

Source: FAA 2011[1] and HDR[2]
[3] Air taxi flights also occasionally include operations by a Piper Navajo, differences in noise levels are negligible.

The majority of operations at Saipan International Airport are flown with single-engine aircraft which include the Piper Cherokee and the Cessna 172 aircraft. It was estimated that approximately 40 percent (44 operations) of the air carrier and military operations occur between the hours of 10 p.m. and 7 a.m. and 1 percent (1.3 operations) of the air taxi/general aviation operations occur between those hours. Aircraft use Runway 07 approximately 85 percent of the time and Runway 25 approximately 15 percent of the time. Arrival and departure flight tracks head in various directions, with the majority of single-engine aircraft flying to Tinian International Airport and the turboprop aircraft flying to the south. Flight tracks for air carrier and military aircraft were modeled to the north and south from the runway.

Figure 3.1-1 shows the baseline scenario noise contours at Saipan International Airport. The noise contours extend out from the runway ends. The 65 dBA DNL noise contour remains close to the airfield facilities. The 75 to 80+ dBA DNL noise contours encompass only airfield property.

Table 3.1-5 shows the acreage within the noise contours under the Baseline Scenario. The total number of acres within the 65 to 80+ dBA DNL noise contours is 353, with 17 acres encompassing non-airport property. As expected, the largest number of acres is within the 65 to 69 dBA DNL noise contours.

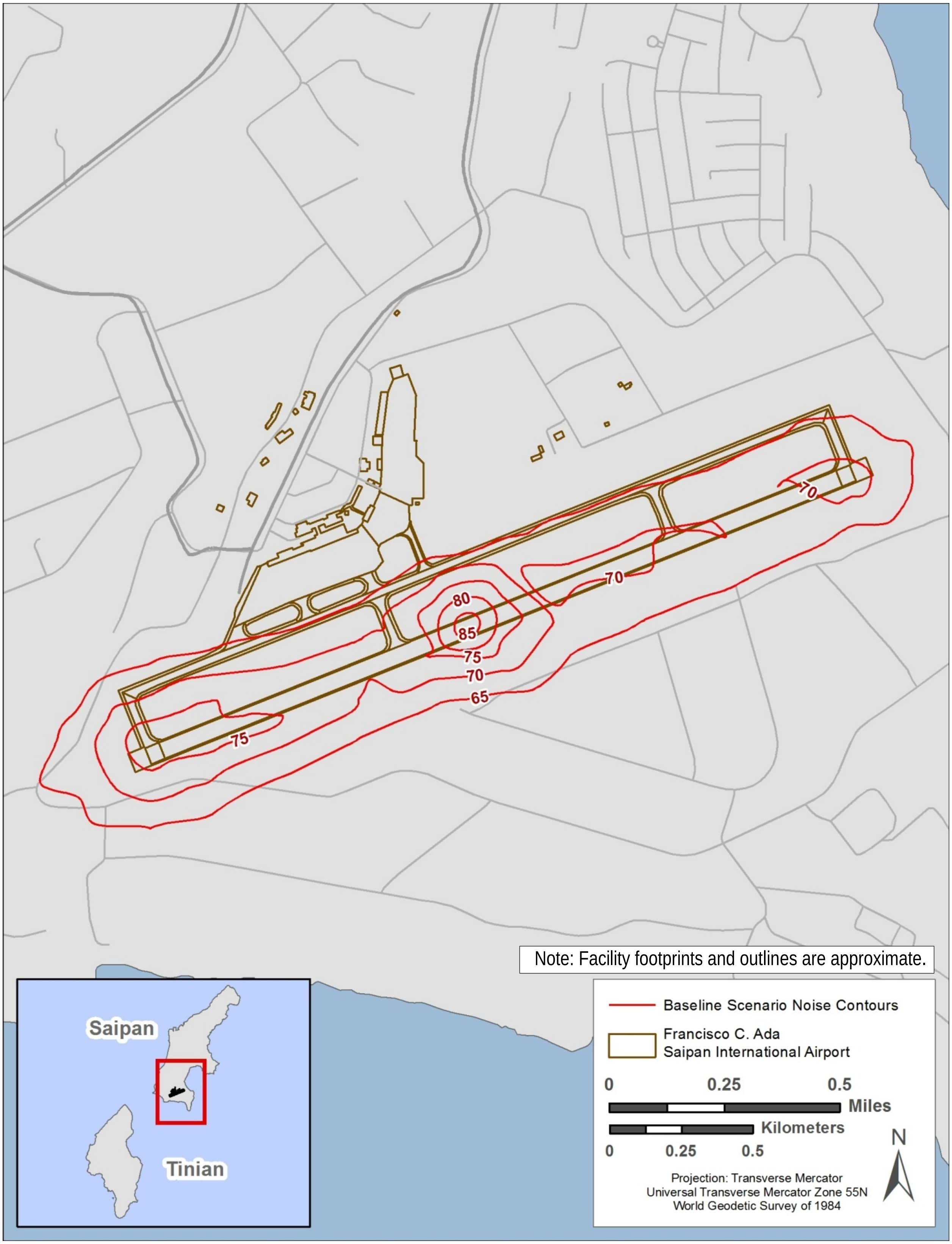


Figure 3.1-1. Baseline Scenario Noise Contours at Saipan International Airport

Table 3.1-5. Baseline Scenario Noise Contour Acreage at Saipan International Airport

Noise Contours	Baseline Scenario (in acres)		
	Off-Airport Property	Airport Property	Total Acres
65–70 dBA DNL	16	198	214
70–75 dBA DNL	1	104	105
75–80 dBA DNL	0	26	26
80+ dBA DNL	0	8	8
Total	**17**	**336**	**353**

Source: HDR

3.1.3.2 Tinian

Major sources of noise on Tinian include aviation and ground-training activities that occur at the Tinian Military Lease Area (MLA), private heliports, and the aircraft operations at Tinian International Airport. The MLA encompasses 15,353 acres and consists of two regions. The Exclusive Military Use Area (EMUA) includes 7,574 acres on the northern third of Tinian and the Leaseback Area (LBA) includes 7,779 acres of the middle of the island. The MLA supports small unit-level training up to large field exercises and expeditionary warfare training. The LBA, which is north of Tinian International Airport, is used for ground training such as military operations in urban terrain-type training, vehicle land navigation, convoy training, and other field activities (DON 2010b). Tinian International Airport is surrounded mostly by vegetation, although there are two small residential developments in the vicinity: Marpo Heights is southeast of the airfield and San Jose is south of the airfield. Major roadways on Tinian include Broadway and 8th Avenue, although traffic activity is low due to the low population density on the island.

Small arms fire occurs in the LBA used during military training on Tinian. When firing occurs, peak noise levels extend from the range in the LBA to the northern edge of Tinian International Airport property (DON 2010b). However, only a small portion of non-military land is within peak noise levels, and there are no noise-sensitive receptors in this area.

Military helicopters operate out of the MLA approximately one week per month. Populations outside of the MLA experience noise from overhead flights approximately 2 days per month when military personnel are transported to and from Tinian.

Daily aircraft operations for the Baseline Scenario at Tinian International Airport were estimated based on the approximate number of air taxi flights, which are the only commercial aircraft that operate at Tinian International Airport. The operations were modeled with a single-engine aircraft, the Cessna 172 and the Piper Cherokee. It was assumed that aircraft fly in and out of Tinian International Airport 365 days a year, resulting in an average of approximately 36 daily operations (FAA 2011), as shown in **Table 3.1-6.** Two of those operations were estimated to occur between the hours of 10 p.m. and 7 a.m. Aircraft use Runway 08 approximately 85 percent of the time and Runway 26 approximately 15 percent of the time. Because of the low number of operations, the result of the model does not include a mapped 65 dBA DNL noise contour under the Baseline Scenario and; therefore, does not include any affected acreage.

Table 3.1-6. Baseline Scenario Aircraft Operations at Tinian International Airport

Aircraft	Daily Operations
Piper Cherokee[1]	27.48
C-172	8.36
Total	**35.84**

Source: FAA 2011
[1] Air taxi flights also occasionally include operations by a Piper Navajo, differences in noise levels are negligible.

3.2 Air Quality

3.2.1 Definition of Resource

In accordance with Federal Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentration of various pollutants in the atmosphere. The measurements of these “criteria pollutants” in ambient air are expressed in units of parts per million (ppm), milligrams per cubic meter (mg/m^3), or micrograms per cubic meter ($\mu g/m^3$). The air quality in a region is a result not only of the types and quantities of atmospheric pollutants and pollutant sources in an area, but also influenced by the surface topography, the size of the topological “air basin,” and the prevailing meteorological conditions.

Ambient Air Quality Standards. The CAA directed the USEPA to develop, implement, and enforce strong environmental regulations that would ensure clean and healthy ambient air quality. To protect public health and welfare, USEPA developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to impact human health and the environment. USEPA established both primary and secondary NAAQS under the provisions of the CAA. NAAQS are currently established for six criteria air pollutants under 40 CFR Part 50: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb). The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources along with maintaining visibility standards. The CAA also gives the authority to states, territories, and commonwealths to establish air quality rules and regulations, including adopting the NAAQS. The CNMI has adopted the Federal NAAQS. **Table 3.2-1** presents the primary and secondary USEPA NAAQS.

Although O_3 is considered a criteria pollutant and is measureable in the atmosphere, it is not often considered a regulated pollutant when calculating emissions because O_3 is typically not emitted directly from most emissions sources. Ozone is formed in the atmosphere by photochemical reactions involving sunlight and previously emitted pollutants or O_3 precursors. The O_3 precursors consist primarily of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) that are directly emitted from a wide range of emissions sources. For this reason, regulatory agencies attempt to limit atmospheric O_3 concentrations by controlling NO_x and VOC pollutants.

Table 3.2-1. National and Commonwealth Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard		Secondary Standard
		Federal	Commonwealth	
CO	8-hour (5)	9 ppm (10 mg/m^3)	Same	None
	1-hour (5)	35 ppm (40 mg/m^3)	Same	None
Pb	Rolling 3-Month Average(6)	0.15 µg/m^3 (1)	Same	Same as Primary
NO_2	Annual(7)	53 ppb (2)	Same	Same as Primary
	1-hour(8)	100 ppb	Same	None
PM_{10}	24-hour(9)	150 µg/m^3	Same	Same as Primary
$PM_{2.5}$	Annual(10)	15 µg/m^3	Same	Same as Primary
	24-hour (8)	35 µg/m^3	Same	Same as Primary
O_3	8-hour (11)	0.08 ppm(3)	Same	Same as Primary
SO_2	1-hour(12)	75 ppb (4)	Same	None
	3-hour(5)	--	Same	0.5 ppm

Sources: USEPA 2011a, CNMI DEQ 2004a, CNMI 2012

Notes: Parenthetical values are approximate equivalent concentrations.

1. **Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.**
2. **The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.**
3. **Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, USEPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.**
4. **Final rule signed June 2, 2010. The 1971 annual (0.3 ppm) and 24-hour (0.14 ppm) SO2 standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.**
5. **Not to be exceeded more than once per year.**
6. **Not to be exceeded.**
7. **Annual mean.**
8. **98th percentile, averaged over 3 years.**
9. **Not to be exceeded more than once per year on average over 3 years.**
10. **Annual mean, averaged over 3 years.**
11. **Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years.**
12. **99th percentile of 1-hour daily maximum concentrations, averaged over 3 years.**

Key: ppm = parts per million; ppb = parts per billion; mg/m^3 = milligrams per cubic meter; µg/m^3 = micrograms per cubic meter

Attainment and General Conformity. The USEPA classifies the air quality in an air quality control region (AQCR), or in subareas of an AQCR, according to whether the concentrations of criteria pollutants in ambient air exceed the NAAQS. Areas within each AQCR are therefore designated as either "attainment," "nonattainment," "maintenance," or "unclassified" for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS; nonattainment indicates that criteria pollutant levels exceed the NAAQS; maintenance indicates that an area was previously designated nonattainment, but is now attainment; and an unclassified air quality designation by USEPA means that there is not enough information to appropriately classify an AQCR, so the area is considered attainment. USEPA has delegated the authority for ensuring compliance with the NAAQS in the CNMI to the CNMI DEQ.

The CNMI DEQ's air pollution control regulations can be found in the Federal Register (FR) (52 FR 43574). In accordance with the CAA, each state or commonwealth must develop a State Implementation Plan (SIP), which is a compilation of regulations, strategies, schedules, and enforcement actions designed to bring the state or commonwealth into compliance with all NAAQS.

The General Conformity Rule applies only to actions in nonattainment or maintenance areas. This rule requires that any Federal action meet the requirements of an existing SIP or Federal Implementation Plan. More specifically, CAA conformity is ensured when a Federal action does not cause a new violation of the NAAQS; contribute to an increase in the frequency or severity of violations of NAAQS; or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS.

Federal Prevention of Significant Deterioration. Federal Prevention of Significant Deterioration (PSD) regulations apply in attainment areas to major stationary sources (e.g., sources with the potential to emit 250 tons per year [tpy] of regulated pollutants) and significant modifications to major stationary sources (e.g., change that adds 0.6 tpy for Pb, or 10 tpy to 100 tpy depending on the regulated pollutant, to the facility's potential to emit). Additional PSD permitting thresholds apply to increases in stationary source greenhouse gas (GHG) emissions. PSD permitting can also apply to a proposed project if all three of the following conditions exist: (1) the proposed project is a modification with a net emissions increase to an existing PSD major source, and (2) the proposed project is within 10 kilometers (km) of national parks or wilderness areas (i.e., Class I Areas), and (3) regulated stationary source pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 $\mu g/m^3$ or more (40 CFR Part 52.21[b][23][iii]). A Class I area includes national parks larger than 6,000 acres, national wilderness areas and national memorial parks larger than 5,000 acres, and international parks. PSD regulations also define ambient air increments, limiting the allowable increases to any area's baseline air contaminant concentrations, based on the area's Class designation (40 CFR Part 52.21[c]).

There are no Class I areas identified in the CNMI. Therefore no Class I area is affected by the Proposed Action. Because the CNMI is not located within 10 kilometers of a Class I area, the existing facilities are not an existing PSD major source, and there are only minor stationary source emissions increases under the Proposed Action, PSD regulations do not apply and are not discussed further in this EIS (40 CFR Part 81 2012).

Title V Requirements. Title V of the CAA Amendments of 1990 requires states and local agencies to permit major stationary sources. A Title V major stationary source has the potential to emit regulated air pollutants and hazardous air pollutants (HAPs) at levels equal to or greater than Major Source Thresholds. Major Source Thresholds vary depending on the attainment status of an ACQR. The purpose of the permitting rule is to establish regulatory control over large, industrial-type activities and monitor their impact on air quality. Section 112 of the CAA lists HAPs and identifies stationary source categories that are subject to emissions control and/or work practice requirements.

***Greenhouse Gas Emissions*.** GHGs are gaseous emissions that trap heat in the atmosphere and occur from natural processes and human activities. The most common GHGs include carbon dioxide (CO_2), methane, and nitrous oxide. On September 22, 2009, the USEPA issued a final rule for mandatory GHG reporting from large GHG emissions sources in the United States. The purpose of the rule is to collect comprehensive and accurate data on CO_2 and other GHG emissions that can be used to inform future policy decisions. In general, the threshold for reporting is 25,000 metric tonnes or more of CO_2 equivalent emissions per year but excludes mobile source emissions. The White House CEQ issued draft NEPA guidance in February 2010 regarding the inclusion of analysis of GHG emissions in NEPA documents. The guidance indicates 25,000 metric tonnes of direct CO_2-equivalent GHG emissions can provide a useful, presumptive, threshold for discussion and disclosure of GHG emissions. However, the guidance does not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of GHG emissions that might warrant some description in the appropriate NEPA analysis involving direct emissions of GHGs. GHG emissions are also factors in PSD and Title V permitting and reporting, according to a USEPA rulemaking issued on June 3, 2010 (75 FR 31514). GHG emissions thresholds of significance for permitting of stationary sources are 75,000 tons CO_2 equivalent per year and 100,000 tons CO_2 equivalent per year under these permit programs.

3.2.2 Existing Conditions

3.2.2.1 Saipan

The Island of Saipan is located in the CNMI, which is within the USEPA Pacific Southwest Region 9 (USEPA 2011b). As defined in 40 CFR Part 81.354, due to lack of monitoring the CNMI is designated as attainment/unclassifiable for all criteria pollutants (USEPA 2012a). The USEPA has not designated an AQCR that encompasses the CNMI. In addition, no emissions inventories or monitoring data are available locally or regionally for the CNMI.

The U.S. Department of Energy, Energy Information Administration, does not provide estimates for gross CO_2 emissions for the CNMI.

The CNMI DEQ regulates air quality air permits for stationary air pollution sources in the CNMI. There are currently no USAF operations conducted at Saipan International Airport. The CNMI DEQ requires all air permit application submissions to include dispersion modeling (conservative or refined), which is evaluated thoroughly and compared against the national ambient air quality standards for compliance.

Over the course of a typical year, average daily wind speeds in Saipan range from 8 mph in September to 13 mph in February. Wind typically blows east to west or northeast to southwest (Weatherspark 2012a). Due to its location relative to an area of cyclonic development in the Pacific Ocean, Saipan is always under weather condition 4, which means that 40 mph winds are possible within 72 hours (Pacific RISA undated).

3.2.2.2 Tinian

The Island of Tinian is located in the CNMI, which is within the USEPA Pacific Southwest Region 9 (USEPA 2011b). As defined in 40 CFR Part 81.354, due to lack of monitoring the CNMI is designated as attainment/unclassifiable for all criteria pollutants (USEPA 2012a). The USEPA has not designated an AQCR that encompasses the CNMI. In addition, no emissions inventories or monitoring data are available locally or regionally for the CNMI.

The U.S. Department of Energy, Energy Information Administration, does not provide estimates for gross CO_2 emissions for the CNMI.

The CNMI DEQ regulates air quality air permits for stationary air pollution sources in the CNMI. The CNMI DEQ requires all air permit application submissions to include dispersion modeling (conservative or refined), which is evaluated thoroughly and compared against the NAAQS for compliance. There are currently no USAF operations conducted at Tinian International Airport.

Over the course of a typical year, average daily wind speeds in Tinian range from 7 mph in August to 15 mph in January. Wind typically blows east to west or northeast to southwest (Weatherspark 2012b). Due to its location relative to an area of cyclonic development in the Pacific Ocean, Tinian is always under weather condition 4, which means that 40 mph winds are possible within 72 hours (Pacific RISA undated).

3.3 Airspace and Airfield Environment

3.3.1 Differences Between the 2012 Draft EIS and Revised Draft EIS

Some information in the Airspace and Airfield Environment sections has changed since the release of the 2012 Draft EIS based on the Modified Alternatives presented in **Section 2**, and provides a more thorough and in-depth analysis of impacts. These changes include updates on information presented in the 2012Draft EIS and additional analysis beyond that done in the 2012 Draft EIS. The changed information relates to the assessment of impacts in **Section 4.1**. A summary of the changed information is presented below.

Saipan International Airport Runway. *Saipan International Airport has completed the* reconstruction and paving of runway 7/25. In the 2012 Draft EIS, runway 6/24 was considered an alternate runway while runway 7/25 was being repaved. However, since the complete of this project, references to runway 6/24 have been removed in the Revised Draft EIS. Per the Airport Layout Plan, former runway 6/24 is to be designated and used as a parallel taxiway.

3.3.2 Definition of Resource

The airports proposed for improvements to support divert capabilities require suitable airspace and airfields capable of handling required classes of aircraft during divert operations, joint military exercises, and humanitarian operations within the MIRC. The designated airfields should have the capabilities, services, and facilities to support the selected aircraft safely and the airspace to provide assurance of safe transition from and to the airfield.

The following airspace and airfield requirements are necessary to support the divert requirement in the western Pacific: airfield accessibility if access to Andersen AFB or other western Pacific airfields is limited or denied; ability to execute contingency operations to include humanitarian relief efforts; and ability to accommodate joint military exercises required to ensure readiness in accordance with service requirements under Title 10 U.S.C. The KC-135 aircraft has been identified as the design aircraft for cargo, tanker, or similar aircraft. PACAF has identified the following airspace and airfield criteria for the proposed location.

Class B Runway. A runway is considered a strip of level paved surface where planes can depart and land. PACAF requires a Class B runway to support KC-135 operations. Class B runways are designed for use by high-performance and large, heavy aircraft but can also be used by other aircraft requiring less stringent runway design standards. UFC 3-260-01, *Airfield and Heliport Planning and Design*, provides the design criteria for a Class B operational runway. The runway design would optimally be at least 150 feet wide with 25-foot-wide paved shoulders, for a total paved width of 200 feet; taxiways and taxi lanes connecting runways and other ground areas would optimally be at least 75 feet wide, with a minimum paved shoulder width of 25 feet, and an unpaved shoulder width of 25 feet, for a total paved and unpaved taxiway width of 125 feet. All proposed airport facilities would be constructed according to all DOD, USAF, and FAA criteria, as applicable, including FAA Advisory Circular 150/5300-13A.

Runway Obstacle Free Zone (OFZ). According to the September 2012 FAA Advisory Circular 150/5300-13A, the runway OFZ is the three-dimensional airspace along the runway and extended runway centerline that is required to be clear of obstacles for protection for aircraft landing or taking off from the runway and for missed approaches. The OFZ clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible visual NAVAIDS that need to be located in the OFZ because of their function. The runway OFZ extends 200 feet (60 meters) beyond each end of the runway. Its required width for runways serving large airplanes is 400 feet (122 meters).

Runway Safety Area. According to the September 2012 FAA Advisory Circular 150/5300-13A, an RSA is a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. The RSA is required to be 1,000 feet beyond the threshold of each runway end and 500 feet wide (250 feet each side of the runway centerline). The FAA defined areas function similar to areas defined in the UFC 3-260-01 as runway lateral clearance zone and runway overrun, however the FAA dimensions are different than the dimensions defined in the UFC.

Runway Protection Zone (RPZ). According to the September 2012 FAA Advisory Circular 150/5300-13A, the RPZ's function is to enhance the protection of people and property on the ground. This is achieved through airport owner control over RPZs. Such control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ. For large aircraft, the RPZ is a parallelogram shape approximately 1,700 feet long and 500 feet wide (width at end of runway) and 1,010 feet wide (outer width). The UFC does not have an exact equivalent, but the RPZ would include elements of the mandatory frangibility zone and runway overrun.

Object Free Area (OFA). The runway OFA is centered on the runway centerline. The runway OFA clearing standard requires clearing the OFA of aboveground objects protruding above the runway safety area edge elevation. Except where precluded by other clearing standards, it is acceptable to place objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes and to taxi and hold aircraft in the OFA. Objects non-essential for air navigation or aircraft ground maneuvering purposes must not to be placed in the OFA. This includes parked airplanes and agricultural operations. The OFA dimensions are based on the category of aircraft that use the runway.

Parking Apron. The parking apron, also known as a “ramp,” is the paved or hard-surfaced area around the hangers and terminal buildings of an airport used to park aircraft. The ramp is also used to unload or load passengers and cargo, and to refuel and maintain aircraft. UFC 3-260-01 provides operational requirements for parking aprons, which are determined by the length and width of the design aircraft, which for this EIS is the KC-135. The KC-135 is 136.2 feet long and 130.8 feet wide. The minimum wing-tip clearance requirement between each aircraft is 50 feet, primarily to support aircraft refueling operations. All proposed airport facilities would be constructed according to all DOD, USAF, and FAA criteria, as applicable, including FAA Advisory Circular 150/5300-13A.

Hours of Operation. Hours of operation refers to the open and closed schedule that the airfield determines it is available to accept aircraft desiring to land and depart the airfield on a routine basis. The USAF is equipped to support operations 24 hours per day, 365 days a year. PACAF might require the airfield to have the capability to support potential around-the-clock operations since exercises, divert operations, and humanitarian or contingency operations could occur at any time. Generally, training would be scheduled for the daylight hours at the proposed location while other activities would be defined by the national command authority based upon the global issues that USAF is called upon to support in the western Pacific.

Instrument Flight Rules (IFR) Capabilities. IFR capability means the airfield has the ability to assist aircraft arriving and departing in bad weather using instrumentation. These capabilities include NAVAIDS, airfield lighting, terminal instrument procedures (TERPS), and air traffic control (ATC) services. DOD pilots are IFR-qualified.

NAVAIDS are any system used in aid of air navigation, including lights, equipment for disseminating weather information, signaling, radio direction finding, radio or other electronic communication, and any other structure or mechanism having a similar purpose for guiding or controlling flight in the air or the landing or takeoff of aircraft (FAA undated). Examples of NAVAIDS are a Non-Directional Beacon (NDB) and an Instrument Landing System (ILS). An NDB is a radio beacon transmitting non-directional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his bearing to or from the radio beacon and "home" on or track to or from the station. An Instrument Landing System (ILS) provides the aircraft the lateral and longitudinal (localizer) and vertical electronic guidance necessary for an instrument landing. A precision instrument approach system normally consists of the following electronic components and visual aids: a localizer which provides course guidance to the runway, a glideslope which provides vertical guidance for aircraft during approach and landing, and approach lights (FAA 2012a). TERPS is a series of predetermined maneuvers for the orderly transfer of an aircraft under IFR to initiate an approach to an airport/airfield to a landing, or to a point from which a landing can be visually made. The two main classifications of approach procedures include precision and non-precision. Precision approaches use both lateral and vertical guidance. Non-precision approaches provide lateral course information only. The publications depicting instrument approach procedures are called terminal procedures, but are commonly referred to by pilots as approach plates. These documents graphically depict the specific procedure to be followed by a pilot for a particular type of approach to a given runway. They depict prescribed altitudes and headings to be flown; and obstacles, terrain, and potentially conflicting airspace (FAA 2002).

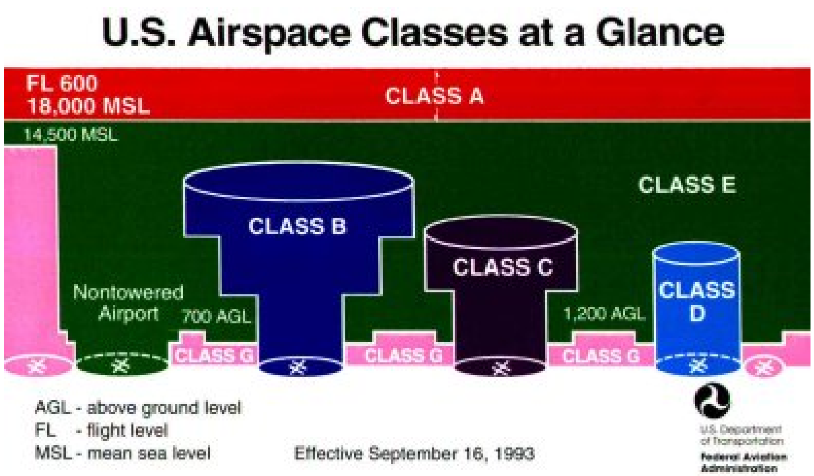
Airfield Obstructions. Airfield obstructions are objects that could affect navigable surfaces (approach/departure procedures), aircraft movement areas (runways, taxiways, and aprons), and NAVAIDS in the airfield vicinity. Airfield obstructions are considered hazards to flight safety for the purposes of FAA airfield certifications.

Cargo. Military aircraft can contain or be carrying cargo and other material, especially in support of humanitarian relief efforts. The cargo pad would be a designated space to support the loading and unloading of materials from aircraft; rather than blocking space on a parking apron or other area to conduct materials loading. The cargo pad would be used in support of divert operations, humanitarian assistance, and military exercises.

Aircraft Fueling. An aircraft fueling service is required to transfer flammable/combustible liquid fuel between a bulk storage system and the fuel tanks of an aircraft. At the proposed locations, the proposed method for transferring fuel is DOD's Hydrant Refueling System. This system provides a means to transfer safely a large volume of flammable fuel. Fuel trucks and a FORCE system would also be used to refuel aircraft in areas not served by the hydrant system.

ATC Services. ATC services are provided by an approved authority for the purpose of safely transiting aircraft to and from airfields, through controlled airspace, maneuvering aircraft within close proximity to each other and obstructions, and maintaining an orderly flow of air traffic (FAA 2012a). ATC services within the MIRC are provided by FAA Center Radar Approach Control (CERAP) and contract ground-control activities in Guam and Saipan. The MIRC contains more than 500,000 square miles (mi^2) of airspace used either exclusively by the military or by both civilian and commercial aircraft. Some of this airspace is SUA designated by FAA as Warning Area, Restricted Area, or ATCAA. Specifically, the MIRC contains 14,000 NM^2 of Warning Area; 28 NM^2 of Restricted Area; and 63,000 NM^2 of ATCAA. The remainder of the airspace within the MIRC is uncontrolled airspace but contains transoceanic routes, most of which are more than 30,000 feet above ground level (AGL). Controlled airspace within the MIRC includes Class A, B, C, D, and E airspace within which the FAA, military, or designated contractors provide

ATC services. The U.S. airspace system's classification scheme is designed to provide maximum pilot flexibility within acceptable levels of risk appropriate to the type of operation and traffic density within that class of airspace. In particular, the U.S. airspace system provides separation and active control in areas of dense or high-speed flight operations. All airspace classes except Class G require ATC clearance for IFR operations. For example, two-way communication with ATC must be established before entering Class D airspace. Aircraft can also operate in Class E airspace without contacting ATC provided the weather meets visual flight rules criteria. ATC will provide separation services between IFR aircraft in Class E airspace, but IFR and VFR aircraft within Class E airspace (when the weather meets VFR criterion) must provided their own separation through see and avoid procedures. Controlled airspace within the MIRC exists in the immediate vicinity of airports where aircraft used in commercial air transport flights are climbing out from or making an approach to the airport, at higher levels where air transport flights would cruise, and in areas where hazardous activities could occur including some military exercises and live fire air-to-ground bombing at the FDM range. All air activities must be approved by the controlling agency. **Figure 3.3-1** provides a graphic summary of U.S. airspace classifications.



Airspace Classes	Communications	Entry Requirements	Separation	Special VFR in Surface Area
A	Required	ATC clearance	All	N/A
B	Required	ATC clearance	All	Yes
C	Required	Two-way communications prior to entry	VFR/IFR	Yes
D	Required	Two-way communication prior to entry	Runway operations	Yes
E	Not required for VFR	None for VFR	None for VFR	Yes
G	Not required	None	None	N/A

Source: FAA 2012c

Figure 3.3-1. FAA Airspace Classification

3.3.3 Existing Conditions

3.3.3.1 Saipan

Saipan International Airport is a public airport located on the Island of Saipan within CNMI (see **Figure 3.3-2**) and is owned by the CPA. Though the islands of Rota, Tinian, and Saipan are all considered immigration ports-of-entry into the United States, Saipan is considered the gateway to the CNMI because of its infrastructure. Saipan International Airport is also designated as the commercial aviation divert airfield location for eastbound flights originating in western Asia and for all flights bound for Guam. The Saipan International Airport main terminal accommodates international passengers with six jetways that lead to immigration and customs processing. There are seven major airlines operating at Saipan International Airport: Delta Airlines, Asiana Airlines, Shanghai Airlines, Sichuan Airlines, China Eastern, United Airlines, and Fly Guam. Saipan International Airport has scheduled flights from cities in Russia, Japan, Korea, China, and Guam with the capability to increase direct flights to Republic of Palau, Federated States of Micronesia, Australia, and other Oceanic destinations. The commuter terminal at Saipan International Airport serves as a general aviation terminal and as the terminal for one feeder or air taxi service, Star Marianas. Freedom Air previously provided air taxi service to Tinian but currently only provides mail service to the island. Star Marianas services Tinian and Rota using single-engine aircraft and dual-engine, short take-off aircraft (CPA 2005).

Figure 3.3-2. Aerial View of Saipan International Airport

Saipan International Airport has one IFR runway, Runway (RWY) 07/25, which is 8,700 feet long, 150 feet wide, and has 25-foot-wide paved shoulders (see **Table 3.3-1**). The runway is designed to accommodate aircraft up to the size and dimensions of a Boeing 747-400. The lighting along the runway consists of a Medium Intensity Approach Lighting System With Runway Alignment Indicator Lights (MALSR), distance remaining markers, Runway End Indicator Lights (REIL), Visual Approach Slope Indicator (VASI) systems, a middle marker, a Non-Directional Beacon (NDB), a glideslope, a localizer, and high intensity runway edge lights (AFCEE/PACAF 2010).

Table 3.3-1. Saipan International Airport Capabilities

Runway	Length and Width	Lights	Hours of Operation	IFR Capability (NAVAIDS/TERPS)	Aircraft Fueling	ATC Services
RWY 7/25	8,700 feet x 150 feet	VASI, REILS on RWY 25 and MALSR in first 1,400 feet of RWY 07	Open 24/7	NAVAIDS: NDB and ILS with associated localizer. TERPS: ILS or LOC/DME RWY 07, RNAV (GPS) RWY 07, NDB/DME RWY 07, NDB RWY 07, RNAV (GPS) RWY 25, and NDB/DME RWY 25	AVGAS 100LL (blue), and Jet A-1+	FAA Air Traffic Control Tower and GUAM Air Route Traffic Control Center (ARTCC)

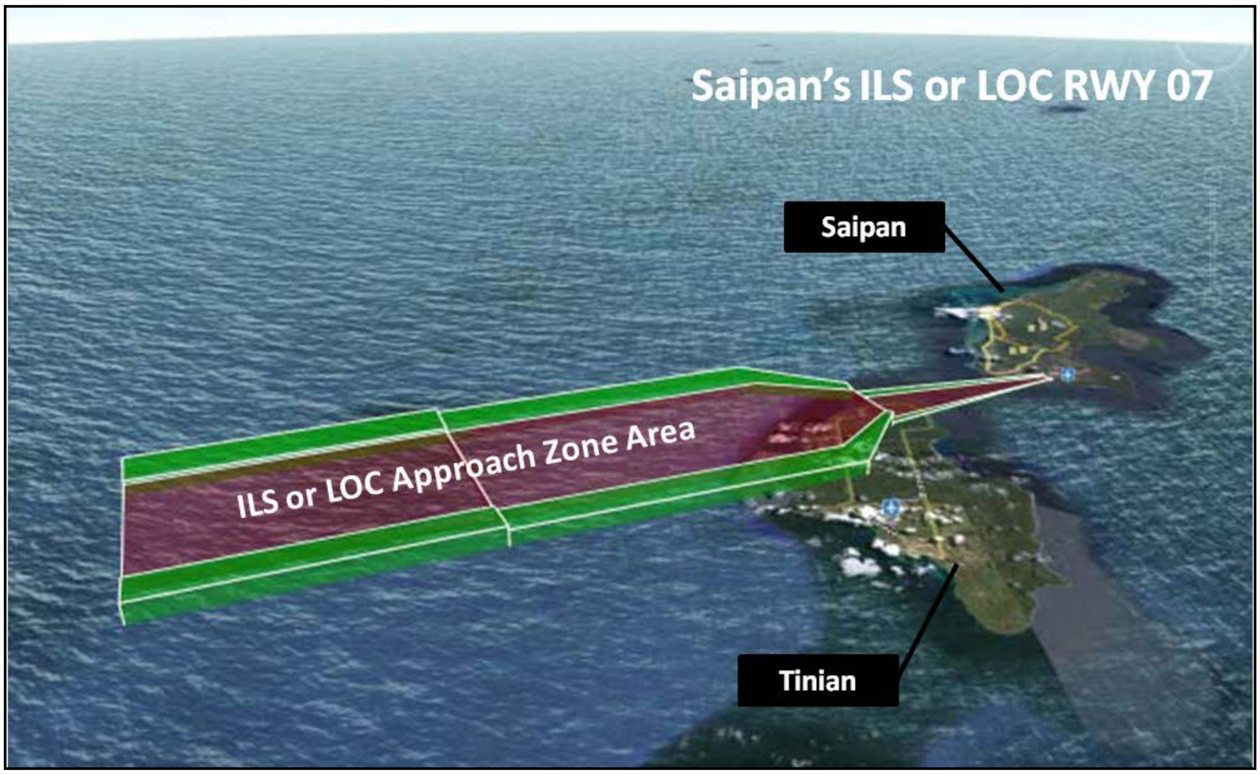
Source: HDR
Key: DME = Distance Measuring Equipment, LOC = Localizer, VASI = Visual Approach Slope Indicator

Saipan International Airport has eight taxiways located throughout the airfield. The taxiways are 70 feet wide with 35-foot wide shoulders. The design criteria for a Class B runway requires 75-foot-wide taxiways but only 25-foot-wide shoulders; therefore, there is ample room to improve the width of the taxiway onto the existing shoulders and meet UFC and FAA criteria for the taxiways without interference into other airport ground operations if required:, however, no proposals to widen the taxiways to UFC standards are included in this analysis. The existing Saipan International Airport 1,498,464-ft^2 parking apron has a commercial hydrant fueling system and parking capacity for six 747 size aircraft. The concrete hardstand portion of the parking apron is adjacent to the main terminal building. The asphalt portion of the existing parking apron is adjacent to the cargo-handling area and does not have adequate width for most large-frame aircraft.

RWY 07/25. Saipan has one runway, RWY 7/25 which is surfaced with asphalt. A structure parallel to runway 7/25, formerly called RWY 6/24 was used as a temporary runway that was 7,001 feet long and 100 feet wide but has been turned into a parallel taxiway. RWY 7/25 has four connecting taxiways on which aircraft can transit to and from the parking aprons. RWY 7/25 is also equipped with High Intensity Runway Edge lights (HIRL) that outline the edges of runways during periods of darkness or restricted visibility conditions. RWY 7 has a REILs, which consists of two lighting units located on the corners of that runway end that flash simultaneously. RWY 25 is also equipped with a MALSR, which consists of a combination of threshold lamps, and steady burning light bars and flashers. The MALSR provides visual information to pilots on runway alignment, height perception, roll guidance, and horizontal references for Category I Precision Approaches (FAA 2012a). RWY 7/25 has a VASI on each end, which is a system of lights arranged to provide visual descent guidance information during the approach to a runway (FAA 2012a).

Hours of Operation. RWY 7/25 is open 24 hours per day, 7 days per week.

Instrument Flight Rules Capabilities. There are two NAVAIDS located on Saipan International Airport's airfield, an NDB and an ILS. The following instrument approach procedures are published to Runway 7/25: ILS or Localizer (LOC)/Distance Measuring Equipment (DME) RWY 7 (see **Figure 3.3-3**); Area Navigation (RNAV) (GPS) RWY 7; NDB/DME RWY 7; NDB RWY 7; RNAV (GPS) RWY 25; and NDB/DME RWY 25. The published instrument approach procedures for Saipan International Airport are to be provided in the Aeronautical Study in **Appendix F**.



Source: HDR

Figure 3.3-3. Depiction of Saipan's ILS or LOC Approach Zone Area

Airfield Obstructions. There are no obstructions within Saipan International Airport's approach surfaces. According to Federal Aviation Regulation (FAR) Part 77.25(d), the approach surface is longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end.

Aircraft Fueling. All fueling and defueling of aircraft is conducted from fuel systems and fuel trucks approved by the CPA. Due to 14 CFR 139 requirements, only airlines, the fuel system operator, and fixed-based operators are authorized to perform into-plane fueling services. Fueling and refueling operators are responsible for compliance with all codes, regulations, and laws associated with the process. Saipan International Airport provides two types of aviation fuel Avgas 100LL (blue) and Jet A-1+. Avgas 100 (green) is still listed on the airport master record, but is not longer distributed. 100LL (blue) is gasoline fuel for reciprocating piston engine aircraft. Jet A-1 is a kerosene grade of fuel suitable for most turbine engine aircraft.

ATC Services. An FAA contractor (SERCO) operates the ATC Tower at Saipan International Airport. The ATC tower is responsible for the separation and efficient movement of aircraft and vehicles operating on the taxiways and runways of the airport itself, and the aircraft within Saipan's Class D airspace. Class D airspace is generally a 5-NM radius from the airport reference point, surface to 2,500 feet AGL. However, Class D airspace is also tailored to meet the needs of the airport. Saipan International Airport's Class D airspace encompasses a 4.3-NM radius, surface to 2,700 feet AGL as shown in **Figure 3.3-4**. Class D airspace only surrounds airports that have an operational control tower. Class E airspace becomes effective when the weather is below basic VFR conditions and extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace and is used by aircraft transiting to and from the terminal or en route environment. Saipan International Airport Class E Airspace extends upward from the surface within a 4.3-NM radius of Saipan International Airport and within 2.6 NMs on each side of the Saipan NDB 264 degree bearing, extending from the 4.3-NM radius to 7.4 NMs west of the Saipan NDB and within 1.8 NMs on each side of the Saipan NDB 248 degree radial, extending from the 4.3-NM radius to 7.4 NMs west of the Saipan NDB and within 1.8 NMs on each side of the Saipan NDB 068 degree radial, and extending from the 4.3-NM radius to 6.5 NMs east of Saipan International Airport (Federal Register Volume 74, Number 37, February 26, 2009). Pilots are required to establish and maintain two-way radio communications with Saipan International Airport's ATC tower prior to entering their Class D airspace.

The Island of Saipan is within FAA's Guam Center Air Route Traffic Control Center (ARTCC) Flight Information Region (FIR). Guam ARTCC is responsible for controlling aircraft en route to, transiting within, and arriving at or departing from the airports within their FIR. Guam ARTCC radar coverage and service begins at 3,500 feet above mean sea level (AMSL) above the airport. Guam ARTCC provides approach and departure service for Saipan International Airport. Between Saipan's Class D Airspace and Guam ARTCC FIR is Class G Airspace. Class G Airspace is uncontrolled airspace.

Commonwealth Ports Authority Services. Saipan International Airport has an ARFF department with approximately 35 personnel. The department manages two 24-hour shifts with approximately 15 personnel assigned to each shift, and an average of 8 personnel on duty per shift daily. A fire captain is in charge of each shift. The fire department has six vehicles: a Striker 1500, an Oshkosh 1500, an Oshkosh 3000, a Rapid Intervention Vehicle, a Tanker, and a Command Vehicle. Saipan's ARFF assets include a 500,000-gallon water tank on their premises. The CPA Police Department is responsible for airport security.

Commercial Aircraft Usage. A summary of commercial aircraft usage at Saipan International Airport is presented in **Table 3.3-2**. The combination of air carrier, air taxi, and general aviation operations compose the majority of air traffic using Saipan International Airport. Approximately 341 annual military operations occur at Saipan International Airport per year, or less than one percent of all annual operations according to available data.

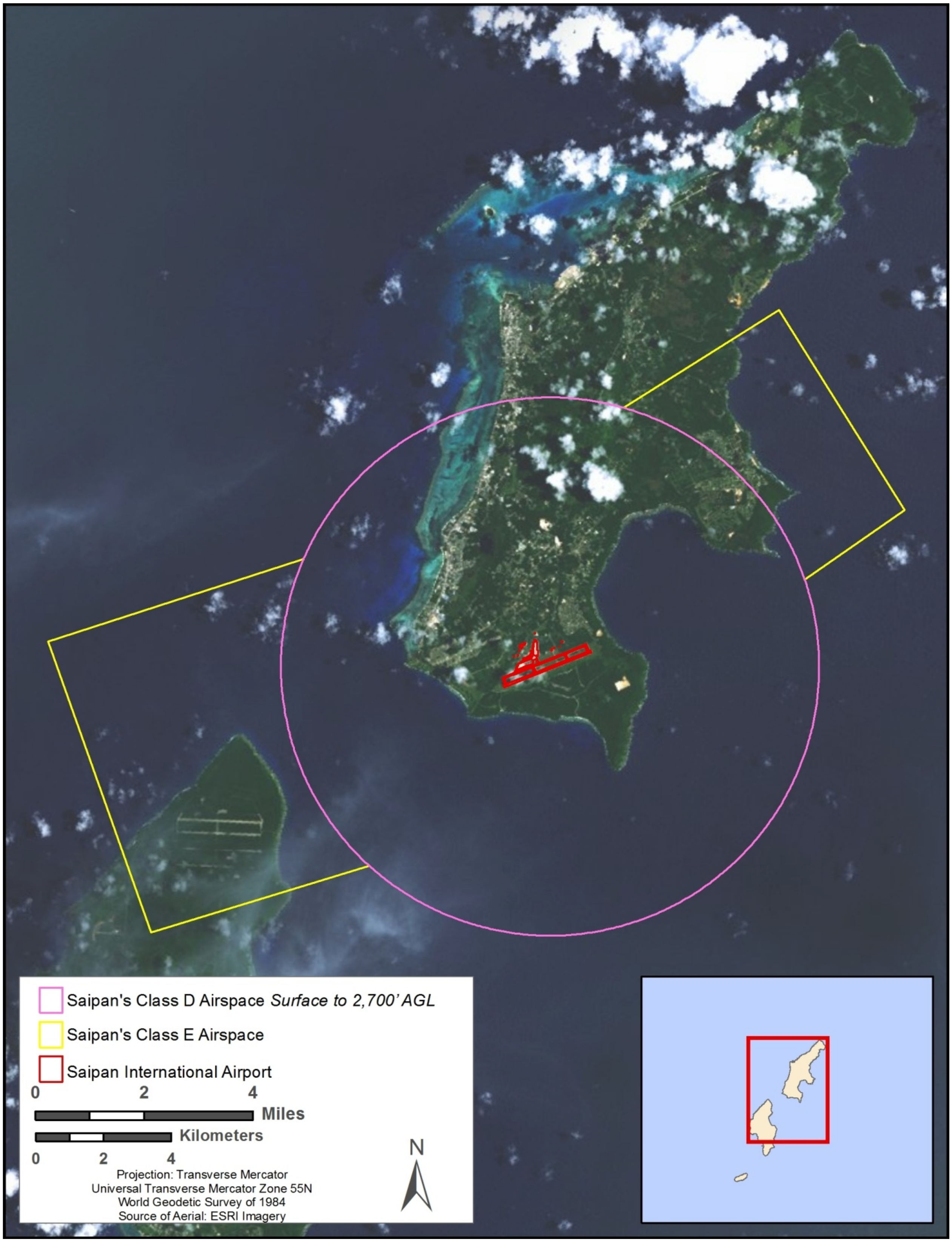


Figure 3.3-4. Saipan's Class D and E Extension Airspace

Table 3.3-2. Saipan International Airport Air Traffic Activity System: Standard Report from January through December 2014

Itinerant Air Carrier	Itinerant Air Taxi	Itinerant General Aviation	Itinerant Military	Local Civil	Local Military	Total Operations
5,095	37,984	26,540	324	18	17	69,9788

Source: FAA 2015

Bird/Wildlife Aircraft Strike Hazard (BASH) Plan. A BASH Plan is a DOD plan implemented on DOD installations that is used to help prevent or reduce bird strikes by aircraft. FAA-certified airports refer to this type of initiative and plan as a Wildlife Hazard Management Plan. The plan typically includes defining the nature and extent of wildlife hazards and procedures for implementing the plan. Plan implementation might require environmental controls and changes to bird/wildlife dispersal/removal techniques and operational procedures. Cooperative agreements for managing fish and wildlife resources require coordination with the CNMI Department of Lands and Natural Resources (DLNR) and Federal conservation agencies prior to implementation. The plan must identify local procedures and permits for the proper collection, handling, and disposal of wildlife carcasses and biological material discovered on the airfield and aircraft (USAF 2011).

According to the FAA Wildlife Strike Database, there have been twenty-nine strikes of birds at Saipan International Airport from January 2010 through July 2015 documented (FAA 2015). The species of birds that were struck by aircraft include Pacific golden plover (3 events); black noddy (3 events); cattle egret, (1 event). Other birds identified include "terns, sandpipers, curlews, phalaropes, and sparrows." It is important to note that not all bird/aircraft strikes are reported. None of the reported strikes resulted in damage to the aircraft. Given the number of movements at Saipan International Airport and the density of birds at the airfield, it is likely the strike frequency is substantially greater than the documented events. The majority of movements at Saipan International Airport are air taxis that primarily service the Island of Tinian with turboprop aircraft, larger jet aircraft, and general aviation constituting the remaining movements. Military aircraft occasionally use Saipan International Airport for training operations. A fairy tern was identified in one of the strikes; species identification was not reported for any other incident. Birds seen and subsequently struck involved individual birds or small flocks (two to ten individuals). Strikes occurred in various phases of the flight including takeoff, climb, approach, and landing roll, and in both clear and overcast/rainy weather conditions. **Section 4.3** analyzes BASH from the airspace/airfield safety perspective. Additional information regarding BASH impacts on wildlife can be found in **Sections 3.6** and **4.6**.

3.3.3.2 Tinian

Tinian International Airport is primarily used for inter-island passenger traffic between the islands of Saipan, Rota, and Guam. The airport is equipped for night operation and there are chartered night flights from Saipan and Guam that primarily service the Tinian Dynasty hotel and casino. Charter flights are available through Star Marianas (CPA 2005).

Runway 08/26. Tinian International Airport has one runway, RWY 8/26, which is 8,600 feet long and 150 feet wide (see **Table 3.3-3**). RWY 8/26 has two connecting taxiways, one at each end of the runway, and a parallel taxiway upon which aircraft can transit to and from the parking aprons. RWY 8/26 is equipped with Medium Intensity Runway Edge Lights (MIRL), which are used to outline the edges of the runway during periods of darkness or restricted visibility conditions. Tinian International Airport also uses a precision approach path indicator (PAPI) system on each runway end to provide visual descent information to pilots. This system is similar to the VASI but is installed in a single row of either two or four light units. In addition, Tinian International Airport uses a REIL on each runway end which consists of two light units flashing simultaneously (FAA 2012a).

Table 3.3-3. Tinian International Airport Capabilities

Runway	Length and Width	Lights	Hours of Operation	IFR Capability (NAVAIDS/TERPS)	Aircraft Fueling	ATC Services
RWY 8/26	8,600 feet x 150 feet	MIRL, REILS, and PAPIs	Open 0600–2000L. Prior Permission Required from CPA outside scheduled hours.	NAVAIDS: None. TERPS: RNAV (GPS) RWY 08, 10 RNAV (GPS) RWY 26, and NDB/DME A	None	Guam ARTCC

Source: HDR

Hours of Operations. RWY 08/26 is open between the hours of 0600 and 2000 Chamorro Standard Time (ChST). Aircraft operating outside of the designated hours require prior permission from the CPA.

Instrument Flight Rules Capabilities. Navigation guidance approaching Tinian International Airport is based on Saipan International Airport's NDB. The following instrument approach procedures are published to Runway 8/26: RNAV (GPS) RWY 8; 10 RNAV (GPS) RWY 26; and NDB/DME A. The published instrument approach procedures for Tinian International Airport are to be provided in the Aeronautical Study in **Appendix F**.

Airfield Obstructions. There is a 30-foot hill at the west end of the CPA property approximately 1,300 feet from the end of RWY 8 within the approach surface. Broadway Avenue, the main north-south thoroughfare on Tinian, is at the east end of CPA property approximately 1,500 feet from the end of the runway. According to FAR Part 77.25(d), the approach surface is longitudinally centered on the extended runway centerline and extends outward and upward from each end of the primary surface. The approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end. There are no obstructions within approach surfaces with the existing conditions at Tinian International Airport.

Air Traffic Control Services. The airspace surrounding Tinian International Airport is designated Class G Airspace. Class G Airspace is uncontrolled airspace when the weather is at or above visual meteorological conditions. It becomes Class E controlled airspace when the weather is below visual meteorological conditions to protect aircraft using the instrument approaches to the airport. Tinian International Airport operates without an ATC tower, Class D

Airspace, or ground control. Aircraft provide courtesy notification to CPA operations and ATC in Saipan for approach and departure clearance. Tinian International Airport is considered an uncontrolled airfield and pilots are responsible for their own separation, takeoffs, and landings. Uncontrolled airports use a universal communication system or Common Traffic Advisory Frequency that pilots can use to transmit their intentions to other aircraft using the airport (FAA 2010).

Like Saipan, the Island of Tinian is within FAA's Guam ARTCC FIR. Guam ARTCC is responsible for controlling aircraft en route to, transiting within, and arriving or departing airports within their FIR. FIR is a region of airspace with specific dimensions, in which air traffic control and flight information services are provided. Guam ARTCC radar coverage and service begins 3,500 feet AMSL above the Island of Tinian. Air taxi service to and from Saipan and Tinian generally remain under 3,000 feet so these aircraft are not able to receive ATC radar service.

Commonwealth Ports Authority Services. Tinian International Airport ARFF department consists of approximately 10 personnel. Personnel have dual roles as ARFF and port police officers. The ARFF Operations run three 8-hour shifts per day with an average of two to three personnel on duty per shift daily. A fire/police captain runs the daily operations for both law enforcement and ARFF protection for the airport. The fire department has three vehicles; an Oshkosh 1500, a Striker 1500, and a HAZMAT full-size pickup. Tinian's ARFF possesses a 60,000-gallon reserve water tank on their premises. Existing military operations require the military services to provide their own expeditionary airfield support requirements when using Tinian International Airport for exercises, including bulk water carriers/tankers, and crash-and-rescue equipment.

Commercial Aircraft Usage. Daily aircraft operations for Tinian International Airport are based on the number of air taxi flights, which are the only commercial aircraft that operate at Tinian International Airport. It was assumed that aircraft fly in and out of Tinian International Airport 365 days a year, resulting in an average of approximately 36 daily operations, based on FAA data (FAA 2011).

Bird/Wildlife Aircraft Strike Hazard Plan. A BASH Plan is a DOD plan implemented on DOD installations that is used to help prevent or reduce bird strikes by aircraft. FAA-certified airports refer to this type of initiative and plans as a Wildlife Hazard Management Plan. The plan typically includes defining the nature and extent of wildlife hazards and procedures for implementing the plan. Tinian International Airport does not have a Wildlife Hazard Management Plan but does have a Wildlife Hazard Assessment. The development of a Wildlife Hazard Management Plan from the Wildlife Hazard Assessment could require environmental controls and changes to bird/wildlife dispersal/removal techniques and operational procedures. Cooperative agreements for managing fish and wildlife resources require coordination with DLNR and Federal conservation agencies prior to implementation. The plan must identify local procedures and permits for the proper collection, handling, and disposal of wildlife carcasses and biological material discovered on the airfield and aircraft (USAF 2011). Three wildlife strikes at Tinian International Airport from January 2010 through July 2015 are documented in the FAA's National Wildlife Strike Database, as of August 2015. Two are of unknown birds of small to medium size, and one is for a domestic dog (FAA 2015). One of the incidents, involving a medium-sized bird, resulted in substantial damage. Additional information regarding BASH impacts on wildlife can be found in **Sections 3.6** and **4.6**.

Table 3.3-4 presents a brief summary of existing conditions at the two airfields analyzed in this EIS. These existing conditions are specific to USAF criteria that would be required if the Proposed Action were implemented.

Table 3.3-4. Existing Capabilities at Saipan International Airport/Tinian International Airport Existing Capabilities

PACAF Criteria	Saipan International Airport Alternative 1	Tinian International Airport Alternative 2
Parking Apron capable of supporting 12 KC-135s	Due to civilian commercial operations, there is not sufficient parking; apron construction needed to meet requirement	Parking Apron size cannot support requirement; construction required
Airfield capable to support 24/7 operations	Open 24 hours per day, 7 days per week	Airfield open 0600–2000 ChST daily, agreement with CPA required for operations outside this time
IFR Capable airfield to support operations in inclement weather	NDB and ILS on airfield; Instrument approach procedures minimums RWY 07 = 415 feet AGL – ½ mile minimum visibility, RWY 25 = 600 feet AGL – 1 1/8 mile minimum visibility	No NAVAIDS on airfield; Instrument approach procedures minimums RWY 08 = 660 feet AGL – 1 ¼ mile minimum visibility, RWY 26 = 760 feet AGL – 1 ½ mile minimum visibility
Airfield Obstructions	None within approach/departure corridor	30-foot hill located 1,300 feet from the end of RWY 08 within approach/departure corridor
Cargo Pad	Not on airfield, location must be determined or constructed	Not on airfield, location must be determined or constructed
Jet Aircraft Hydrant Refueling System	Jet aircraft fueling available via fuel trucks, construction required for Hydrant Refueling System	No jet aircraft fueling capability, construction required for Hydrant Refueling System
ATC service for maintaining an orderly flow of air traffic	Terminal service available via Saipan's ATC tower; IFR service available from 3,500 feet MSL and above	IFR service available from 3,500 feet MSL and above; procedural control below 3,500 feet above MSL; no terminal service available

Source: HDR

3.4 Geological Resources and Soils

3.4.1 Definition of Resource

Geological resources consist of the Earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of topography and physiography, geology, soils, and, where applicable, geologic hazards and paleontology.

Geology is the study of the Earth's composition and provides information on the structure and configuration of surface and subsurface features. Such information derives from field analysis based on observations of the surface and borings to identify subsurface composition.

Physiography and topography pertain to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features.

Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex type, slope, and physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

Prime farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981 and is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The soil qualities, growing season, and moisture supply are needed for a well-managed soil to produce a sustained high yield of crops in an economic manner. The land could be cropland, pasture, rangeland, or other land, but not urban built-up land or water.

Geologic hazards are defined as natural geologic events that can endanger human lives and threaten property. Examples of geologic hazards include earthquakes, volcanoes, landslides, rock falls, ground subsidence, and avalanches.

3.4.2 Existing Conditions

3.4.2.1 Saipan

Regional Geology

The Mariana Islands formed from a curved line of stratovolcanoes that rise up from the ocean floor. These stratovolcanoes were created by subduction of the Pacific Plate beneath the Philippine Plate, which caused magma to rise up beneath the ocean's crust to form volcanoes that compose the islands. The volcanic activity that created these islands occurred approximately 45 to 10 million years ago, and volcanism is still active in the Northern Mariana Islands (NPS 2006).

Geology of the islands in the CNMI is largely dependent on the degree of recent volcanism. The older (southern) islands, including Saipan and Tinian, are composed of a volcanic core covered by coralline limestone up to several hundred meters thick. When the original volcanoes subsided beneath the ocean surface, coral formations grew, which ultimately formed limestone caps. Limestone plateaus were elevated several hundred meters above sea level when the Philippine Plate was uplifted due to tectonic activity (DON 2010a, University of Hawai'i 2010). Volcanic activity now only occurs in the northern islands (DON 2010b).

Island of Saipan. Limestones and calcareous deposits compose about 90 percent of the surficial geology on Saipan, with volcanic rocks exposed on 10 percent of the land surface (from erosion and weathering). The limestones are considered to be very porous and with good permeability, which limits erosion potential (NPS 2006). Porosity (i.e., the volume of pore spaces in a rock) in the limestones is both primary and secondary. Primary porosity occurs during rock formation and is affected by the size, shape, and sorting of grains and particles.

Secondary porosity can occur during alteration of rock, such as dissolution of limestone with rainwater or faulting (DON 2010b).

Limestones in Saipan are also highly permeable, which indicates the connectivity of pores within the rock. A rock with a higher permeability has a greater ability to transmit the flow of groundwater. Volcanic rocks on Saipan typically are poorly sorted and have undergone secondary alteration that inhibits the flow of groundwater. However, faults transect the island in a north-northeast direction, complicating the sequence and porosities/permeabilities of rock units (DON 2010b).

Saipan International Airport. Surficial geology at the Saipan International Airport is mapped as Mariana limestone. The Mariana limestone is composed of clastic and reef limestone with argillaceous (clayey) rubbly sedimentary facies (USGS 2003). Based on the surficial geologic cross-section from Cloud et al. (1956) and modified by the USGS in 2003, the Mariana limestone is approximately 400 to 500 feet thick at Saipan International Airport and is underlain by approximately 100 feet of the Tagpochau limestone.

Bedrock geology underlying Saipan International Airport is primarily composed of bioclastic to reefy limestone and granular clastic limestone (PACAF undated b).

Port of Saipan. Surficial geology at the Port of Saipan is mapped as Pleistocene- and Holocene-aged emerged limey sand, beach, wetland, fill, and volcanic outwash materials. The truck routes would traverse through Mariana limestone, outwash deposits along the coast, and potentially pockets of Tagpochau or Tanapag limestones.

PHYSIOGRAPHY AND TOPOGRAPHY

Island of Saipan. The surface terrain of Saipan is dominated by horizontal to gently undulating limestone plateaus and terraces separated by steep scarps. Limestone cliffs of varying relief are separated intermittently by small beaches and coves along the eastern, southern, and northern coasts. The western coast is formed by a narrow coastal plain of limestone-derived, sand-sized particles. Toward the southern end of the coastal plain is a small brackish lake, Lake Susupe, surrounded by an extensive marshy area (Susupe Marsh). Seaward of the western coast are three shallow lagoons bordered by a barrier reef (USGS 2003).

Saipan International Airport. Saipan International Airport occurs within the low limestone platforms physiographic province. The low limestone platforms physiographic province is bordered on the east and west by the low terraced benches physiographic province.

At the site of the proposed development within the airfield, land is generally flat. To the east and west of the airstrip, terrain is rough and the land slopes steeply towards the sea. The land proposed for the fuel tanks has been graded, and some asphalt exists. An operational limestone quarry exists to the southeast of the airstrip.

Port of Saipan. The seaport lies in the western coastal plain physiographic province. The fuel truck route would traverse through the low limestone platforms, western coastal plain, and the central uplands (USGS 2003). The central uplands are bordered by low limestone platforms to the north and south and terraced benches to the east that form a terraced pattern downward to the sea. The limestone platforms are broad, flat areas at the southern, southeast-central, and northern margins of the central uplands (USGS 2003).

The western coastal plain is a narrow plain to the west of the central uplands, extending continuously from the beaches at San Roque in the north to Agingan Point in the south. The western coastal plain ranges in width from 650 feet to more than 1 mile. The western coastal plain rises gradually inland to elevations generally not more than 15 to 20 feet above sea level and is predominately composed of emerged calcium carbonate sands. Part of the coastal plain contains wetland areas, including the brackish-water Lake Susupe in the south (see **Section 3.5**). Three shallow lagoons and barrier reefs exist along the west coast, which separate the island from the Philippine Sea (USGS 2003).

SOILS

Island of Saipan. Soils on Saipan developed on volcanic rock tend to be poorly drained clays, while soils developed on limestone are usually shallow and highly porous. The Island of Saipan consists of six soil orders with Mollisols dominating the limestone plateaus and uplands. Mollisols are the dominant soil order on Saipan, and are soft, fertile soils rich in organic matter and nonacid cations (e.g., calcium, magnesium, potassium, and sodium) that develop under grassland landscapes. These soils are classified as very productive (University of Hawai'i 2010).

Saipan International Airport. Soils mapped within Saipan International Airport are Chinen-Urban Land and soils mapped to the southeast of the airstrip and the truck routes are Chinen-Takpochao.

Port of Saipan. Soils mapped within the seaport area and within the truck routes include the Shioya sandy loam and the Mesei Variant.

PRIME FARMLAND

There is no prime and unique farmland in the areas proposed for development. All soils underlying sites proposed for development activities are previously disturbed. **Table 3.4-1** lists the soils associated with the Proposed Action on Saipan. These soils are considered to be highly erodible (CNMI SWARS 2010).

Table 3.4-1. Characteristics of Soils Mapped on Saipan

Mapping Unit	Texture	Location	Characteristics
Chinen-Urban Land	Urban land	Airstrip development and adjacent to airstrip	Shallow, well-drained, nearly level, and Urban land
Chinen-Takpochao	Clay	Southeast of airstrip, truck routes	Very shallow and shallow, well-drained, nearly level to strongly sloping
Shioya	Loamy sand	Truck routes, port	Very deep, excessively drained, level to nearly level soils
Mesei Variant	Peat	Truck routes, port	Moderately deep, very poorly drained, level

Source: USDA NRCS 1988

Geologic Hazards

On Saipan, the geologic hazards that could endanger lives or threaten property include tsunamis, earthquakes, mass wasting, sinkholes, and volcanoes. Erosion is another hazard that occurs on Saipan (CNMI CRMO 2011).

Because of the prominence of tectonic activity, the coastal areas of Saipan are considered to be at a high risk for earthquakes, tsunamis, and volcanic eruptions. Seismic zones range from 0 (no chance of severe ground shaking) to 4 (10 percent chance of severe shaking in a 50-year interval). The CNMI is located within Seismic Zone 3 (CNMI 1988).

Earthquakes often precede volcanic eruptions in the Mariana Islands. Geologic hazards associated with earthquakes and volcanic activity includes the generation of tsunamis, ash and steam, ejection of pyroclastic materials, and lahars (ash flows). Only a few tsunamis have hit the CNMI in the past 200 years. It is suggested by Lander et al. (2002) that because of the nature of the subsidence occurring within the Mariana Trench (referred to as decoupled), earthquakes with a magnitude range of 6 to 7 occur on average once every 10 years and earthquakes greater than 7 occur about once in 100 years. Earthquakes ranging from 5 to 6 magnitude occur approximately 5 to 8 times a year within 250 miles of Guam (DON 2010b).

However, four earthquakes with a magnitude greater than 6.5 on the Richter scale have occurred within 400 miles of CNMI within the past 20 years, including a 7.8-magnitude earthquake in 1993, a 7.1-magnitude earthquake in 2002, a 7.4-magnitude earthquake in 2007, and a 6.9-magnitude earthquake in 2010 (DON 2010a, DON 2010b). These earthquakes tend to precipitate from the shallower, southern region of the Mariana Trench.

In concert with earthquakes is the potential for tsunami generation. Three tsunamis, in 1849, 1892, and 1993, have caused damage. Due to the eastern location of the Mariana Trench, it is suggested by Lander et al. (2002) that the impacts of a local tsunami would most likely occur on Guam's east coast. Therefore, it can be extrapolated that tsunamis would generally impact the east coast of Saipan as well. If a tsunami has a southern origin, it could impact both the west and east coast of Saipan (USGS 2010).

Earthquakes can also affect areas beyond their origin, by inducing mass wasting or landslides. Slope failures and landslides on Saipan do occur, predominantly in limestone terrain. Slope destabilization and landslides occur when a slope is destabilized, such as during a seismic event. When destabilization is followed by heavy rainfall, the destabilized slope is saturated, and mudflows can result (PACAF undated b).

Because landslide hazards are dependent upon local surficial geologic factors, vulnerability can be assessed by analyzing the local geology, slope angle, groundwater elevations, rainfall, and geologic structures such as faults and joints. The overall likelihood for landslides to occur on Saipan is generally low because the consolidated nature of the limestone and volcanic units reduce the potential for slope failure. Areas with steeper slopes are at a higher risk for landslides (PACAF undated b). The Proposed Action on Saipan would be in relatively flat areas and would not be anticipated to be impacted by landslides.

Another effect associated with seismic activity is liquefaction. Liquefaction can occur when water-saturated sandy soils are subjected to ground shaking. In order for liquefaction to occur, two conditions must exist: the soil must be susceptible (loose, water-saturated, sandy soil, typically between 0 and 30 feet below the ground surface) and ground shaking must be strong enough to cause susceptible soils to liquefy. When soil liquefies, it loses strength and behaves as a liquid and begins to flow. This can cause structures to sink into the ground or tilt, empty buried tanks to rise to the ground surface, slopes to fail, nearly level ground to shift laterally tens of feet (lateral spreading), surface to subside, and ground to crack. Consolidated limestone and volcanic geologic units are not usually susceptible to liquefaction.

3.4.2.2 Tinian

Regional Geology

Regional geology of Tinian is similar to that of Saipan (described in **Section 3.4.2.1**) as they are both in the southern Mariana Islands, and are both volcanic rock (tuff and breccias) covered in coralline and algal limestone. Limestone rock predominates, while volcanic rock is only exposed in two small, isolated areas due to extensive weathering (DON 2010a).

Island of Tinian. Tinian has more than 95 percent carbonate rocks at the surface (University of Guam 2002). There are two main limestone formations on Tinian: the Mariana and Tagpochau limestones (see **Section 3.4.2.1**). The Mariana limestone was deposited in Pliocene and Pleistocene time and covers approximately 83 percent of the Tinian's surface. The Mariana limestone is composed of seven rock types, differentiated by the type of carbonate material contained within the limestone, which is, in general, either derived from coralline or algal materials. Argillaceous (clayey) and massive limestones are also present within the Mariana limestone formation (USGS 2003).

The Tagpochau limestone covers approximately 16 percent of Tinian's surface and is composed of three rock types: detritus (majority of the formation), clays, and sands, and is primarily biogenic calcium carbonate fragments and calcite cement derived from corals.

In the coastal regions, these deposits are overlain by Holocene limestone, developing sands and gravels, and reefs. Most of the shoreline on Tinian consists of limestone cliffs with sea-level caverns, cuts, notches, and slumped borders. Beach deposits are composed of medium- to coarse-grained calcareous sands, gravel, and rubble interspersed in exposed limestone. Reef development occurs primarily on the western coast, with minor fringing or apron reef development on the northern, eastern, and southern coasts (DON 2010a). There are no permanent streams for surface drainage on Tinian because all water evaporates or percolates through the highly permeable limestone. Water resources on Tinian are discussed in detail in **Section 3.5**.

The presence of limestone indicates that karst topography could be present. Limestone is a soluble rock primarily composed of calcium carbonate; on Tinian, the source of calcium carbonate is primarily from coral reef. Karst is a distinctive topography formed by dissolution of underlying soluble rocks by surface water or groundwater. Karst is characterized by caves, sinkholes, and subsurface drainage. These dissolution features are created when rainwater, which is slightly acidic, dissolves carbonate rocks, such as limestone. Although karst topography does exist on Tinian, no karst features were detected during site investigations for the Proposed Action on Tinian or were noted during geologic investigations by Gingerich and Yeatts in 2000 (University of Guam 2002).

Tinian International Airport. Geology at Tinian International Airport consists of the Mariana limestone (DON 2010b). In some areas, soils are very thin and a very hard limestone outcrops or is close to the ground surface.

Physiography and Topography

Island of Tinian. Tinian is composed of five limestone plateaus at varying elevations, separated by steep slopes and escarpments.

Tinian International Airport. Tinian International Airport occurs within the Central Plateau physiographic province. The Central Plateau, found within the central portion of the island, is isolated by steep slopes and scarps associated with north-south trending faults.

At Tinian International Airport, topography is relatively flat, and elevations range from approximately 61 to 100 feet above sea level (DON 2010b, USGS 1999). Elevation surrounding the airstrip drops towards the sea to the east and west. A depression exists between the taxiway and airstrip west of the terminal/apron area. The area is believed to have been excavated and used as a borrow pit.

Port of Tinian. The fuel truck route would occur within the Central Plateau and Median Valley physiographic provinces. Work at the Port of Tinian would occur in the Median Valley. In the south- and east-central regions, the Median Valley is a broad depression with little relief that is bounded by faults (University of Guam 2002).

Soils

Soil profiles on limestone regions are shallow and highly porous, and soils are similar to those described in **Section 3.4.2.1** for Saipan, as the soils formed under similar conditions (University of Guam 2002).

Island of Tinian. In addition to the Chinen-Urban Land, Chinen-Takpochao and Shioya described for Saipan, Tinian also has Chinen, Chinen-Rock, and Dandan-Saipan. The Dandan-Saipan soil is a moderately deep to very deep clayey loam that is slightly acidic (McCraken undated).

Tinian International Airport. Soils mapped at the airport are Chinen, Chinen-Rock, Dandan-Saipan, and Chinen-Urban Land.

Port of Tinian. Soils mapped within the port area are Shioya loamy sands, and soils mapped within the truck routes include the Shioya sandy loam and the Chinen-Takpochao (described in **Section 3.4.2.1**).

All soils within areas to be developed by the Proposed Action are previously disturbed and considered to be moderately to highly erodible (CNMI SWARS 2010). Soils at the sites of the Proposed Action on Tinian are shown in **Table 3.4-2**.

Table 3.4-2. Characteristics of Soils Mapped on Tinian

Mapping Unit	Texture	Location	Characteristics
Chinen-Takpochao	Clay	Truck routes	Very shallow to shallow, well-drained, nearly level to steeply sloping
Chinen	Clay Loam, Sandy Loam	Tinian South	
Chinen-Rock	Rock	Tinian South	
Shioya	Loamy sand	Truck routes, port	Very deep, excessively drained, level to nearly level soils
Dandan-Saipan-	Loam	Tinian North	Moderately deep and very deep, well-drained, nearly level to gently sloping
Chinen-Urban Land	Urban land	Tinian North	Shallow, well-drained, nearly level, and Urban land

Sources: USDA NRCS 2015, DON 2010b

Prime Farmland

Soils are shallow in many places, and, as a result, productive areas for farming are limited (CNMI SWARS 2010). Erosion can be a problem in limestone areas, especially near roads or on recently cleared lands (CNMI SWARS 2010).

No prime farmland soils exist at the sites of the Proposed Action on Tinian (USDA NRCS 1989).

Geologic Hazards

Tinian has similar geologic hazards as Saipan (see **Section 3.4.2.1**), with the potential for earthquake activity, impacts from volcanoes, and tsunamis. Tinian is susceptible to tsunamis because of seismic activity associated with the active volcanoes to the north and the Marianas Trench to the east. The band of coral reef that surrounds Tinian provides protection from tsunamis, and the steep slope of the ocean floor surrounding the island lowers the risk of significant wave run-up.

Tinian International Airport is listed as an evacuation safe zone as designated by the CNMI Emergency Management Office (CNMI HS&EM 2012). The Pacific Tsunami Warning Center considers the tsunami evacuation safety zone to be above 30 feet above sea level and more than 100 feet inland. In addition, the National Weather Service has recognized Tinian as “Tsunami Ready” and “Storm Ready” because it has a 24-hour warning point and emergency operations center, monitors local weather and ocean conditions, has developed multiple methods to receive tsunami and severe warnings to alert the public quickly, has developed a hazard plan, and promotes public readiness through education (PACAF undated b).

The potential for landslides and liquefaction to occur within the site of the Proposed Action is considered to be low because rock is consolidated and no steep slopes are present.

3.5 Water Resources

3.5.1 Definition of Resource

Water resources are natural and man-made sources of water that are available for use by and for the benefit of humans and the environment. Hydrology encompasses the occurrence, distribution, movement, and properties of the Earth's waters through the processes of evapotranspiration, atmospheric transport, precipitation, surface runoff and flow, and subsurface flow. Hydrology results primarily from temperature and total precipitation that determine evapotranspiration rates, topography that determines rate and direction of surface flow, and soil and geologic properties that determine rate of subsurface flow and recharge to the groundwater reservoir. Water resources relevant to Saipan and Tinian include groundwater, surface water, and floodplains.

Groundwater. Groundwater is water that exists in the pore spaces and fractures in rock and sediment beneath the Earth's surface within the zone of saturation. Groundwater features include depth from the surface, aquifer or well capacity, quality, recharge rate, and surrounding geologic formations. Most of the available fresh groundwater on small oceanic islands is in a freshwater-saltwater coastal aquifer system where a lens-shaped body of fresh and brackish groundwater floats on denser salt water within the island (i.e., beneath the ground's surface). Fresh water is separated from salt water by a transition zone in which salinity grades from fresh water to salt water. Rainfall infiltrates and recharges the aquifer, where frictional resistance to flow causes the water to accumulate and form a lens. Fresh water flows by gravity to the shore, where it discharges as diffuse seepage and as springflow at shoreline and submarine springs. On small islands such as Saipan and Tinian, mixing in the transition zone results mainly from tidal fluctuations superimposed on the gravity-driven flow of fresh water toward the shore. Rainfall (i.e., recharge) is episodic and seasonal, causing the lens volume to fluctuate. The lens discharges continuously throughout the year, but shrinks during dry periods when recharge diminishes or ceases. The lens expands during high recharge episodes, which commonly occur within a definable wet season.

The Safe Drinking Water Act (SDWA) of 1974 establishes a Federal program to monitor and increase the safety of all commercially and publicly supplied drinking water. The 1986 amendments to the SDWA required the USEPA to establish maximum contaminant levels, maximum contaminant level goals, and best available technology treatment techniques for organic, inorganic, radioactive, and microbial contaminants; and turbidity in drinking water sources. The Federal Sole Source Aquifer regulations authorized under the SDWA protect aquifers that are critical to water supply.

Surface Water. Surface water resources generally consist of streams, rivers, lakes, and wetlands. The CWA of 1977 is administered by the USEPA and sets the basic structure for regulating discharges of pollutants into U.S. waters. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The CWA requires the USEPA to establish water quality standards for specified contaminants in surface waters. Section 402 of the CWA forbids the discharge of pollutants from a point source into navigable waters without an NPDES permit. The NPDES storm water program requires construction site operators engaged in clearing, grading, and excavating activities that disturb 1 acre or more to obtain coverage under an NPDES permit for their storm water discharges. NPDES permits in the CNMI are issued by USEPA Region 9. Where the USEPA is the permitting authority, construction storm water discharges are almost all permitted under the USEPA's Construction General Permit (CGP). The CGP requires compliance with effluent limits and other permit requirements, such as the development of a site-specific Storm Water Pollution Prevention Plan (SWPPP). Construction or demolition that requires permit coverage requires preparation of an NOI certifying that the permit's eligibility conditions have been met and all activities will comply with the permit's effluent limits and other requirements.

The USEPA published the technology-based Final Effluent Limitations Guidelines (ELGs) and New Performance Standards for the Construction and Development point sources, known as the "Construction and Development (C&D) Rule," on December 1, 2009, to control the discharge of pollutants from construction sites. The C&D Rule became effective on February 1, 2010, and requires construction site operators to meet erosion and sediment control, pollution prevention, and stabilization requirements. The C&D Rule also included a numeric turbidity limit for certain larger construction sites, but effective January 4, 2011, the USEPA has suspended the numeric limitation for further evaluation. Therefore, the numeric turbidity limitation and monitoring requirements do not currently have to be incorporated into construction permits. The USEPA currently regulates large and small (greater than 1 acre) construction activities through the final 2012 CGP (February 16, 2012). The 2012 CGP includes a number of modifications to the 2008 CGP, many of which are necessary to implement the new ELGs and New Source Performance Standards for C&D point sources. Permittees must select, install, and maintain effective erosion- and sedimentation-control measures as identified and as necessary to comply with the 2012 CGP, including the following:

- Minimize exposure of soils and control discharges from stockpiled sediment or soil
- Design storm water controls according to the amount, frequency, intensity, and duration of precipitation; the nature of storm water runoff and run-on at the site; and the range of soil particle sizes expected to be present on the site
- Direct discharges from storm water controls to vegetated areas to increase sediment removal and maximize storm water infiltration
- Complete installation of storm water controls by the time each phase of earth-disturbance has begun, unless infeasible
- Install sediment controls (e.g., sediment basins, sediment traps, silt fences, and vegetative buffer strips) along the perimeter of the construction site
- Regularly inspect and maintain all erosion and sediment controls
- Prevent discharges of petroleum products; soaps, solvents, or detergents used in equipment washing; or other toxic or hazardous substances from a spill or other release
- Minimize sediment track-out and implement dust controls
- Minimize disturbance of steep slopes
- Preserve topsoil

- Minimize soil compaction
- Design storm water conveyance channels to avoid unstabilized areas on the site and to reduce erosion; minimize erosion of channels and their embankments, outlets, and downstream waters.

Section 404 of the CWA establishes a Federal program to regulate the discharge of dredge and fill material into waters of the United States. Section 404 permits are issued by the USACE. Waters of the United States include interstate and intrastate lakes, rivers, streams, and wetlands that are used for commerce, recreation, industry, sources of fish, and other purposes. Each agency should consider the impact on water quality from actions such as the discharge of dredge or fill material into U.S. waters from construction, or the discharge of pollutants as a result of facility operation.

The CNMI DEQ is the administrative authority for CWA Section 401 Water Quality Certifications required for validation of CWA Section 402 NPDES permits. The CNMI administers a CWA Section 401 Water Quality Certification Program through provisions contained within the CNMI Water Quality Standards. Section 401 certification by the CNMI is required for every Federal permit that could result in a discharge of pollutants to waters of the CNMI, including the USEPA CGP.

Section 303(d) of the CWA requires states, territories, or commonwealths and the USEPA to identify waters not meeting state water quality standards and to develop Total Maximum Daily Loads (TMDLs). A TMDL is the maximum amount of a pollutant that a waterbody can receive and still be in compliance with state water quality standards. After determining TMDLs for impaired waters, states, territories, and commonwealths are required to identify all point and nonpoint sources of pollution in a watershed that are contributing to the impairment and to develop an implementation plan that will allocate reductions to each source to meet the state, territory, or commonwealth standards. Impaired (Category 5) waters are defined as those waters where available data or information indicate that at least one designated use (e.g., recreation, support of aquatic life and coral reef conservation, fishing and the consumption of fish and shellfish, aesthetic enjoyment, and as potable water in the case of fresh water) is not being supported or is threatened, and a TMDL is needed.

Section 438 of the Energy Independence and Security Act (EISA) (42 U.S.C. 17094) established new storm water design requirements for Federal construction projects that disturb a footprint greater than 5,000 ft^2 of land. The project footprint consists of all horizontal hard surfaces and disturbed areas associated with the project development, including both building area and pavements such as roads, parking lots, and sidewalks. These requirements do not apply to resurfacing of existing pavements. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology will be modeled or calculated using recognized tools and must include site-specific factors such as soil type, ground cover, and ground slope. Site design will incorporate storm water retention and reuse technologies such as bioretention areas, permeable pavements, cisterns/recycling, and green roofs to the maximum extent technically feasible. Post-construction analyses will be conducted to evaluate the effectiveness of the as-built storm water-reduction features. As stated in a January 2010 DOD memorandum, these regulations will be incorporated into applicable DOD UFC (DOD 2010b). Additional guidance is provided in the USEPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act*.

The CNMI DEQ has developed its own Water Quality Standards, which are promulgated in accordance with the Federal CWA, the Commonwealth Environmental Protection Act of 1982 (2 Commonwealth Code [CMC] §§3101 to 3134, P.L. 3-23), the Commonwealth Environmental Amendments Act of 1999 (P.L. 11-103), and the Commonwealth Groundwater Management and Protection Act of 1988 (2 CMC §§3311 to 3333, P.L. 6-12). The purpose of these authorities is to establish standards for water quality for all CNMI waters and groundwater to protect their use and value for propagation of fish and wildlife, recreation, public water supply use, and commerce.

The CNMI Water Quality Standards define two classes (AA and A) of marine water uses. The majority of the coastal marine waters are Class AA, meaning that these waters should remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-related source or actions. The uses protected in these waters are the support and propagation of marine life, conservation of coral reefs and wilderness areas, oceanographic research, and aesthetic enjoyment and compatible recreation inclusive of whole body contact and related activities. Class A waters are protected for their recreational use and aesthetic enjoyment; other uses are allowed as long as they are compatible with the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water is of a limited body contact nature.

Per the Northern Mariana Islands Administrative Code Chapter 65-30, Earthmoving and Erosion Control Regulations, no person shall commence or continue grading, filling, or vegetation-clearing activities without first obtaining a permit from the CNMI DEQ. All permits expire in one year unless otherwise specified in the permit; and permits are not granted for longer than a 2-year period. Extensions may be granted 30 days prior to permit expiration. The application for this permit must include an erosion-and-sediment-control plan (ESCP) that meets the following requirements:

- Plans must be based on the 25-year, 24-hour duration storm event.
- Conveyance structures must be based on the 25-year, 24-hour duration storm event peak discharge.
- Sediment-control structures (e.g., ponding basins, sediment basins/traps) must be designed for the 25-year, 24-hour storm event. Designs can be based on either (1) minimum of 24-hour detention time including sediment storage volume or (2) sediment removal rate of not less than 75 percent.
- All earth-moving activities shall cease during storms. Extra measures and precautions must be taken to eliminate erosion during these periods.
- Extra measures and precautions must be taken to eliminate erosion during a 3-week period surrounding the annual coral spawning event (typically in June or July). These extra measures might include ceasing earth-moving activities in areas that are either

highly erodible or near the coast. The actual date shall be determined by the Chief of CNMI DEQ.

- A slope stabilization and revegetation plan.
- A storm water-control plan for the project after construction is complete.

The CNMI DEQ in coordination with the Guam Environmental Protection Agency (GEPA) developed a guidance manual in 2006 to assist the local engineering and development communities and local government agencies of Guam and CNMI in developing and implementing storm water- and erosion-control plans that adequately address nonpoint source pollution through the use of currently accepted Best Management Practices (BMPs). Volume I of the *Stormwater Management Manual* provides designers a general overview of local storm water issues, lists the storm water performance standards for the islands, and describes how to size and design BMPs to comply with those standards. Volume II of the Manual contains more detailed information on how to select, site, and construct BMP specifications (CNMI DEQ and GEPA 2006).

Floodplains. Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters. Floodplains are subject to periodic or infrequent inundation from rainfall. Risk of flooding typically depends on local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which defines the 100-year floodplain as an area that has a 1 percent chance of inundation by a flood event in a given year. Certain facilities inherently pose too great a risk to be in a 100-year floodplain, such as hospitals, schools, or storage buildings for irreplaceable records. Federal, state, and local regulations often limit floodplain development to passive uses such as recreational and preservation activities to reduce the risks to human health and safety.

EO 11988, *Floodplain Management* (May 24, 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in floodplains. An agency may locate a facility in a floodplain if the head of the agency finds there is no practicable alternative. If it is found there is no practicable alternative, the agency must minimize potential harm to the floodplain, and circulate a notice explaining why the action is to be located in the floodplain prior to taking action. New construction in a floodplain must apply accepted flood proofing and flood protection to include elevating structures above the base flood level rather than filling in land. EO13690 (January 30,2015) amends EO 11988 and provides additional approaches agencies can use to establish the flood elevation and hazard area in their decisionmaking, climate-informed science approach.

3.5.2 Existing Conditions

3.5.2.1 Saipan

Groundwater. Groundwater is the major source of water on Saipan. All fresh groundwater on Saipan originates as rainfall (USGS 2003). Saipan receives an average of 80 inches of rainfall per year and has distinctive wet and dry seasons. The months of July through November (the wet season) receive approximately 67 percent (53 inches) of the annual rainfall; January through May (the dry season) receive 21 percent (17 inches); and December and June (transitional months) receive 12 percent (10 inches) (CNMI DEQ and GEPA 2006). A significant portion of rainfall on Saipan is lost to evapotranspiration and a minor component is lost to surface runoff. The remaining portion is available as recharge to groundwater (CNMI DEQ and GEPA 2006).

Saipan has an average groundwater recharge rate of 23 inches per year, which is approximately 28 percent of the annual rainfall of 80 inches (USGS 2003). The position of the volcanic basement rocks on Saipan relative to sea level and the overlying limestone affects the occurrence of groundwater. Most of the available fresh groundwater in Saipan is within the Mariana Limestone Aquifer, which is a freshwater-saltwater coastal aquifer system where a lens-shaped body of fresh and brackish groundwater floats on denser salt water within limestone extending from the land surface to some distance below sea level. Rainwater infiltrates the highly permeable limestone and maintains a freshwater body within the island (i.e., beneath the ground's surface).

Some fraction of the fresh groundwater can be withdrawn by wells; however, fresh groundwater quality and availability can be affected by overpumping or sustained periods of dry weather (USGS 2003). The thickness of the freshwater lens in the coastal aquifer system on Saipan ranges from approximately 20 to 60 feet. Vertical sections through central and southern Saipan show that the freshwater lens is thicker towards the interior of the island and thins considerably toward the coasts (USGS 2003).

The elevations of the top of the water table beneath Saipan International Airport range from approximately 2 to 3 feet above sea level and the slope of the water table is nearly flat (USGS 2003). Groundwater flows from the central uplands, where the water table elevation is highest, towards the coast, where the water table elevation is lowest. Groundwater generally flows south across Saipan International Airport; however, a large water table depression at the Saipan International Airport well field indicates that groundwater withdrawal is causing groundwater flow patterns to change near some production wells on Saipan International Airport. Drawdown from pumping diverts some of the oceanward groundwater flow to these wells (USGS 2003). The Saipan International Airport area (Isley Field) has 35 pumped wells (USGS 2003). Groundwater management zones have been designated on the basis of groundwater quality for Saipan. Saipan International Airport is within a Class I groundwater management zone, which is an area deemed as having the highest quality, most valuable, and most vulnerable groundwater resources (CNMI DEQ and GEPA 2006).

The proposed seaport fuel tank area is located in a Class III groundwater management zone (lowest water quality), and the fuel and personnel transport routes are located in Class II and Class III groundwater management zones.

Surface Water. Surface water on Saipan includes canyon drainages throughout the island. No natural streams occur on or within the vicinity of Saipan International Airport (CNMI DEQ and GEPA 2006). All surface water features at Saipan International Airport are man-made and consist of storm water drainage ditches and swales and a large (approximately 100,000-ft^2) storm water retention basin that occurs approximately 1,000 feet north of the runway. The catchment water is mixed with well water from the wells at Saipan International Airport and is used as an emergency backup water supply during power outages at Saipan International Airport.

Storm water sheet flow conditions that occur at Saipan International Airport during rainfall events result in ponding in some areas. However, the standing water percolates quickly following the cessation of runoff. The sloping perimeter areas of the airport property direct sheet flow off site to the south, east, and west. Storm water drainage ditches and swales and small pipe culverts are used, which empty into the 20-million-gallon storm water retention basin to the north of the runway. Most storm water is directed away from the airport runway and airfield or naturally percolates into the porous limestone. However, localized flooding is reported to occur during periods of heavy rains within the developed areas, particularly around the terminal parking lot (CPA 2002).

No natural streams occur on or within the vicinity of the proposed seaport fuel site (CNMI DEQ and GEPA 2006). A man-made, shallow drainage ditch occurs along the northern side of the proposed fuel site.

Flood Zones. None of the proposed construction areas at Saipan International Airport or the proposed Port of Saipan fuel site occur within flood zones.

Nearshore Waters. Coastal waters surrounding Saipan serve as the ultimate discharge area for all surface runoff from the island. Coastal water quality issues include eutrophication, damage to coral reefs (including sedimentation), and bacterial/viral pollution of swimming beaches. According to the CWA 305(b) reports for CNMI, coastal waters are most significantly impacted by sedimentation and nutrients (CNMI DEQ 2010a). Sediments cause physical damage including decreased water clarity and smothering of coral and other marine resources. Nutrients (typically nitrogen for coastal environments) cause eutrophication, which results in excessive algae and weed growth, and depleted dissolved oxygen levels that support aquatic life.

Saipan International Airport spans across two watersheds. The majority of Saipan International Airport occurs in the Isley Watershed, which drains southwest and south into the Philippine Sea. The easternmost portion of Saipan International Airport occurs within the Dandan Watershed, which drains east into the Pacific Ocean (CNMI DEQ 2010a).

Class A waters include the coastal waters of the Isley (West) watershed in the area centered on the outfall for the Agingan Point Wastewater Treatment Plant. These Class A waters are downgradient of the western portion of Saipan International Airport. All other marine waters downgradient of Saipan International Airport are classified as Class AA waters (CNMI DEQ 2010a).

The Port of Saipan occurs within the West Takpochau Watershed, which drains northwest into the Philippine Sea (CNMI DEQ 2010a). The coastal waters of the Isley Watershed are impaired (Category 5) due to enterococci (bacteria) and orthophosphate (nutrient) pollution, the sources of which include a municipal point source (Agingan Point Wastewater Treatment Plant outfall), sedimentation, and other unknown sources. The Dandan Watershed does not have available water quality monitoring data of any type. The coastal waters of the West Takpochau (North)

Watershed are impaired (Category 5) due to low dissolved oxygen levels, enterococci, biocriteria, and orthophosphate pollution caused by sanitary sewer overflows, urban runoff, sedimentation, landfills (the Puerto Rico Dump), and a municipal point source (Sadog Tasi Wastewater Treatment Plant outfall) (CNMI DEQ 2010a). TMDLs for these impaired waters have not yet been developed (CNMI DEQ 2010a).

Class A waters include the coastal waters of the West Takpochau (North) watershed in the area around the commercial Port of Saipan. These Class A waters are downgradient of the proposed Port of Saipan fuel site.

3.5.2.2 Tinian

Groundwater. Groundwater is the major source of water on Tinian. All fresh groundwater on Tinian originates as rainfall. Tinian receives approximately 80 inches of annual rainfall with distinct wet (July through September) and dry (February through March) seasons (CNMI DEQ and GEPA 2006). On average, 58 percent of the rainfall occurs during the wet season between the months of July and November and 14 percent of the annual rainfall occurs during the dry season from January through April. The remainder is distributed in the transition months between wet and dry season (AECOS and Wil-Chee 2009). Approximately 7 percent of the annual rainfall becomes runoff, approximately 37 percent recharges the groundwater, and approximately 56 percent is evapotranspirated. Thus, most of the precipitation on Tinian either evaporates or percolates into the limestone substrata (Gingerich 2002).

Tinian is composed of permeable limestone that overlies a relatively impermeable volcanic foundation. The main source of drinking water on Tinian is the basal freshwater lens aquifer in the high-permeability limestone (Takpochao Limestone) overlying low-permeability volcanic rock (Gingerich 2002). The basal freshwater lens extends from 2 to 4 feet above mean sea level to about 80 to 160 feet below sea level at its deepest point (DON 2010c).

Surface Water. There are no perennial or intermittent streams on Tinian. The limestone plateaus of Tinian are generally far too porous to support stream or wetland development and most precipitation either evaporates or percolates into the highly permeable limestone substrata. During periods of intense rainfall, runoff approximates 6 to 12 percent of total rainfall and flows toward the low-lying coastal areas (Gingerich 2002). Surface water on Tinian is restricted to wetlands that occur on areas of impermeable clay that impound rainwater. These wetlands are entirely dependent on precipitation as a water source. In periods of drought, the water level in these wetlands drops and open water dramatically decreases. There are several wetland areas on Tinian, the largest of which is Hagoi (36 acres) in the northern part of the island. Other Tinian wetlands are smaller than Hagoi and considered ephemeral because they are not large enough to sustain during periods of low rainfall. The Sisoyan Makpo wetland once supported open water, but municipal groundwater pumping significantly altered the water levels (DON 2010a).

None of the wetlands on Tinian are in close proximity to Tinian International Airport or the Port of Tinian. The closest wetland that is downgradient of the project area is the Makpo wetland, which is more than 1.5 miles southeast of the site (AECOS and Wil-Chee 2009). See **Section 3.6.2.2** for more information regarding wetlands on Tinian.

A very large depression occurs between the taxiway and runway of Tinian International Airport and was previously used for excavation of fill material. In addition, another large depression occurs south of the taxiway. These depressions do not permanently hold water, but likely temporarily hold water during heavy rainfall events. These depressions are designated by FEMA as Flood Zone A and are discussed in the following Flood Zones section. A storm water retention area is in place at the west end of the Tinian International Airport runway. Storm water drainage ditches and swales direct water off the runway and airfield into the storm water retention area and the large, excavated depressions in between the runway and taxiway.

Flood Zones. Since the elevation of the island is relatively uniform and there is little surface water runoff, flooding is not an important natural hazard on Tinian. FEMA has designated several isolated flood hazard areas on Tinian as Flood Zone A, which are areas with a 1 percent annual chance of flooding. Zone A areas on Tinian are unpopulated areas and include the Hagoi wetland and portions of North Field, Tinian International Airport, and the Makpo wetland (DON 2010a).

According to FEMA Flood Insurance Rate Map (FIRM) Historic Community Panel Number 750001 0040 B (Effective Date May 15, 1991), three areas designated as Flood Zone A occur near the Tinian International Airport runway and two areas occur north of the runway (see **Figure 3.5-1** and **3.5-2**) (FEMA 1991). These flood zones are associated with depressions created by former excavation activities described in the previous section. However, because these flood zones are only designated as such due to their potential to hold water during heavy rain events and because they are not associated with floodplains of surface water bodies, these flood zones would not be protected under EO 11988, *Floodplain Management*.

Nearshore Waters. As with Saipan, coastal waters surrounding Tinian serve as the ultimate discharge area for all surface runoff from the island. Tinian International Airport spans across two watersheds. The western portion of Tinian International Airport occurs in the Puntan Daiplolamanibot Watershed, which drains west into the Philippine Sea. The eastern portion of Tinian International Airport occurs within the Masalok Watershed, which drains northeast into the Pacific Ocean (CNMI DEQ 2010a).

The proposed Port of Tinian fuel site occurs within the Makpo Watershed, which drains west-southwest into the Philippine Sea (CNMI DEQ 2010a). The coastal waters of the Puntan Daiplolamanibot and Masalok watersheds are impaired (Category 5) due to orthophosphate pollution, the source of which is unknown. The coastal waters of the Makpo Watershed are impaired (Category 5) due to low dissolved oxygen levels, biocriteria, and orthophosphate pollution caused by onsite treatment systems and urban runoff (CNMI DEQ 2010a). TMDLs for these impaired waters have not yet been developed (CNMI DEQ 2010a).

All the nearshore waters surrounding Tinian are designated Class AA, except for the nearshore waters of Tinian Harbor that are designated Class A. The coastal waters of the Puntan Daiplolamanibot and Masalok watersheds are designated as Class AA marine waters. The coastal waters of the Makpo Watershed, the location of the proposed fuel site at the Port of Tinian, are designated as Class A marine waters (CNMI DEQ 2010a).

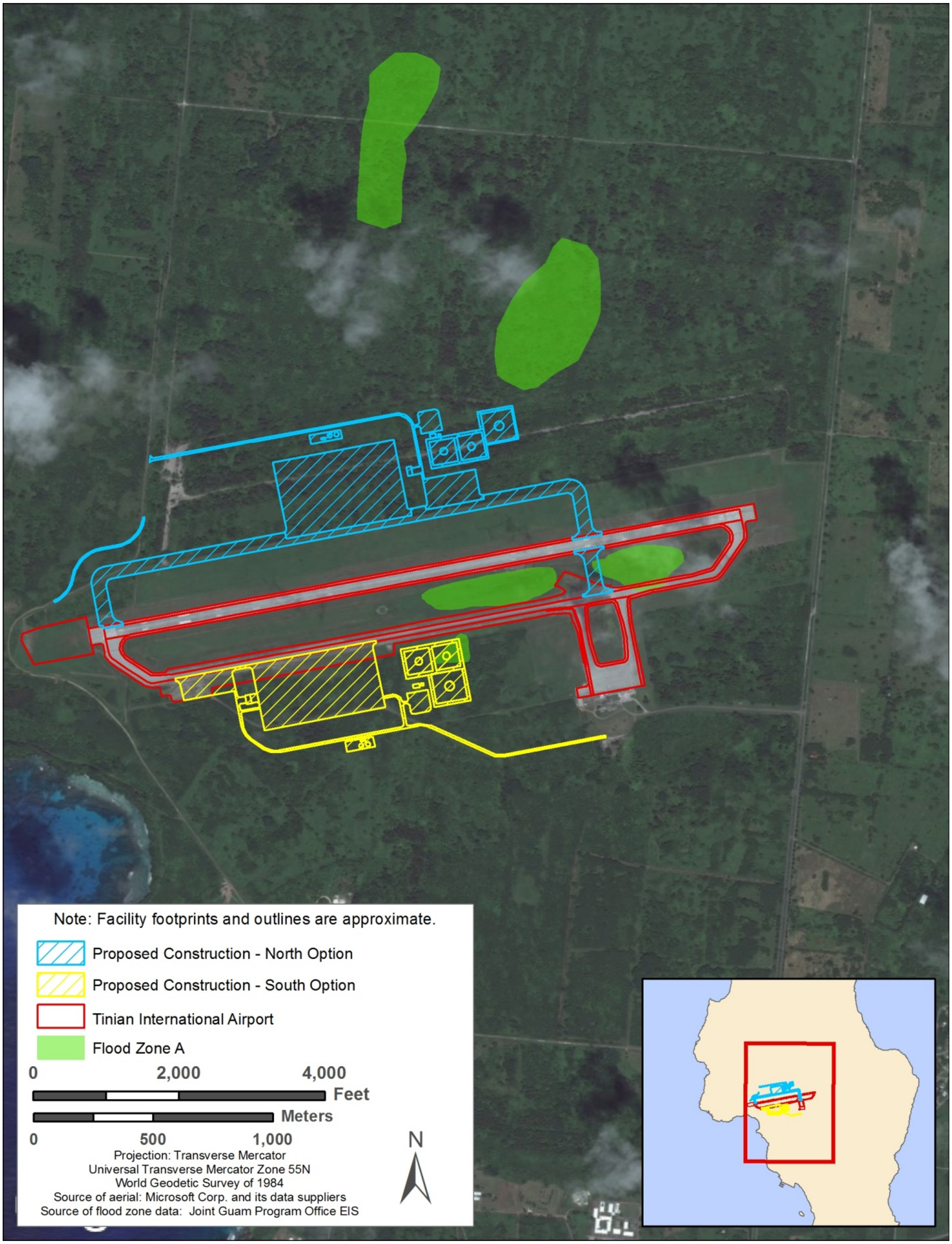


Figure 3.5-1. Areas Mapped as Flood Zone A on Tinian under Alternative 2

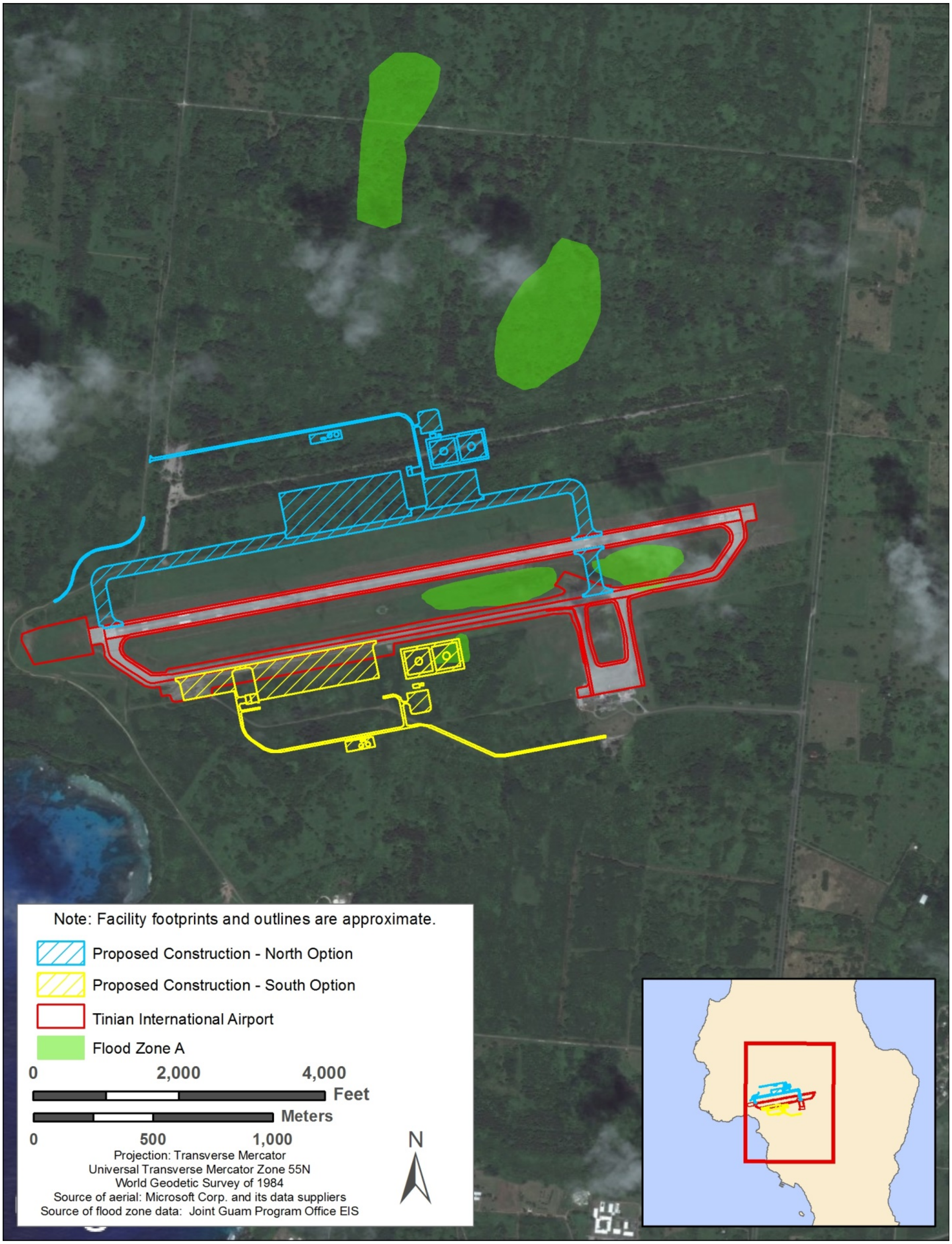


Figure 3.5-2. Areas Mapped as Flood Zone A on Tinian under Alternative 3

3.6 Terrestrial Biological Resources

3.6.1 Differences Between the 2012 Draft EIS and Revised Draft EIS

Some information in the Terrestrial Biological Resources sections has changed since the release of the 2012 Draft EIS. Specifically, the USFWS has proposed listing as threatened or endangered an additional 23 plant and animals species in the Mariana Islands; information has been added to this section to describe the proposed species that occur on Saipan and Tinian. In addition, information made available since the release of the 2012 Draft EIS that relates to effects on biological resources in the project area, as described in **Section 4.6**, has been added to this section.

3.6.2 Definition of Resource

Terrestrial biological resources include vegetation, wildlife, and the ecosystems in which these resources occur. Specific concerns relating to terrestrial biological resources considered in this EIS include declines in species diversity and impacts on threatened and endangered species. Biological resources are protected by Federal or Commonwealth regulations.

Migratory Bird Treaty Act**.** The MBTA provides the USFWS regulatory authority to protect birds that migrate. The MBTA prohibits any "take" of these species, except as permitted by the USFWS. "Take" is defined per 50 CFR Section 10.12 as to "hunt, shoot, wound, kill, trap, capture, or collect."

Endangered Species Act. The ESA requires that all Federal agencies shall seek to conserve threatened and endangered species and shall utilize their authorities in furtherance of the purposes of the ESA (Sec. 2(c)). Section 7 consultations with the USFWS ensure that "any action authorized, funded, or carried out by such an agency...is not likely to jeopardize the continued existence of any endangered or threatened species..." (Sec. 7(a)(2)).

Fish, Game, and Endangered Species Act. The Government of the CNMI has concurrent jurisdiction over all federally protected wildlife and has the authority to list non-federally protected species as endangered under P.L. #2-51, the "Fish, Game, and Endangered Species Act." The CNMI Government maintains a separate listing of locally endangered plant and animal species that is more extensive than the list of species protected under the ESA.

3.6.3 Existing Conditions

Following is a summary of the terrestrial vegetation, common wildlife species, and protected and sensitive resources for Saipan and Tinian, including Saipan International Airport and Tinian International Airport.

3.6.3.1 Saipan

Terrestrial Vegetation. This section presents a characterization of flora occurring within the Project Area, including at Saipan International Airport and the Port of Saipan. Vegetation community types observed at Saipan International Airport at the sites of proposed construction and improvements include mowed field, tangantangan forest, park, disturbed/unmowed, and agriculture/grazing (see **Table 3.6-1**).

Table 3.6-1. Vegetation Communities at Proposed Facilities on Saipan

Proposed Facilities	Vegetation Community
Parking apron	Mowed Field
Cargo pad	Mowed Field Tangantangan Forest
Maintenance facility	Tangantangan Forest
Hydrant system	Park Disturbed/Unmowed
Airport fuel storage	Tangantangan Forest Disturbed/Unmowed
Seaport fuel site	Disturbed/Unmowed

Source: HDR

The following is a description of the vegetation communities, including characteristic species, at Saipan International Airport and the Port of Saipan (see **Figure 3.6-1**).

Second-growth tangantangan forest covers much of the area around the perimeter of Saipan International Airport (**Figure 3.6-1**). Canopy vegetation in that forest is characterized by a near monoculture of nonnative tangantangan (*Leucaena leucocephala*), with occasional native forest tree species such as ahgao (*Premna obtusifolia*), hodda (*Ficus tinctoria*), pago (*Hibiscus tiliaceus*), sumak (*Aidia cochichinensis*), and Indian mulberry *(Morinda citrifolia*). Papaya (*Carica papaya*) also occurs in the forest along with the nonnative siris tree (*Albizia lebbeck*) and flame tree (*Delonix regia*). The understory consists largely of nonnative herbaceous weeds. Common species include coral berry (*Rivina humilis*), rosary pea (*Abrus precatorius*), Chinese violet (*Asystasia gangetica*), and achyranthes (*Achyranthes canescens*). Gaps in the tangantangan forest and some areas of canopy are blanketed by a layer of vines. These vines include the native akankang tasi (*Canavalia rosea*); and the nonnative bittervine (*Mikania micrantha*), abubo (*Stictocardia tiliifolia*), coral vine (*Antigonon leptopus*), and ivy gourd (*Coccinia grandis*). Vines present in the Project Area can be stimulated by the opening up of the canopy after storm disturbance and can form oppressive vine mats that retard native vegetation growth or kill it outright. In addition, there are small, previously disturbed areas surrounding Saipan International Airport facilities that are naturally revegetating with tangantangan and common nonnative herbaceous weeds and vines.

Mowed fields are maintained around the airfield tarmac, runway, taxiway, and terminal at Saipan International Airport (**Figure 3.6-1**). Those fields consists mainly of grasses, including Bermuda grass (*Cynodon dactylon*), crowfoot grass (*Dactyloctenium aegyptium*), broadleaf carpetgrass (*Axonopus compressus*), golden beardgrass (*Chrysopogon aciculatus*), guinea grass (*Panicum maximum*), and windmill grass (*Chloris* sp.); and herbaceous weeds, including sensitive plant (*Mimosa pudica*), tropical Lucerne (*Stylosanthes guianensis*), and white moneywort (*Alysicarpus vaginalis*).

Park-like areas are maintained to the north of the terminal. Those areas are mowed close to ground level and have a narrow border of ornamental trees and shrubs primarily along road edges. Grasses in the park areas are characterized by Bermuda grass and golden beardgrass. Ornamental trees that have been planted along road edges are characterized by flame tree and

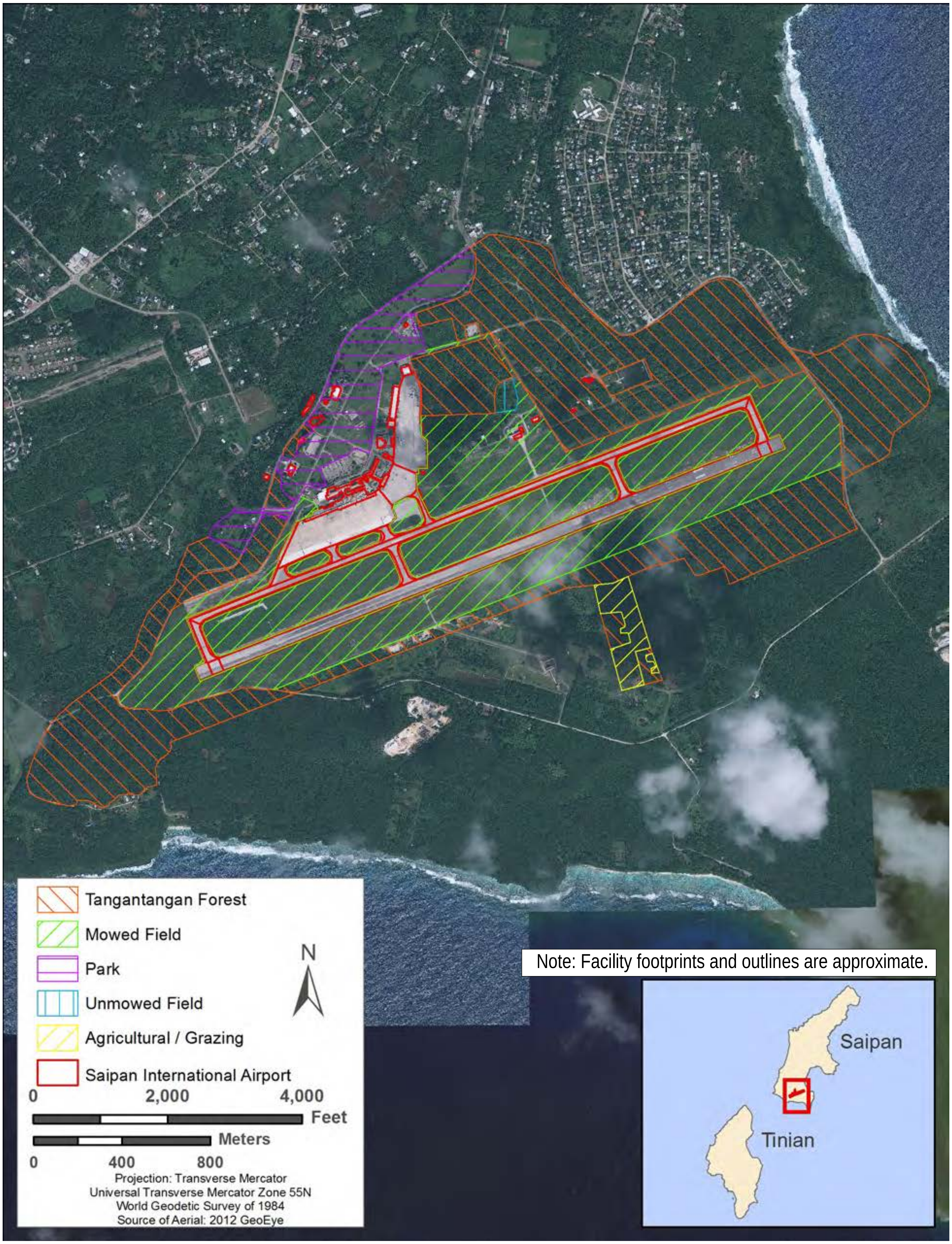


Figure 3.6-1. Vegetation Communities at Saipan International Airport

several species of plumeria (*Plumeria* spp.). Hodda also occurs at several locations in the park areas. Shrub species planted along road edges are characterized by bougainvillea (*Bougainvillea* sp.), lantana (*Lantana camara*), and several species of hibiscus (*Hibiscus* spp.).

There are agriculture/grazing areas south of Saipan International Airport. These highly disturbed areas are characterized by scrub habitat with sparse trees. Agricultural plots in the area are planted with local crops or are fallow. Grazed areas have a sparse cover of trees including flame tree and papaya with a minor occurrence of ahgoa. The scrub habitat is a mix of shrub and herbaceous species dominated by lantana, Jack-in-the-bush (*Chromolaena odorata*), nettleleaf velvetberry (*Stachytarpheta urticifolia*), and romerillo (*Bidens alba*). Tangantangan occurs as short saplings scattered through the scrub habitat.

The proposed location for the fuel tank adjacent to the Port of Saipan is a flat disturbed area with a deteriorating asphalt surface over much of the site and fine limestone gravel across most of the remainder. Dense, weedy vegetation occurs around the perimeter of the site and there are sparse patches of vegetation within the asphalt and gravel surface. Several coconut palms (*Cocos nucifera*) occur around the boundaries of the site. Tangantangan is the dominant tree and sapling species occurring on the site. Romerillo, Jack-in-the-bush, and golden beardgrass compose the dominant herbaceous species occurring on the site.

Wildlife. Wildlife on the island consists primarily of birds and other terrestrial animals, including many introduced species. Characterization of fauna occurring in the Project Area at Saipan International Airport and the harbor was based on incidental observation of species during the site reconnaissance surveys conducted from October 4 to 6, 2011, and the surveys conducted for nightingale reed-warblers (*Acrocephalus lusinius*) and other avian species from January through April 2012 (MES 2012) (see **Table 3.6-2**).

Table 3.6-2. Incidental Observations of Terrestrial Fauna on Saipan during the Reconnaissance Surveys, October 4 to 6, 2011, and Avian Surveys, February through March 2012

Common Name	Chamorro Name	*Scientific Name*	Occurrence
Mammals			
House shrew	no Chamorro name found	*Suncus murinus*	R
Cat	katu	*Felis catus*	R
Rat	chå'ka	*Rattus* sp.	R
Birds			
Black noddy	fahang dikiki	*Anous minutus*	R
Brown noddy	fahang dankolo	*Anous stolidus*	R
Micronesian starling	sali	*Aplonis opaca*	R
Ruddy turnstone	dulili	*Arenaria interpres*	W
Golden white-eye	canario	*Cleptornis marchei*	R
Orange cheeked waxbill	no Chamorro name found	*Estrilda melpoda*	R
White-throated ground-dove	paluman apåka', male; paluman fache', female	*Gallicolumba xanthonura*	R
Mariana common moorhen	pulattat	*Gallinula chloropus guami*	R

Common Name	Chamorro Name	*Scientific Name*	Occurrence
Birds (continued)			
White tern	chunge	*Gygis alba*	R
Collared kingfisher	sihek	*Halcyon chloris*	R
Black-winged stilt	no Chamorro name found	*Himantopus himantopus*	M
Black-necked stilt	no Chamorro name found	*Himantopus mexicanus*	M
Yellow bittern	kakkak	*Ixobrychus sinensis*	R
Micronesian honeyeater	egigi	*Myzomela rubratra*	R
Whimbrel	kalalong	*Numenius phaepous*	M/W
Eurasian tree sparrow	ga’ga’ pale	*Passer montanus*	R
Pacific golden plover	dulili	*Pluvialis fulva*	W
Mariana fruit dove	totot	*Ptilinopus roseicapilla*	R
Rufous fantail	na’abak, chichirika	*Rhipidura rufifrons saipanensis*	R
Island collared dove	paluman sinisa	*Streptopelia bitorquata bitorquata*	R
Bridled white-eye	nosa’	*Zosterops conspicillatus*	R
Reptiles and Amphibians			
Green anole	achi’ak	*Anolis carolinensis*	R
Curious skink	achi’ak	*Carlia fusca*	R
Pacific blue-tailed skink	achi’ak	*Emoia caeruleocauda*	R
Emerald skink	achi’ak	*Lamprolipis smaragdina*	R
Marine toad	achi’ak	*Rhinella marina*	R
Crustaceans and Mollusks			
Giant African snail	no Chamorro name	*Achatina fulica*	R
Insects			
Lemon migrant	ababang	*Catopsilia pomona*	R
Cycad blue butterfly	ababang	*Chilades pandava*	R
Blue-banded king crow	ababang	*Euploea eunice*	R
Large grass yellow	ababang	*Eurema blanda*	R
Guardian	ababang	*Hypolimnas anomala*	R
Blue moon	ababang	*Hypolimnas bolina*	R
Common mormon	ababang	*Papilio polytes*	R
Tiny grass blue	ababang	*Zizina hylax*	R

Key: R = Year-round Resident; M = Passage migrant, generally seen in small numbers during fall and spring; W = Spends winter on the island

MAMMALS

The only mammals observed during the surveys were rats (*Rattus* spp.), house shrews (*Suncus murinus*), and feral cats (*Felis catus*).

BIRDS

Migratory Birds. Saipan supports a diverse variety of migratory shorebirds, with most species occurring in limited abundance annually. This shorebird assemblage is dynamic, with species diversity varying greatly every year. Shorebirds can be found anywhere on the airfield, although most are associated with small spots of wet grass or puddles that develop following rainfall.

Native migratory bird species include Pacific golden plover (*Pluvialis fulva*), ruddy turnstone (*Arenaria interpres*), and whimbrel (*Numenius phaeopus*). Three nonnative species, the island collared dove (*Streptopelia bitorquata*), Eurasian tree sparrow (*Passer montanus*), and orange cheeked waxbill, (*Estrilda melpoda*) were frequently observed during the 2011 reconnaissance surveys. Yellow bitterns (*Ixobrychus sinensis*) were also commonly observed (see **Table 3.6-2**).

During the nightingale reed-warbler surveys conducted over 10 weeks from January through March 2012, biologists located a black noddy (*Anous minutus*) rookery at Saipan International Airport (see **Figure 3.6-2**). The black noddy rookery was approximately 675 feet south of the proposed bulk fuel storage area, 640 feet south of the proposed operational fuel tanks and hydrant system, 1,115 feet northwest of the proposed maintenance facility, and 1,000 feet north of the proposed west parking apron. There were in excess of 60 noddy nests found mostly in a large ironwood (*Casuarina equisetifolia*) tree and some in an adjacent flame tree. Most of the nests were active at the time of the surveys. There were also numerous white terns (*Gygis alba*) flying around the rookery. It was not determined whether the terns were also nesting in the area. Terns place their eggs in crooks on the branches, so it's difficult to determine if they are nesting from the ground.

Source: HDR

Figure 3.6-2. Photograph of a Black Noddy Rookery at Saipan International Airport

In March 2005, U.S. Department of Agriculture-Wildlife Services (USDA-WS) entered into a cooperative agreement with the CPA to conduct Wildlife Hazard Assessments (WHAs) at Saipan International Airport, Tinian International Airport, and Rota International Airport (USDA-WS 2008a). A WHA is an ecological report that describes and determines the potential for wildlife strike at an airport.The following sections provide details on individual bird species that were found at Saipan International Airport during the WHA; accounts are ordered based generally upon relative abundance. Supplemental information for each bird species is also

provided, if available, from the site reconnaissance surveys from October 4 to 6, 2011, and the surveys conducted for nightingale reed-warblers (*Acrocephalus lusinius*) and other avian species from January through April 2012 (MES 2012).

Pacific Golden Plover. Migrant Pacific golden plovers are the most abundant birds on the airfield between August and March. The first plovers usually arrive on Saipan in late August and are solitary, territorial adults. In September, larger flocks of juvenile plovers begin arriving on the wintering grounds. These flocks are nomadic and settle in open areas throughout Saipan, including Saipan International Airport. By mid-winter, flocks of juvenile birds are generally smaller and less mobile; by early March, birds reassemble into flocks for pre-migration staging. Most plovers have left Saipan for their arctic breeding grounds by May 1, although a small number of non-breeding birds might be on the island all year; this residual population is reflected in low plover count numbers between May and July.

Ruddy Turnstone. The ruddy turnstone is the second most abundant wintering shorebird found on Saipan and the second most abundant shorebird at Saipan International Airport. Turnstones use similar habitat as Pacific golden plovers and, when observed on the airfield, are usually found in mixed flocks. The single highest maximum count of turnstones on Saipan International Airport property was approximately 40 birds; generally, turnstones are encountered in flocks of 10 to 15 individuals. Most birds were observed near the approach end along Taxiway Alpha and near the ponding basin, which has been filled since the WHAs were conducted. Given the number of turnstones on the airfield, it is likely that turnstone strikes have previously occurred and will in the future.

Whimbrel. Whimbrel are large shorebirds that are common migrants in the Mariana Islands. A smaller number of whimbrel winter in the region, and a few non-breeding birds might spend the entire year in the islands. Whimbrel were most commonly observed at Saipan International Airport between August and November, generally seen alone or in small loose flocks up to 10 birds.

Mixed Shorebirds. Saipan supports a diverse variety of transient migratory shorebird species, with most species occurring in limited abundance annually. This shorebird assemblage is quite dynamic, with species diversity varying greatly every year. Rufous-necked stint (*Calidris ruficollis*), black-bellied plover (*Pluvialis squatarola*), and black-winged stilt (*Himantopus himantopus*) are found throughout the fall and winter on Saipan, and individuals of these species can be observed in small numbers at Saipan International Airport during September through April. Several other species are regular migrants around the island, including wood sandpiper (*Tringa glareola*), sharp-tailed sandpiper (*Calidris ferruginea*), and Mongolian plover (*Charadrius mongolus*). These shorebirds are observed every year at Saipan International

Airport, generally in very low numbers (1–10 individuals) for very short times during the months of September, October, November, and December.

Egrets. Egrets, including cattle (*Bubulcus ibis*), intermediate (*Mesophoyx intermedia* [*Egretta intermedia*]), great (*Egretta alba*), and little egrets (*Egretta garzetta*), are seasonal migrants through the Mariana Islands. Worldwide egret populations appear to be increasing, and the annual population of migrant birds on Saipan appears to be increasing as well. Egrets generally arrive at Saipan International Airport in mid-September to early October, and can be present throughout the winter months. Although a few individual birds can be observed all year, most egrets depart Saipan by April or May each year. The total number of arrivals varies annually; roughly 100 birds might winter on Saipan during a typical season. Mixed flocks, consisting of cattle, intermediate, and great egrets totaling 10 to 25 individuals regularly appear at Saipan International Airport between October and December. Egrets were generally observed in the open grass on the south side of the airfield, but occurred throughout the airport operating environment. Flocks were frequently observed making flights across the runway.

White Tern. White terns are the most common breeding seabird found inland on Saipan. When inland, they are often associated with stands of ironwood, several of which are found adjacent to the airfield. White terns are generally observed in small groups (2–6 individuals) around the airfield, generally flying 50 to 200 feet off the ground. Terns were occasionally observed making runway crossings, usually near either end of the runway.

Island Collared Dove. The island collared dove (formerly Philippine turtle dove), native to the Philippine Islands, was introduced to the Mariana Islands, including Saipan, in the late 1700s and is now a common year-round breeding resident species. On Saipan, the doves are commonly seen in all habitats, including urban environments, throughout the island. Although island collared doves are relatively small, their flocking behavior and dense body mass present opportunities for damaging strikes. Small groups of doves were frequently observed foraging on waste grain associated with brown treesnake (*Boiga irregularis*) traps located near the terminal and adjacent areas. Loose flocks of doves numbering 50 or more were observed on the airfield, particularly near the departure end of the runway.

Eurasian Tree Sparrow. The Eurasian tree sparrow is the most abundant resident passerine found at Saipan International Airport. The bird's small size and its propensity to avoid wide-open grassy habitat limit the safety risk presented by sparrows. Most sparrows at Saipan International Airport are associated with shrubby vegetation along the perimeter fence of the airport and locations where grains falling from brown treesnake traps provide a food source. The introduced sparrow is listed by the Government of Saipan as unprotected.

Native Forest Birds. A number of native forest birds have been documented in and around Saipan International Airport throughout the year. Most common were Micronesian starling, collared kingfisher, and white-throated ground dove (*Gallicolumba xanthonura*). Forest birds were generally restricted to the forest habitat outside the perimeter security fence, although ground doves were observed making runway crossings at about 100 feet AGL on several occasions.

Ducks. Ducks generally arrive in the Mariana Islands in October and depart the islands by early April. At Saipan International Airport, tufted ducks (*Aythya fuligula*), northern pintail (*Anas acuta*), northern shoveler (*Anas clypeata*), and green-winged teal (*Anas crecca*) were often observed loafing in the airfield ponding basin, which has been filled since the WHAs were conducted. A green-winged teal was observed in the storm water retention basin in the northeast section of the Saipan International Airport during the nightingale reed-warbler surveys conducted in February 2012.

Black and Brown Noddy. Noddies are the most common breeding seabirds in Saipan, with large colonies of black noddies distributed around the island's shorelines and smaller colonies of brown noddies (*Anous stolidus*) found inland and on offshore islets. Noddies at Saipan International Airport are essentially transiting the airspace, moving between nesting/roosting sites on land and feeding sites off shore. Noddy activity was highest at Saipan International Airport during summer months.

Rock Dove. Rock doves (*Columba livia*) are resident on Saipan and can occupy hangar facilities inside the airport.

Bird/Wildlife Aircraft Strike Hazard. Aircraft collisions with wildlife have the potential to cause significant structural damage to the aircraft and could result in catastrophic loss. Strikes that do not cause physical damage to aircraft often result in costs related to aircraft downtime while structural inspections are completed. Despite increased awareness of the hazards wildlife presents to aircraft, strikes occur often and occasionally have catastrophic results. Threats to human safety and the potential for damage to aircraft has prompted the FAA to require all airfields handling commercial aircraft with 30 or more passenger seats to address wildlife hazards if a real or potential wildlife problem is present (Title 14, CFR, Part 139). Detailed information regarding threats posed to aviation safety is included in **Section 3.3.2**.

The industry standard definition of a wildlife strike includes any pilot- or crew-reported collision with wildlife, or any dead or injured animal found on or within 250 feet of an active runway for which an alternate cause of death cannot be determined.

In November 2005, a biologist from USDA-WS conducted an initial onsite assessment of wildlife hazards at Saipan International Airport. This request was precipitated by several reported bird strikes in the preceding weeks and a request by the FAA. During the duration of data collection in support of the WHA, operations staff documented two strikes, both detected when carcasses were found on Runway 7/25. The strikes involved a Pacific golden plover and a whimbrel; both occurred during November 2005 (USDA-WS 2008a). Wildlife Services personnel determined the primary threats to aviation safety at Saipan International Airport included cattle egrets, intermediate egrets, Pacific golden plovers, whimbrel, ruddy turnstones, island collared doves, white tern, black noddy, and brown noddy. Other birds present that could pose a slightly lower risk to aviation safety included feral pigeons, yellow bitterns, black-winged stilts, collared kingfisher (*Halcyon chloris*), Micronesian starling (*Aplonis opaca*), and Eurasian tree sparrows (USDA-WS 2008a). The previous section provides details on individual wildlife species that are found at Saipan International Airport.

The following are wildlife attractants located on and in the vicinity of Saipan International Airport based on the WHA (USDA-WS 2008a).

- *Airfield Sheet Water.* Several areas on the airfield temporarily hold sheet water following heavy rainfall. The airfield appears to have adequate drainage across most areas, and the standing sheet water is usually an ephemeral event. Although shorebird flocks generally disperse as the water dries, large congregations can create substantial short-term safety hazards, and aggressive harassment is necessary to move birds out of these environments.
- *Storm Water Retention Basin.* A concrete storm water retention basin is located in in the northeastern section of the Saipan International Airport.
- *Heavily Vegetated Infield Areas.* Current airfield mowing regimes allow substantial grass growth on many parts of the airfield, particularly on the south side of the infield, near the windsock. As grass height increases, territorial adult Pacific golden plovers that occupy the normally short grass environment could be displaced into the nearest open space, which is often on runways or taxiways. Territorial adult plovers appear to be less likely to be struck by aircraft than juvenile birds, as they become acclimated to aircraft disturbance and do not flee as readily as juvenile birds. However, displacing territorial birds to runway and taxiway environments likely increases their probability of being struck by aircraft. Consistent, regular mowing will create more space for plovers to occupy, and will result in fewer birds establishing territories on tarmac inside the operating environment. It is important to recognize the response that egrets show to grass cutting and have active management in place to discourage their use of freshly mowed turf.
- *Flores Pond.* Flores Pond is approximately 0.5 miles north of Saipan International Airport on private property west of Chalan Tun Herman Pan. The pond occupies about 2 acres during the height of the wet season (early autumn) and shrinks to nearly dry during the late winter and early spring months. This basin intermittently supports large numbers of ducks, shorebirds, and wading birds (egrets); it appears birds move between Saipan International Airport and Flores Pond on a routine basis. Flocks of egrets often use trees surrounding this wetland for roosting.
- *Dandan Driving Range Pond.* A small wetland is adjacent to the Dandan Driving Range along Chalan Tun Herman Pan. Like Flores Pond, this wetland supports ducks, shorebirds, and wading birds, but in smaller numbers. There is likely movement between Saipan International Airport and the Dandan pond.
- *Black Noddy Breeding Colonies.* Two breeding colonies of black noddies (and presumably smaller numbers of brown noddies) were located to the east of the Saipan International Airport operations area during the WHA; one along the south shore of Laulau Bay and another along the cliff line in Naftan. Noddies frequently travel along the airfield perimeter as they move between nesting and feeding sites. This activity was most pronounced during summer months. Transiting noddies were observed crossing Runway 07/25 several times during point counts. During the 2012 nightingale reed-

warbler surveys, a black noddy rookery, consisting of approximately 60 nests, was observed at Saipan International Airport (**Figure 3.6-2**).

- *Adjacent Agricultural Fields.* Several farms surrounding Saipan International Airport support small-scale cattle grazing; cattle egrets were occasionally observed using pasture areas for feeding and loafing.
- *Lake Susupe.* Lake Susupe is the largest permanent freshwater body on Saipan, about 1.5 miles northwest of Saipan International Airport. Although the lake is used by some waterfowl and wading birds, it is a relatively deep and open water body that provides limited habitat for most migrant and wintering species on Saipan. Dense grassy wetlands south of the lake are habitat for water birds.
- *Golf courses.* There are five golf courses on Saipan, with two courses (Laulau Bay Golf Course and Coral Ocean Point Resort) providing habitat for birds near Saipan International Airport. Laulau Bay often hosts large flocks of plovers and some ducks. There is limited information available on plover movements around Saipan, but it is likely that the plover flocks that frequent Laulau Bay Golf Course also use Saipan International Airport. Two lined golf course ponds are located on the Coral Ocean Point Golf Course west of the Saipan International Airport. The closest and smaller of the two ponds is approximately 0.9 acres and is approximately 0.63 miles west of the end of the runway. The larger pond is approximately 2.9 acres and is approximately 1.5 miles northwest of the end of the runway.
- *Surrounding Tidal Flats and Beaches.* Reef margins and beaches surrounding Saipan International Airport support small flocks of shorebirds, particularly plovers and ruddy turnstones, which might frequent the operating environment, particularly as tides change and daytime beach activities disturb birds from beaches.

Twenty-nine strikes of birds from January 2010 through July 2015 are documented in the FAA Wildlife Strike Database (FAA 2015a). The species of birds that were struck by aircraft include Pacific golden plover (3 events), black noddy (3 events), and cattle egret (*Bubulcus ibis*) (1 event). Other birds identified as strikes in the FAA Wildlife Strike Database include “terns, sandpipers, curlews, phalaropes, and sparrows.” It is important to note that not all bird/aircraft strikes are reported. Southwest of the Saipan International Airport airfield is a series of man-made ponds (golf course water hazards) that increase the likelihood of birds foraging at Saipan International Airport; therefore, increasing the total number of birds at Saipan International Airport. Given the number of movements at Saipan International Airport and the density of birds at the airfield, it is likely the strike frequency is substantially greater than the documented events. The majority of movements at Saipan International Airport are air taxis that primarily service the Island of Tinian, with turboprop aircraft, larger jet aircraft, and general aviation constituting the remaining movements. Military aircraft occasionally use Saipan International Airport for regular and training operations. In 2014, there were 341 military aircraft operations at Saipan International Airport (FAA 2015).

Reptiles and Amphibians

One native reptile, the Pacific blue-tailed skink (*Emoia caeruleocauda*) was observed during surveys in the Project Area. In addition, three introduced species including green anoles (*Anolis* *carolinensis*), emerald skinks (*Lamprolipis smaragdina*), and curious skinks (*Carlia fusca*) were observed on the site. One amphibian, the marine toad (*Rhinella marina*), was also observed during surveys in the Project Area. Focused reptile surveys were not conducted and it is likely that additional native and nonnative gecko and skink species occur in the Project Area.

FISH

There are no surface water features other than a concrete storm water retention basin located in the northeast section of the Project Area.

INVERTEBRATES

Several species of butterfly were noted during surveys. Eggflies (*Hypolimnas* sp.), including blue moon and guardian, were frequently observed flying within and along the edge of tangantangan forest. The blue-banded king crow (*Euploea eunice*), common grass blue (*Zizina hylax*), large grass yellow (*Eurema blanda*), lemon migrant (*Catopsilia pomona*), cycad blue butterfly (*Chilades pandava*), and common mormon (*Papilio polytes*) were also observed on mowed edges of the tangantangan forest.

Threatened and Endangered Species. There are five terrestrial threatened and endangered species with the potential to occur in the Saipan Project Area (PACAF 2012, USFWS 2015b) (**Table 3.6-3**). They are the Mariana fruit bat (*Pteropus mariannus mariannus*), Micronesian megapode (*Megapodius laperouse*), Mariana swiftlet (*Aerodramus bartschi*), nightingale reed-warbler, and Mariana common moorhen (*Gallinula chloropus guami*). No critical habitat has been designated or proposed for those species on Saipan.

On Saipan, Mariana fruit bats and Micronesian megapodes are restricted to native limestone forests, primarily on the northern part of the island (USFWS 1998b, 2009b). There is no suitable habitat for these species within the project area, as land at Saipan International Airport where facilities would be developed and divert activities and exercises would occur has been cleared of native vegetation, or is vegetated with second-growth forests dominated by tangantangan.

Mariana swiftlets nest in caves located in central Saipan (Cruz et al. 2008) and favor ridge crests and open, grassy areas for foraging (USFWS 1991). No swiftlets were detected during bird surveys conducted at Saipan International Airport during 2012, and the nearest cave used by these birds for roosting and nesting is more than 2 miles north of Saipan International Airport (MES 2012).

The nightingale reed-warbler, known in Chamorro as *ga'ga'karisu*, is approximately 7 inches (17 centimeters [cm]) long, and is grayish olive-brown above with a pale-yellow underside. It inhabits wetlands, thickets, and the margins of forests on Saipan and Alamagan; historically it also occurred on four other islands in the region (USFWS 2015a). Nightingale reed-warblers commonly use tangantangan on Saipan. On that island, this species is distributed islandwide, and was estimated to number 4,225 individuals in 1997 (USFWS 1998a). Forest bird surveys conducted in 2007 resulted in an abundance estimate of 2,742 nightingale reed-warblers on Saipan (Camp et al. 2009).

Table 3.6-3. Terrestrial Federally Classified Threatened, Endangered, and Proposed Species with the Potential to Occur in the Saipan Project Area

Common Name	*Scientific Name*	Federal Status	Presence in Project Area	Comments
Mariana fruit bat	*Pteropus mariannus mariannus*	T	No	Lack of forested areas and roosting or foraging trees.
Pacific sheath-tailed bat	*Emballonura semicaudata rotensis*	PE	No	Extirpated from Saipan.
Nightingale reed-warbler	*Acrocephalus luscinia*	E	Present	Present in tangantangan forest.
Mariana swiftlet	*Aerodramus bartschi*	E	Unlikely	Distant from roosting caves.
Mariana common moorhen	*Gallinula chloropus guami*	E	Unlikely	Not found at Saipan International Airport concrete detention basin. Seen at golf course pond 0.6 miles from runway.
Micronesian megapode	*Megapodius laperouse*	E	No	No limestone forest habitat in Project Area.
Mariana eight-spot butterfly	*Hypolimnas octucula mariannensis*	PE	No	Extirpated from Saipan.
Humped tree snail	*Partula gibba*	PE	No	No limestone forest habitat in Project Area.
Cebello halumtano	*Bulbophullum guamense*	PE	No	Extirpated from Saipan.
	Dendrobium guamense	PE	No	No suitable limestone forest habitat in Project Area.
Berenghenas halomtano	*Solanum guamense*	PE	No	Extirpated from Saipan.

Key: E = Endangered, T = Threatened, PE = Proposed Endangered
Source: USFWS 2015b, 2015d

Although breeding might occur year-round, Mosher and Fancy (2002) identified two peaks in breeding activity on Saipan: January through March and July through September. Tangantangan are commonly used nest trees, although nests have also been observed in ironwood, achiote (*Bixia orellana*), large-leafed mangrove (*Brufuiera gymnorrhiza)*, hibiscus, and kamachilie (*Pithecellobium dulce*).

Surveys were conducted during January through March 2012 following USFWS (USFWS 2009a) protocols to identify nightingale reed-warbler territories in areas where facilities might be developed at Saipan International Airport (MES 2012). Eight territories were identified in tangantangan forest to the north of the airfield. No territories were identified south of the airfield.

Mariana common moorhens inhabit emergent vegetation of natural and man-made freshwater lakes, marshes and swamps. The only ponds or other potentially suitable habitat for moorhens within or near Saipan International Airport are the water catchment basin located north of the Saipan International Airport runway and two artificial ponds west and northwest of the runway on the Coral Ocean Point golf course. Nine surveys for moorhens and other avian surveys were conducted around the perimeter of the water catchment basin and golf course ponds during January–March 2012 (MES 2012). No moorhens were detected at the Saipan International Airport water catchment basin or the golf course pond to the northwest of Saipan International

Airport. A single adult moorhen was seen at the east golf course pond during four of the nine surveys. Moorhens have been detected at the east golf course pond since about 2001 during surveys conducted by or for the CNMI Division of Fish and Wildlife (PACAF 2012). That pond has an impervious lining that inhibits the growth of shoreline emergent vegetation.

Proposed Species. In October 2014, the USFWS proposed to list 23 plant and animal species from the Mariana Islands as threatened or endangered (USFWS 2015d). According to the proposed rule, one of those species, the humped tree snail (*Partula gibba*) occurs in native limestone forests on Saipan. A second species, the orchid *Dendrobium guamense*, also has been documented in forests on Saipan (D. Janake, HDR, personal communication), and four other species occurred there historically (**Table 3.6-3**). None of those species would occur in the mowed field, tangantangan forest, park, disturbed, or agricultural vegetation communities found at and surrounding Saipan International Airport (Rounds 2015).

WETLANDS

Site reconnaissance was conducted between October 4 and 6, 2011, to determine the extent of jurisdictional wetlands and other waters of the United States in the Project Area. Determination of the extent of jurisdictional wetlands and other waters of the United States was based on the application of protocols and procedures established in the USACE *Wetlands Delineation Manual*, Technical Report Y-87-1 (USACE 1987) and the 2010 *Draft Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawai'i and Pacific Islands Region*, (2010 Regional Supplement). Determination of the occurrence of jurisdictional wetlands was based on the presence or absence of hydrophytic (wetland) vegetation, hydric (wetland) soils, and wetland hydrology. The presence of all three of the criteria is necessary for an area to be designated as a jurisdictional wetland under normal conditions.

Based on the site investigations there are no jurisdictional wetlands in the Project Area.

3.6.3.2 Tinian

Terrestrial Vegetation. This section presents a characterization of flora occurring within the Tinian Project Area. Vegetation community types observed at the site of the proposed additions include mowed field, semi-disturbed tangantangan forest, tangantangan/ironwood scrub, and agriculture/grazing (see **Table 3.6-4**).

Table 3.6-4. Vegetation Communities at Locations of Proposed Facilities and Improvements on Tinian

Proposed Additions / New Areas	Vegetation Community
Cargo pad	Mowed field Developed
Fire pump building, tanks, and wells	Tangantangan forest
Fuel pump buildings, tanks, and fill stands	Tangantangan forest
Maintenance facility	Tangantangan forest
Parking apron	Tangantangan forest Mowed field Developed
Fuel tanks at Tinian International Airport	Tangantangan forest Mowed field
Fuel Tanks at Port of Tinian	Developed/Disturbed

Source: HDR

The following is a description of the vegetation communities, including characteristic species, within the Project Area (see **Figure 3.6-3**).

The primary vegetation type surrounding the runway, taxiway, apron, airport facility buildings, and vehicle parking is mowed field. Vegetation there is characterized by introduced grasses and herbs maintained by periodic mowing. Common grass species found in mowed field habitat on Tinian include Bermuda grass and Australian beadgrass (*Dichanthium bladhii*), and common herbs include white moneywort, romerillo, sensitive plant, and tropical lucerne. In areas outside of airfield operations, mowed fields often contain landscape trees and shrubs.

There is an excavated depression between the runway and taxiway at Tinian International Airport. The excavated area is characterized by a trench with steep near-vertical banks that are up to 40 feet in height. The north end has a ditch that directs runoff into the trench. Vegetation associated with upper edge and side slopes in the excavated area between the taxiway and runway is characterized by unmowed grasses intermixed with herbaceous species that are covered by a dense layer of vines. The central area of the trench is characterized by forested habitat that is covered by dense vines. Sapling and shrub species in the unmowed areas are characterized by tangantangan in the sapling layer and lantana in the shrub layer. Grasses occurring in the unmowed areas are dominated by elephant grass (*Pennisetum purpureum*) and golden beard grass. Other herbaceous species in the area include romerillo and jack-in-the-bush. Vines cover most of the unmowed areas. The dominant vine species in the area is Alaglag (*Operculina ventricosa*). Other common vines occurring in the area include little bell (*Ipomoea triloba*), ocean-blue morning glory (*Ipomea indica*), and akangkang (*Canavalia megalantha*). Forested habitat in the central area of the trench is dominated by tangantangan, with common papaya and occasional lada. Alaglag covers most of the forested area.

Vegetation south and west of Tinian International Airport consists of semi-disturbed tangantangan forest. Canopy tree species in this vegetation type consist of a near monoculture of tangantangan with ironwood, flame tree, kamachilie, and papaya occasionally rising above the tangantangan. Much of the canopy in this area is covered by vines, including coral vine, ocean-blue morning glory, and spotted heart, creating a dimly lit understory. The understory is dominated by monarch fern (*Phymatosorus scolopendria*) in most areas. A variety of nonnative grasses were noted under thinner canopy and along tangantangan forest edges. Several native forest tree species were commonly observed under the tangantangan canopy, the most common of which were sumak, alom (*Melanolepis multiglandulosa*), and lada.

Vegetation north of Tinian International Airport consists of semi-disturbed tangantangan/ironwood scrub with an open canopy. Ironwood forms the tallest canopy component and occurs primarily around the edges of the area where the vegetation encroaches onto an old asphalt surface. Tangantangan forms a shorter open canopy around the ironwood. Native tree species, including amahadyan (*Pipturus argenteus*), ahago, lada, alom, and papaya were observed within the community. Vines, including oceanblue morning glory, coral vine, corky stem passionflower (*Passiflora suberosa*), spottedheart, and bittervine, occur and form dense mats on the ground or over the tangantangan canopy. The understory in the tangantangan forest is composed of nonnative grasses and monarch ferns as observed. In gaps or along edges where sunlight is sufficient, additional herbs were observed including

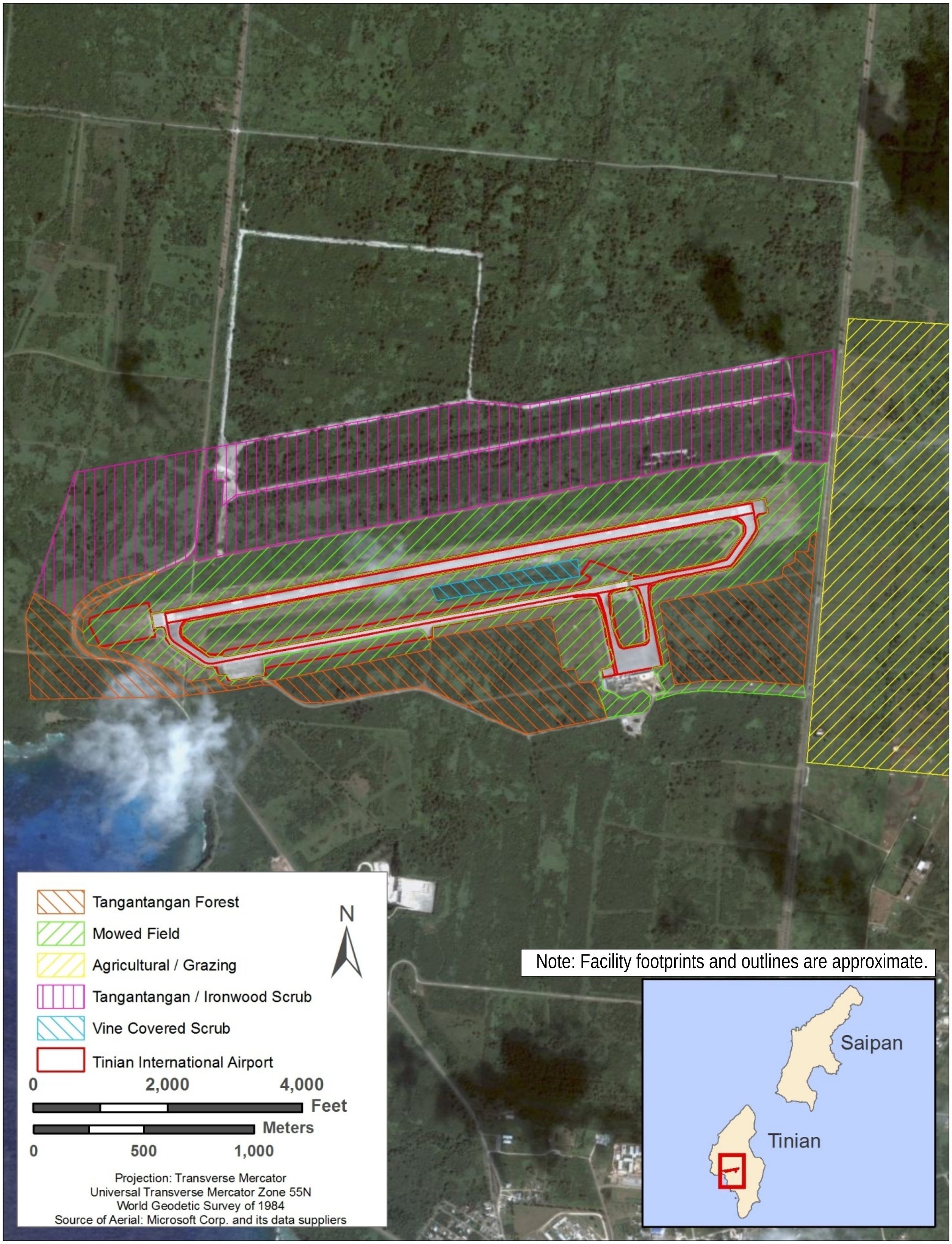


Figure 3.6-3. Vegetation Communities at Tinian International Airport

romerillo, achyranthes, jack-in-the-bush, lantana, light-blue snake weed (*Stachytarpheta jamaicensis*), and nettleleaf velvetberry.

East of Tinian International Airport and the adjacent road is an area of fenced cattle pasture identified as Agriculture/Grazing vegetation type. This area is open with little to no canopy cover and contains scattered clusters of tree. The ground cover consists of nonnative forage grasses, including guinea grass and Australian beadgrass, and the noxious giant sensitive plant (*Mimosa invisa*), an herb that might have been introduced as a cover crop. Scattered tree species include small Philippine acacia (*Acacia confusa*), atbut, kamachile, and tangantangan.

Wildlife. Characterization of fauna occurring in the Project Area was based on incidental observation of species during the site reconnaissance surveys conducted from October 7 to 8, 2011 (see **Table 3.6-5**).

Table 3.6-5. Incidental Observations of Terrestrial Fauna on Tinian during the Reconnaissance Surveys, October 7 to 8, 2011

Common Name	Chamorro Name	*Scientific Name*	Occurrence
Birds			
Common sandpiper	dulili	*Actitis hypoleucos*	M
Brown noddy	fahang	*Anous stolidus*	R
Micronesian starling	sali	*Aplonis opaca*	R
Ruddy turnstone	dulili	*Arenaria interpres*	W
Sharp-tailed sandpiper	dulili	*Calidris acuminata*	M
Collared kingfisher	sihek	*Halcyon chloris*	R
Yellow bittern	kakkak	*Ixobrychus sinensis*	R
Tinian monarch	chichirikan	*Monarcha takatsukasae*	R
Micronesian honeyeater	egigi	*Myzomela rubrata saffordi*	R
Whimbrel	no Chamorro name found	*Numenius phaepous*	W
Eurasian tree sparrow	no Chamorro name found	*Passer montanus*	R
Pacific golden plover	dulili	*Pluvialis fulva*	W
Mariana fruit dove	tottot	*Ptilinopus roseicapilla*	R
Rufous fantail	na'abak, chichirika	*Rhipidura rufifrons saipanensis*	R
Island collared dove	paluman sinisa	*Streptopelia bitorquata bitorquata*	R
Collared kingfisher	sihek	*Todiramphus chloris*	R
Tattler sp.	no Chamorro name found	*Tringa sp.*	M
Bridled white eye	nosa'	*Zosterops conspicillatus*	R
Reptiles and Amphibians			
Curious skink	achi'ak	*Carlia fusca*	R
Marine toad	achi'ak	*Rhinella marina*	R
Monitor lizard	iguana	*Varanus indicus*	R
Crustaceans and Mollusks			
Giant African snail		*Achatina fulica*	R

Common Name	Chamorro Name	*Scientific Name*	Occurrence
Insects			
Lemon migrant	ababang	*Catopsilia pomona*	R
Cycad blue butterfly	ababang	*Chilades pandava*	R
Large grass yellow	ababang	*Eurema blanda*	R
Guardian	ababang	*Hypolimnas anomala*	R
Blue moon	ababang	*Hypolimnas bolina*	R
Common mormon	ababang	*Papilio polytes*	R
Blue-banded king crow	ababang	*Euploea eunice*	R

Source: HDR
Key: R = Year-round Resident; M = Passage migrant, generally seen in small numbers during fall and spring; W = Spends winter on the island

MAMMALS

No mammals were observed in the Project Area during the site reconnaissance surveys conducted during October 2011.

BIRDS

Migratory Birds. Tinian is an important stopover location for migratory birds, including a number of shorebirds, waterfowl, waterbirds, and seabirds. Several areas on the airfield temporarily hold sheet water following heavy rainfall, which in turn attracts flocks of shorebirds. Additionally, Tinian International Airport is close to coastal environments. Shorebirds, particularly Pacific golden plovers, ruddy turnstones, and whimbrels make daily movements between tidal and upland environments, as tides fluctuate. During periods of exceptionally high tides, many shorebirds are displaced from the coast and move to inland locations, including Tinian International Airport (USDA-WS 2008b). Eurasian tree sparrows were frequently observed during the 2011 reconnaissance surveys (see **Table 3.6-5**). Native resident bird species observed include rufous fantail and Micronesian starling.

In March 2005, USDA-WS entered into a cooperative agreement with the CPA to conduct WHAs at the Saipan, Tinian, and Rota International Airports (USDA-WS 2008b). The following sections provide details on individual bird species that were found at Tinian International Airport; accounts are ordered based generally upon relative abundance.

Pacific golden plovers and ruddy turnstones constituted more than 80 percent of the observed birds over the entire duration of the surveys. Other species detected in the counts included island collared doves, white terns, whimbrel, egrets, and Eurasian tree sparrows. Most migrant bird species (primarily shorebirds) present at Tinian International Airport occur in very low abundance, and were not documented during point counts. Overall bird abundance was highest between August and April, which coincides with the presence of migrant species and wintering shorebirds in the region.

Pacific Golden Plover. Migrant and wintering Pacific golden plovers are the most abundant birds on the airfield between September and April and are the single greatest risk to aviation at Tinian International Airport. The first plovers arrive on Tinian in late August and are usually solitary, territorial adults. In September, larger flocks of juvenile plovers begin arriving on the wintering grounds. These flocks are somewhat nomadic and settle in open areas throughout Tinian, including Tinian International Airport. By mid-winter, the large flocks of juvenile birds are generally smaller and less mobile; beginning in early March, birds reassemble into flocks for pre-migration staging. Most plovers have left the Mariana Islands for their arctic breeding grounds by May 1, although a small number of non-breeding birds might be present on the island for the entire year.

Whimbrel. Whimbrels are large shorebirds that occur in loose flocks at Tinian International Airport during the fall and winter months. Whimbrels were observed throughout the operations area at Tinian International Airport, generally on infield turf, in flocks of up to 10 birds. A small number of non-breeding whimbrels might spend the summer months on Tinian.

Island Collared Dove. The island collared dove (formerly Philippine turtle dove), native to the Philippine Islands, was introduced to the Mariana Islands, including Tinian, in the late 1700s. On Tinian, doves are year-round residents and are commonly seen in all habitats, including urban environments, throughout the island. Doves actively forage on waste grain associated with snake traps around the airfield. Loose flocks of doves numbering 15 or more were occasionally observed on the airfield.

Egrets. Four species of white egrets were observed at Tinian International Airport, with cattle egrets the most common. Intermediate, great, and little egrets were also documented at Tinian International Airport, generally in mixed flocks of two or more species. Egrets feed in short grass, capturing lizards and insects; mowing operations kill and injure potential egret prey items, and flocks of cattle egrets often follow mowers to exploit this food source. All egret species are seasonal migrants or wintering residents in Tinian, with a small number of nonbreeding birds spending the summer months on the island. Cattle and great egret populations are increasing worldwide, and the annual population of migrant birds on Tinian appears to be increasing as well. Egrets generally arrive at Tinian International Airport in mid-September to early October, and most egrets depart Tinian by April or May each year. Egrets were not detected during most daily point counts; however, flocks of 10 to 25 individuals regularly appear at Tinian International Airport between September and December each year. Egrets were observed using a variety of locations on the airfield and often occupied infield grass just north of the terminal, adjacent to the tarmac.

White Tern. The white tern is the most common breeding seabird found inland on Tinian. When inland, they are usually associated with stands of ironwood, including stands adjacent to the perimeter of the airport operating area. White terns are generally observed in small groups (2–6 individuals) on and around the airfield, usually flying 50 to 200 feet AGL. White terns do not spend time on the ground, but instead roost in trees adjacent to the airfield.

Ruddy Turnstone. The ruddy turnstone is the second most abundant wintering shorebird found on Tinian and the second most abundant shorebird at Tinian International Airport. Turnstones use similar habitat as Pacific golden plovers and when observed on the airfield, were usually found in mixed flocks of 5 to 20 individuals. Unlike plovers, wintering turnstones are not territorial. Turnstones were observed in every month at Tinian International Airport, with abundance highest between August and April. Most turnstones depart for their arctic nesting grounds by May.

Eurasian Tree Sparrow. The Eurasian tree sparrow is the most abundant resident passerine found at Tinian International Airport, but was infrequently observed around movement areas. Most sparrows at Tinian International Airport are associated with shrubby vegetation along the perimeter fence of the airport operating area and near the terminal. Sparrows can inadvertently receive supplemental feeding through the deposition of waste grain dropped from the approximately 50 brown treesnake traps that are found on Tinian International Airport property. The introduced sparrow is listed by the Government of the CNMI as unprotected.

BASH. Three wildlife strike at Tinian International Airport from January 2010 through July 2015 are documented in the FAA's National Wildlife Strike Database, as of August 2015. Two are of unknown birds of small to medium size, and one is of a domestic dog (FAA 2015b). One of the incidents, involving a medium-sized bird, resulted in substantial damage.

In November 2005, a biologist from USDA-WS conducted an initial onsite assessment of wildlife hazards at Tinian International Airport. This assessment was requested by FAA and was precipitated by several reported, but undocumented, bird strikes in the preceding weeks. Wildlife Services personnel determined the primary threats to aviation safety at Tinian International Airport included cattle egrets, intermediate egrets, Pacific golden plovers, whimbrel, ruddy turnstones, white tern, black noddy, and brown noddy. Other birds present included feral pigeons, island collared doves, yellow bitterns, collared kingfisher, Micronesian starling, and Eurasian tree sparrows (USDA-WS 2008b). The previous section provides details on individual wildlife species that are found at Tinian International Airport.

The following are wildlife attractants located on and in the vicinity of Tinian International Airport based on the WHA (USDA-WS 2008b).

- *Airfield Sheet Water.* Several areas on the airfield temporarily hold sheet water following heavy rainfall, which, in turn, attracts flocks of loafing shorebirds. The airfield appears to have adequate drainage across most of the area, and the standing sheet water is usually an ephemeral event. Shorebird flocks generally disperse as the water dries, but often this dispersal is to other locations around the airport.
- *Airfield Instruments.* Airfield signage and instruments were occasionally used by egrets and doves as perch sites. Usage was not significant enough to recommend specific management activities to eliminate their use, but warrant attention when harassing birds from the airfield. A single black kite (*Milvus migrans*) observed on Tinian multiple times during the assessment occasionally perched on airfield instrumentation.
- *Tarmac.* Wintering shorebirds, particularly plovers and turnstones, spend extensive amounts of time loafing on asphalt. It is believed birds use the warming conditions of sun-exposed asphalt to increase body temperatures, which subsequently increases digestion rates while conserving their energy. The airport area provides substantial asphalt surfaces, including runways and taxiways, which brings birds into direct contact with aircraft movements.

- *Heavily Vegetated Infield Areas.* Several locations inside the airfield are heavily vegetated, particularly the infield between the runway and old runway and the hill on the northeast end of the airfield. Although most migratory shorebirds and wading birds are not attracted to heavy grass or woody vegetation, resident forest birds, including island collared doves, might use such areas for feeding, loafing, and nesting. As vegetation growth matures, other native forest birds might begin to use the same areas.
- *Lake Hagoi.* Lake Hagoi is the largest wetland on Tinian, approximately 3 miles north of Tinian International Airport. Lake Hagoi holds water all year during normal weather patterns, but can dry up during dry seasons with below normal precipitation. A variety of migratory and resident birds use Lake Hagoi, including endangered Mariana moorhens, egrets, ducks, and shorebirds. There is likely some movement of migrant species (shorebirds and egrets) between Lake Hagoi and Tinian International Airport; a flock of 10 tundra swans (*Cygnus columbianus*) seen in Tinian during January 2006 spent most of their time on Lake Hagoi. This flock was observed at Tinian International Airport for short durations several times over a 2-week period. Although their presence was only for 2 weeks, the massive size of these birds created a substantial hazard to aircraft.
- *Tinian Municipal Dump.* The Tinian Municipal Dump is immediately west of Tinian International Airport. Although the current waste management operations do not limit the accessibility of waste to scavenging animals, the Mariana Islands do not support flocking birds (e.g., gulls, crows, starlings) that typically occupy landfill or dump environments. Therefore, the Tinian Municipal Landfill does not appear to present any increased risk of wildlife strikes to aviation traffic using Tinian International Airport.
- *Coastal and Shoreline Habitat.* As Tinian is a relatively small island, Tinian International Airport is situated in close proximity to significant coastal environments. During the migratory and wintering season, shorebirds, particularly Pacific golden plovers, ruddy turnstones, and whimbrels frequent the saltwater tidal regions throughout the island. Shorebirds make daily movements between tidal environments and upland environments, as tides fluctuate. During periods of exceptionally high tides, many shorebirds are displaced from the coastal environment and move to inland locations, including Tinian International Airport. As tidal water recedes, many transient shorebirds move back to the tidal flats and beaches found around Tinian. This daily movement of birds is likely impacted by daily rainfall, as birds might remain on and around the airfield through low tides if adequate standing or sheet water is present.
- *Surrounding Livestock Production.* Much land surrounding Tinian International Airport, particularly to the east of the airport, is used in production of livestock. Wintering flocks of cattle egrets were occasionally observed loafing, feeding, and roosting near cattle herds. It is likely these flocks moved between Tinian International Airport property and the surrounding area on a daily basis.

Reptiles and Amphibians

Monitor lizards and curious skinks were the most common reptiles observed. Only one amphibian, the marine toad, was observed during surveys in the Project Area. Focused reptile surveys were not conducted and it is likely that additional native and nonnative gecko and skink species might be present in the area.

Fish

There are no surface water features containing fish in the Project Area.

Invertebrates

Several species of butterfly were noted during surveys. Eggflies, including blue moon and guardian, were frequently observed flying within and along the edge of tangantangan forest. The large grass yellow, lemon migrant, cycad blue butterfly, and common mormon were also observed on mowed edges of the tangantangan forest.

Threatened and Endangered Species. Three terrestrial threatened and endangered species occur or have been documented recently on Tinian: the Mariana common moorhen, Micronesian megapode, and Mariana fruit bat (USFWS 2015c) (**Table 3.6-6**). Two other listed species, the Mariana swiftlet and nightingale reed-warbler, no longer occur on Tinian (USFWS 1998a, Cruz et al. 2008, USFWS 2010b).

Table 3.6-6. Terrestrial Federally Classified Threatened, Endangered, and Proposed Species with Potential to Occur in the Tinian Project Area

Common Name	*Scientific Name*	USFWS Status	Presence in Project Area	Comments
Mariana fruit bat	*Pteropus mariannus mariannus*	T	No	Extirpated from or very rare on Tinian (USFWS 2014). No suitable habitat near Tinian International Airport
Mariana common moorhen	*Gallinula chloropus guami*	E	No	No suitable wetland habitat at Tinian International Airport.
Micronesian megapode	*Megapodius laperouse*	E	Unlikely	Rare on Tinian. Absence of suitable forest habitat in Project Area.
Humped Tree Snail	*Partula langfordi*	PE	Unlikely	Rare on Tinian. No suitable forest habitat near Tinian International Airport.
	Heritiera longipetiolata	PE	Unlikely	Rare on Tinian. No suitable native forest habitat near Tinian International Airport.
	Dendrobium guamense	PE	Unlikely	Rare on Tinian. No suitable native forest habitat near Tinian International Airport.

Key: E = Endangered, T = Threatened, PE = Proposed Endangered
Source USFWS 2015c, 2015d

The Mariana common moorhen is limited to the Mariana archipelago and is presently found on Guam, Saipan, Rota, and Tinian. There are no wetlands within or near areas that would be disturbed for construction of facilities at Tinian International Airport and no wetlands occur within one mile of the flight path to that airport (NAVFAC 2015a). The closest wetlands to Tinian International Airport that are used by Mariana common moorhens are the Bateha and Mahalang wetland complexes (NAVFAC 2014a), located about 1.5 to 3 miles north of Tinian International

Airport. Moorhens also occur on perennial Lake Hagoi, located about 4 miles north of Tinian International Airport (Takano and Haig 2004, NAVFAC 2014a).

Micronesian megapodes have been seen very infrequently on Tinian in recent years (USFWS 1998b, Kessler and Amidon 2009). None were detected during an extensive survey of potential habitat in 2008 (Kessler and Amidon 2009) and 2013 (NAVFAC 2014a), and they either have been extirpated from that island (USFWS 2010a) or occur there only incidentally. In the past, megapodes have been found on Tinian primarily within and near limestone forests in the Maga and Mt. Laso areas (USFWS 1998b, Kessler and Amidon 2009, NAVFAC 2014a).

Mariana fruit bats have rarely been seen on Tinian within the past 30 years (Brooke 2009, USFWS 2009b) and now appear to be extirpated from that island (USFWS 2014) or occur there only incidentally. No fruit bats were detected during extensive surveys of Tinian in 1994, 1995, 2000, or 2008, but they have been observed there incidentally (Cruz et al. 2000, Brooke 2009).

Proposed Species. In October 2014, the USFWS proposed to list 23 plant and animal species from the Mariana Islands as threatened or endangered (USFWS 2015c). According to the proposed rule, five of those species occur on Tinian or were found there historically. Three of those species, described below, have the potential to occur near Tinian International Airport (Rounds 2015), and two others, the Pacific sheath-tailed bat (*Emballonura semicaudata rotensis*) and the orchid *Tuberolabium guamense*, no longer occur on Tinian.

The tree *Heritiera longipetiolata* is endemic to the Mariana Islands and historically was found in forests on Guam, Rota, Saipan, and Tinian. *H. longipetiolata* occurs in moist forests on limestone cliffs and in coastal sites with windy conditions (NAVFAC 2015b, USFWS 2015d). On Tinian it has been found near Unai Masalok on the eastern coast, along the Lamanibot Bay escarpment on the northwestern coast, and along the southeastern coast between Puntan Barangka and Puntan Kastiyu. There were fewer than 10 individuals known on Tinian during or before 2013 (USFWS 2015d).

The orchid *Dendrobium guamense* is known from forests of Guam, Rota, Saipan, and Tinian. There is only one known occurrence on Tinian as reported by the USFWS (USFWS 2015d); over 1.8 miles from Tinian International Airport in native forest habitat (NAVFAC 2014a).

The humped tree snail *(Partula langfordi*) is endemic to the Mariana Islands and is found in cool, shaded forests. Live humped tree snails were found in native limestone forest adjacent to Lamanibot Bay on the northwestern coast of Tinian during extensive surveys of potential habitat on the island in 2013 (NAVFAC 2014a). That site is about 2.8 miles from Tinian International Airport. Old shells, but no live snails, were found in other stands of native limestone forest, the closest of which was near the eastern shore of Tinian about 1.8 miles from Tinian International Airport.

Wetlands. Site reconnaissance was conducted between October 7 to 8, 2011, to determine the extent of jurisdictional wetlands and other waters of the United States in the project area. Determination of the extent of jurisdictional wetlands and other waters of the United States was based on the application of protocols and procedures established in the USACE *Wetlands Delineation Manual*, Technical Report Y-87-1 (USACE 1987) and the 2010 *Draft Interim*

Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawai'i and Pacific Islands Region, (2010 Regional Supplement). Determination of the occurrence of jurisdictional wetlands was based on the presence or absence of hydrophytic (wetland) vegetation, hydric (wetland) soils, and wetland hydrology. The presence of all three of the criteria is necessary for an area to be designated as a jurisdictional wetland under normal conditions.

Based on the site investigations, there are no jurisdictional wetlands in the project area.

Although there are no wetlands in the Project Area, several areas on the airfield temporarily hold runoff following heavy rainfall. The airfield appears to have adequate drainage across most of the area, and the standing sheet water is usually an ephemeral event. Lake Hagoi is the largest wetland on Tinian, located approximately 3 miles north of Tinian International Airport. Lake Hagoi holds water all year during normal weather patterns, but can dry up during dry seasons with below normal rainfall.

3.7 Marine Biological Resources

3.7.1 Differences Between the 2012 Draft EIS and Revised Draft EIS

Some information in the Marine Biological Resources sections has changed since the release of the 2012 Draft EIS based on ongoing coordination with federal agencies. These changes include updates on information presented in the 2012 Draft EIS and relates to the assessment of impacts in **Section 4.7**. A summary of the changed information is presented below.

Consultation with National Marine Fisheries Service. After the 2012 Draft EIS was released, the USAF completed informal consultation with NMFS as required by the ESA. The USAF sent correspondence to NMFS informing them of the USAF determination that development of facilities on Saipan and Tinian, and conducting divert activities and exercises from those islands, is not likely to adversely affect marine species. After the 2012 Draft EIS was released, NMFS provided an official concurrence with the USAF position on this issue. This additional information validates the analysis that was presented in the 2012 Draft EIS. The analysis for potential affects on marine species in provided in **Section 4.7** and correspondence is presented in **Appendix B**.

3.7.2 Definition of Resource

This section describes existing environmental conditions for marine biological resources potentially affected by the alternatives described in **Section 2.4.** Marine biological resources include those marine species and habitats that could be affected by the Construction or Implementation Phases of the alternatives. No construction would occur in the marine waters surrounding Saipan or Tinian (see **Sections 2.4.1, 2.4.2** and **2.4.3**). As discussed in **Sections 4.5.1.1** and **4.5.2.1**, DOD policies, compliant with Federal and CNMI regulations, would be followed to minimize erosion and sedimentation during construction and to manage storm water runoff after construction. By implementing those policies, adverse impacts of sedimentation and runoff would be minor. EFH, coral species, and other nearshore resources are not discussed in this section because indirect or direct impacts are not expected from any aspect of the Proposed Action. Marine biological resources considered include those potentially affected by takeoffs and landings during unit-level training exercises (i.e., below 10,000 feet). Marine biological resources evaluated in this section include sea turtles and marine mammals. Systematic literature and data review and Internet searches were conducted to determine that these were the only species potentially affected by the Proposed Action.

3.7.3 Existing Conditions

Sea Turtles. All sea turtle species are protected under the ESA. NMFS has jurisdiction over sea turtles while they are in the water and the USFWS has jurisdiction over sea turtles on land; including sea turtle eggs, nesting females, and hatchlings on the beach. Green sea turtles *(Chelonia mydas)* are the most common sea turtle in the Mariana Archipelago, although hawksbill *(Eretmochelys imbricate)*, leatherback *(Dermochelys coricea)*, and olive ridley *(Lepidochelys olivacea)* have also been observed there (Kolinski et al. 2004, NAVFAC 2014b). A comparison of observed turtle activities within the region suggests that the Mariana Archipelago should presently be classified as primary resident green turtle habitat with a minor green turtle nesting component (Kolinski 2001). Green turtle nesting in CNMI occurs from March through August with some year-round nesting documented.

Marine Mammals. All marine mammals are protected under the MMPA as amended in 1994. In addition to the MMPA, the ESA provides protection to marine mammals that have been federally listed as endangered or threatened. Federal agency actions that reasonably have the potential to “take” a marine mammal require an incidental harassment authorization from the NMFS. Takes of marine mammals include harassment or mortality. Two levels of harassment were defined in the 1994 amendments to the MMPA: Level A and Level B. Level A harassment is defined in the MMPA as any act of pursuit, torment, or annoyance that has the potential to injure marine mammal stock in the wild. Level B has the potential to disturb marine mammal stock in the wild by disrupting behavioral patterns, including migration, breathing, nursing, breeding, feeding, or sheltering.

Table 3.7-1 lists 26 marine mammals that occur in the waters around the Mariana Islands (NMFS 2012). These include the ESA-listed blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), sei whale (*Balaenoptera borealis*), sperm whale (*Physeter macrocephalus*), and dugong (*Dugong dugon*). The ESA-listed large whale species generally have a seasonal occurrence (mid-November thru mid-May) in the Mariana Archipelago, making migrations to feeding areas in higher latitudes (DON 2005, DON 2007, NMFS 2010). Since deep waters come close to shore around the Mariana Archipelago, it is possible that deepwater marine mammal species (those occurring along and seaward of the shelf break) could make their way into waters within a few kilometers of shore (e.g., sperm whales) (DON 2007, Fulling et al. 2011).

1 **Table 3.7-1. Marine Mammals of the Mariana Islands**

Common Name	*Scientific Name*	ESA Status	Occurrence	
			July–November	December–June
Mysticetes				
Blue whale	*Balaenoptera musculus*	Endangered	Rare	Rare
Bryde's whale	*Balaenoptera edeni*	--	Regular	Regular
Fin whale	*Balaenoptera physalus*	Endangered	Rare	Regular
Humpback whale	*Megaptera novaeangliae*	Endangered	Rare	Regular
Minke whale	*Balaenoptera acutorostrata*	--	Rare	Regular
North Pacific right whale	*Eubalaena japonica*	Endangered	Extralimital	Extralimital
Sei whale	*Balaenoptera borealis*	Endangered	Rare	Regular
Odonotocetes				
Blainville's beaked whale	*Mesoplodon densirostris*	--	Regular	Regular
Bottlenose dolphin	*Tursiops truncatus*	--	Regular	Regular
Cuvier's beaked whale	*Ziphius cavirostris*	--	Regular	Regular
Dwarf sperm whale	*Kogia simus*	--	Regular	Regular
False killer whale	*Pseudorca crassidens*	--	Regular	Regular
Fraser's dolphin	*Lagenodelphis hosei*	--	Regular	Regular
Ginkgo-toothed beaked whale	*Mesoplodon ginkgodens*	--	Rare	Rare
Odonotocetes (continued)				
Hubbs beaked whale	*Mesoplodon carlhubbsi*	--	Extralimital	Extralimital
Indo-Pacific bottlenose	*Tursiops aduncus*	--	Extralimital	Extralimital
Killer whale	*Orcinus orca*	--	Regular	Regular
Longman's beaked whale	*Indopacetus pacificus*	--	Regular	Rare
Melon-headed whale	*Peponocephala electra*	--	Regular	Regular
Pantropical spotted dolphin	*Stenella attenuata*	--	Regular	Regular
Pygmy killer whale	*Feresa attenuata*	--	Regular	Regular
Pygmy sperm whale	*Kogia breviceps*	--	Regular	Regular
Risso's dolphin	*Grampus griseus*	--	Regular	Regular
Rough-toothed dolphin	*Steno bredanensis*	--	Regular	Regular
Short-beaked common dolphin	*Delphinus delphis*	--	Rare	Rare
Short-finned pilot whale	*Globicephala macrorhynchus*	--	Regular	Regular
Sperm whale	*Physeter macrocephalus*	Endangered	Regular	Regular
Spinner dolphin	*Stenella longirostris*	--	Regular	Regular
Striped dolphin	*Stenella coeruleoalba*	--	Regular	Regular
Pinnipeds				
Hawaiian monk seal	*Monachus shauinslani*	Endangered	Extralimital	Extralimital
Northern elephant seal	*Mirounga angustirostris*	--	Extralimital	Extralimital
Sirenia				
Dugong	*Dugong dugon*	Endangered	Extralimital	Extralimital

Source: NMFS 2012

3.7.3.1 Saipan

Sea Turtles. The resident population of green sea turtles on Saipan's nearshore environment was estimated to be 574 sea turtles in 1999 (Kolinski et al. 2001). Most are located along relatively uninhabited east coast sites with limited human access. This area has complex benthic habitat and forage species, including 2 species of seagrass and at least 29 species of algae forage species for green turtles in other surveys around the world. Nesting activity was limited, with 15 nesting attempts and 6 nests recorded throughout the 1999 nesting season. Nests were documented at Unai Fanonchuluyan (Bird Island Beach) and Unai Halaihai (Tang Beach), both north of the Saipan International Airport airfield and Unai Obyan, just south of the Saipan International Airport airfield. A nesting attempt was also made at Unai Agingan (Sisters Beach), which is also just south of the Saipan International Airport airfield (Kolinski et al. 2001). No other sea turtle species were sighted during the 1999 survey (Kolinski et al. 2001). Sixty percent of the turtles (101 turtles) were observed along the east coast sites, which is relatively uninhabited. Eighteen percent (30 turtles) were noted along the west coast, 14 percent (23 turtles) along the north coast, and 9 percent (15 turtles) along the south coast. Immature turtles predominated along all coastlines (Kolinski et al. 2001). The CNMI Division of Fish and Wildlife (DFW) continues to monitor nesting activity on Saipan and has documented 4 to 18 nests per year. Five beaches that have been used are Bird Island, Unai Makpe (Wing Beach), Unai Laulau Kattan (Tank Beach, Laulau Bay, and Unai Obyan) (Maison et al. 2010).

Marine Mammals. Fourteen species of marine mammals were documented during surveys of the southern Mariana Islands during 2010–2014 (Hill et al. 2014). The most common species were spinner dolphins (*Stenella longirostris*), pantropical spotted dolphins (*Stenella attenuata*), bottlenose dolphins (*Tursiops truncatus*), and short-finned pilot whales (*Globicephala macrorhynchus*). Other species reported include melon-headed whales (*Peponocephala electra*), rough-toothed dolphins (*Steno bredanensis*), pygmy killer whales (*Feresa attenuata*), false killer whales (*Pseudorca crassidens*), sperm whales, and a dwarf sperm whale (*Kogia sima*). Spinner dolphins, bottlenose dolphins, and short-finned pilot whales were often found near shore and in shallow waters.

During a winter (January to April) survey in 2007, humpback whales (endangered), sperm whales (endangered), pantropical spotted dolphins (*Stenella attenuata*), and unidentified small delphinids were sighted north and west of Saipan. Spinner dolphins were also sighted east of Saipan during a small vessel winter survey (Ligon et al. 2011). The behavior of the humpback whales observed during the survey suggests that the waters around Saipan could be a small active breeding site (DON 2007, Fulling et al. 2011).

3.7.3.2 Tinian

Sea Turtles. Green sea turtles and hawksbill sea turtles are known to forage offshore of Tinian (Pultz et al. 1999, Kolinski 2001, Maison et al. 2010, NAVFAC 2014b). Ninety-four percent of sea turtles observed offshore of Tinian during surveys in July 2013 were green sea turtles (the remainder were hawksbills) and 75 percent of the green sea turtles were juveniles (NAVFAC 2014b). The resident population of sea turtles in Tinian's nearshore environment was estimated to be 795 to 1,107 green turtles and 50 to 71 hawksbill turtles in 2013 (NAVAF 2014y). Leatherback sea turtles are uncommon in the Tinian area; however, there have been two sightings of the species in open water (NAVFAC 2015b). Nesting likely occurs on all or most of the beaches on Tinian (Minton et al. 2009, Maison et al. 2010, DON 2010a), and nesting activity has been observed in all months (NAVFAC 2014b).

Marine Mammals. The same marine mammals isted in **Section 3.7.3.1** occur in waters around Tinian. The most common species found near shore and in shallow water are spinner dolphins, bottlenose dolphins, and short-finned pilot whales.

3.8 Cultural Resources

3.8.1 Differences Between the 2012 Draft EIS and Revised Draft EIS

Some information in the Cultural Resources sections has changed since the release of the 2012 2012 Draft EIS based on the Modified Alternatives presented in **Section 2.4**. These changes include updates to information presented in the 2012 Draft EIS and additional analysis beyond that presented in the 2012 Draft EIS. A summary of the changed information is presented below.

Definition of Resource. A new paragraph has been added that clarifies USAF's definition of the Area of Potential Effect (APE) and finding of effects. New maps have also been added (**Figures 3.8-1** and **3.8-2**) to illustrate the revised APE.

Existing Conditions. An expanded discussion of CNMI's World War II history has been added as a separate subsection between Cultural Setting and Post-World War II History. The background discussion was also expanded to elaborate on the resources within the defined APE and to summarize the results of the Phase I cultural resources survey that was conducted in support of the Divert EIS undertaking. An expanded discussion and new paragraph were added to summarize the Section 106 consultation process including USAF's finding of possible adverse effects.

Potential Impacts. Impact conclusions were updated based on the most current status of the Section 106 consultation process, including an updated discussion of impacts according to the defined APE(s) for all alternatives.

Cumulative Impacts. The Cultural Resources subsection was expanded to explain more thoroughly the cumulative impacts from past, present, and reasonably foreseeable future development when considered with Divert activities.

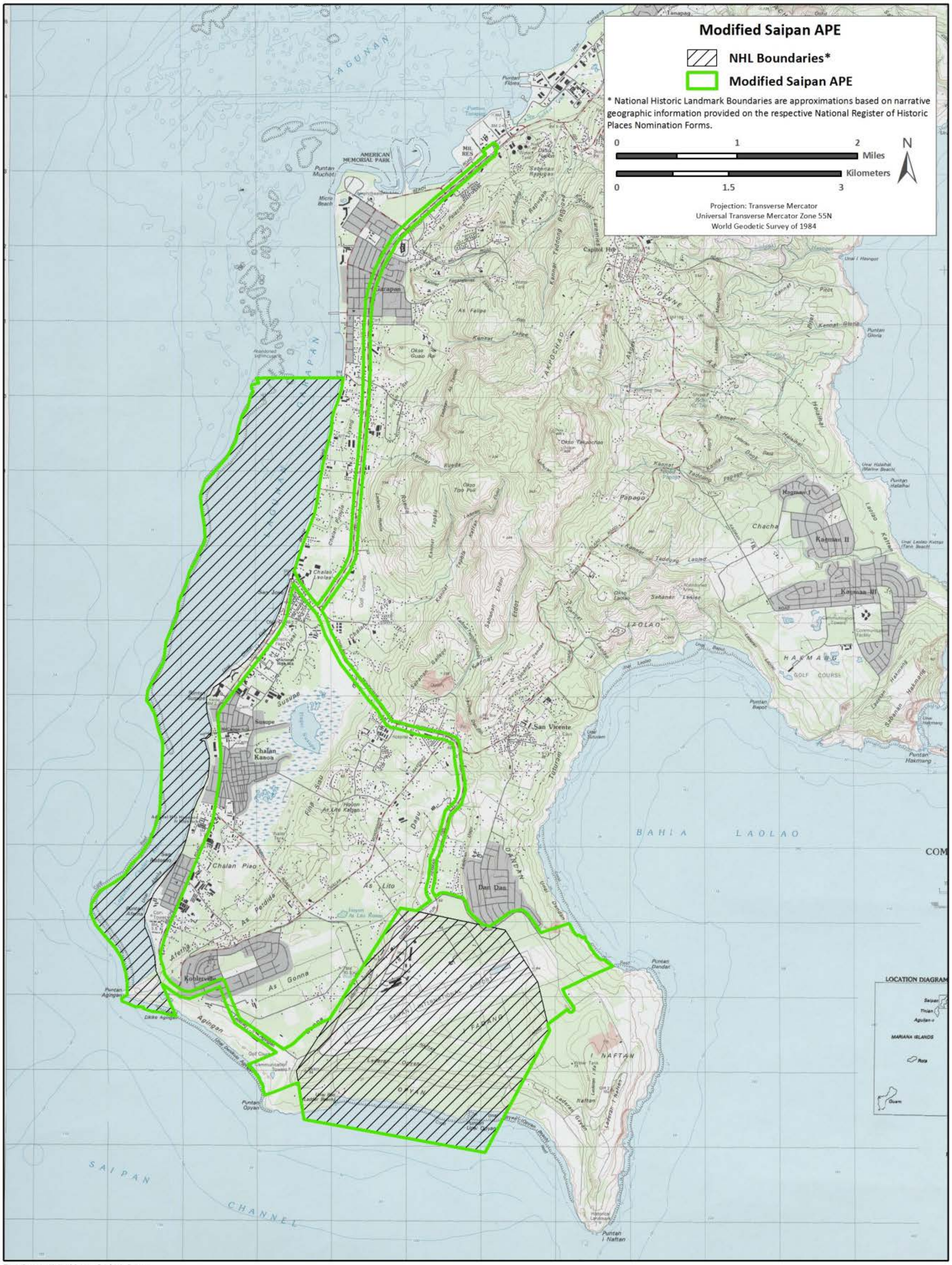
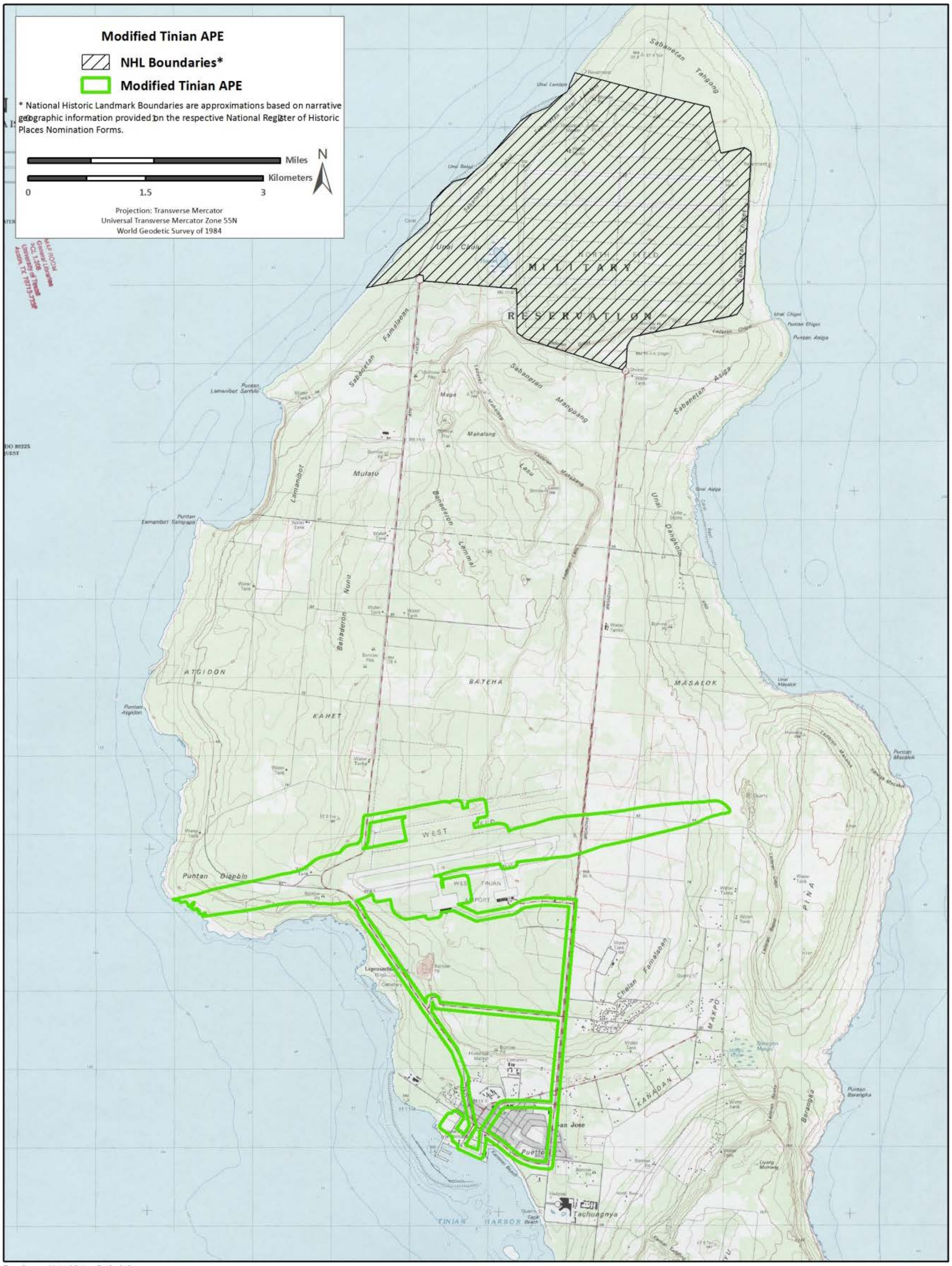


Figure 3.8-1. Modified Saipan APE.



Topo Source: United States Geologic Survey

Figure 3.8-2. Modified Tinian APE.

3.8.2 Definition of Resource

Cultural resources are any prehistoric or historic district, site, building, structure, or object considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. These include archaeological resources (prehistoric and historic), historic architectural resources, and traditional resources. Only significant cultural resources (as defined in 36 CFR Part 60.4) are subject to potential adverse impacts from an action. This usage of "significant" is separate from that defined under NEPA (40 CFR Part 1508.27). Significant archaeological and architectural resources are resources that are eligible for listing or are listed on the National Register of Historic Places (NRHP). Significant traditional resources are identified by Native American tribes or other groups, and might also be eligible for listing on the NRHP as traditional cultural properties (TCPs). Resources listed on or eligible for listing on the NRHP are referred to as "historic properties."

In addition to NEPA, the USAF is concurrently meeting its obligations under Section 106 of the National Historic Preservation Act (NHPA). The NHPA provides a framework for determining the relative importance of various types of cultural resources and assessing how federal actions may affect historic properties. Section 106 of the NHPA (36 CFR Part 800, Subpart B) also requires the USAF to consider the effects of the Proposed Action on historic properties. Pursuant to 36 CFR Part 800 Subpart B, and in consultation with the CNMI HPO and other consulting parties, PACAF is responsible for defining the area of potential effect (APE), determining whether any historic properties are located within the APE, and assessing whether the proposed undertaking would adversely affect those historic properties. An adverse effect is any action that might directly or indirectly change the characteristics that make the historic property eligible for listing in the NRHP. If an adverse effect is identified, the Federal agency (USAF) must continue consultation to develop measures to avoid, minimize, or mitigate the adverse impacts of the undertaking.

This discussion of the affected environment for cultural resources incorporates input received during the Section 106 consultation process as of August 19, 2015. Section 106 consultation is ongoing and will be completed prior to implementing any actions proposed in the Final EIS. The Section 106 process will culminate in an agreement document between the USAF, CNMI HPO, ACHP, and other consulting parties that stipulates the USAF's responsibilities regarding the identification of and resolution of impacts to historic properties in the APEs.

The study area for cultural resources is the area where the Proposed Action or alternatives have the potential to affect existing or potential archaeological, historic, architectural, or traditional resources, also known as the APE. As part of Section 106 consultation for this effort, PACAF has engaged the public and consulting parties including the CNMI HPO, NPS, and ACHP to develop an appropriate APE for the Proposed Action Alternatives. 36 CFR Part 800.16(d) defines APE as "…the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." Because the Proposed Action and alternatives involve multiple alternative project areas, the APE includes the maximum extent of potential impacts for each alternative, including potential impacts from construction, aircraft noise, and vehicle traffic. The APEs for each alternative are illustrated in **Figures 3.8.1, 3.8.2,** and **3.8.3**.

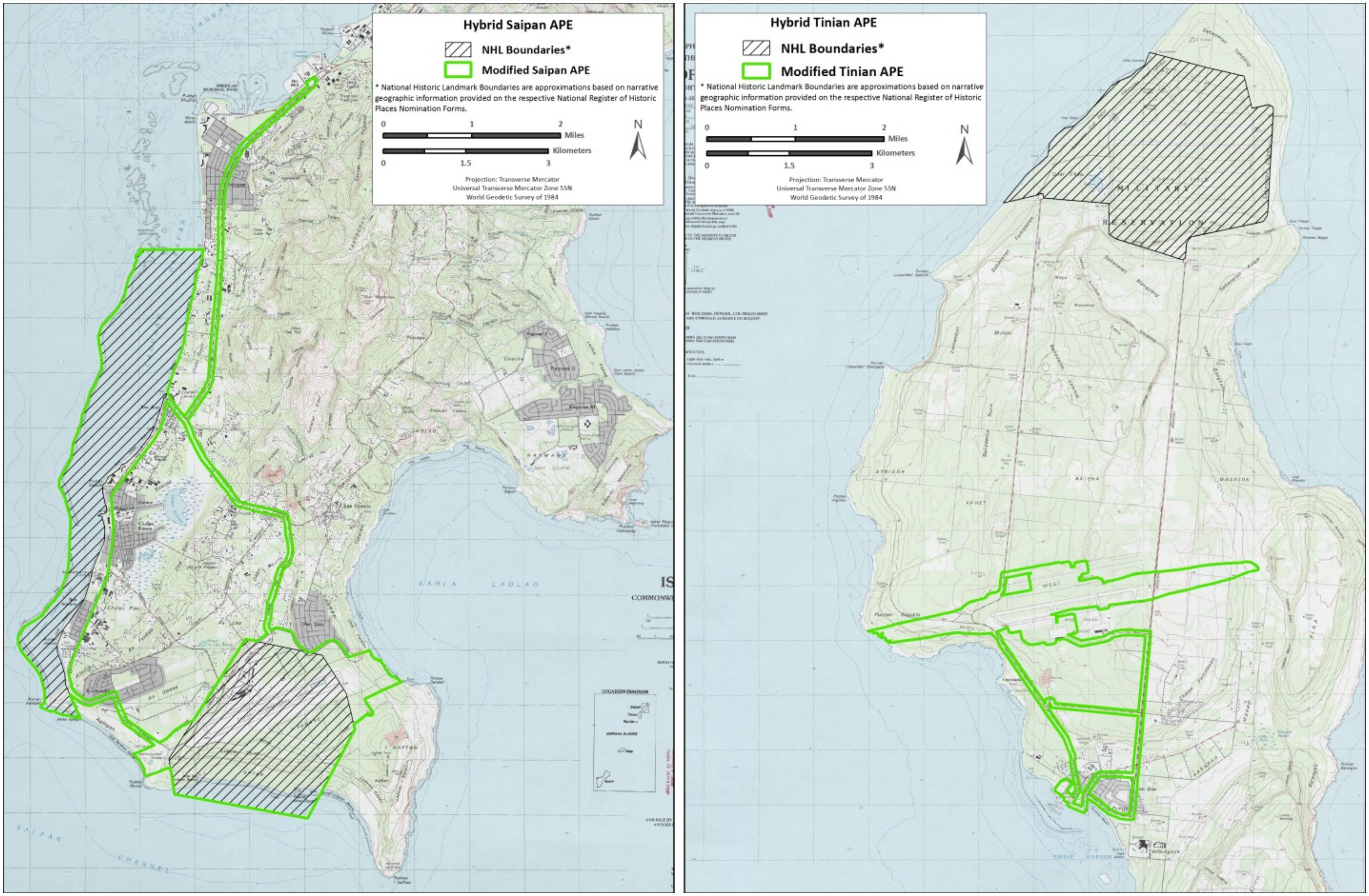


Figure 3.8-3. Modified Hybrid APE.

3.8.3 Existing Conditions

Cultural Setting. The Mariana Islands have been occupied for at least 3,500 years by prehistoric Chamorro populations and more recent settlers from Spain's colonies, the Caroline Islands, Germany, Japan, and the United States. This section presents a chronological overview of the human occupation of the Marianas and describes the physical traces those settlers left on the islands. The Marianas have been the subject of archaeological and historical research since the 1920s (Thompson and Hornbostel 1932). The presence of the U.S. military brought considerable attention to Marianas archaeology in the mid 1940s (Osborne 1947, Reed 1954). Current understanding of Marianas prehistory is the outgrowth of the work of Alexander Spoehr, who surveyed Guam, Saipan, Rota, and Tinian in the mid 1950s and developed the first regional prehistoric chronology (Spoehr 1957). Knowledge of Mariana Islands archaeology increased dramatically after 1977 with the establishment of the Micronesian Survey of the Office of Historic Preservation for the U.S. Trust Territories of the Pacific Islands (Cordy 1986). Major themes in Marianas archaeology include the effects of colonizing populations on island ecology, the timing of colonization, agricultural practices, and increased status and power differences (Kirch 2002, Kirch and Ellison 1994, Rainbird 1994).

World War II. War-time construction and occupation by Japanese and American forces during World War II contributed more to the region's archaeological and architectural historical record than any other historic period. Japan developed military forces and infrastructure on Rota, Saipan, and Tinian in the 1930s in preparation for war. On December 7, 1941, Japan bombed Pearl Harbor in Hawai'i, bringing the United States into World War II. Japan invaded Guam the following day. The Mariana Islands of Saipan, Tinian, Rota, and Guam were strategic strongholds for Japan during World War II. The islands served as important defensible locations and outposts for bombing missions and airstrikes. After February 1944, Japan realized U.S. forces were likely to strike the Marianas and began reinforcing the 1,500 military personnel then on Saipan (Goldberg 2007). The Japanese Navy built three additional airfields in 1944 on Tinian: one immediately southwest of Ushi field, one east of Tinian Town, and one near Gurguan Point that would later become West Field. On June 15, 1944, the 2nd and 4th U.S. Marine Divisions invaded Saipan. By August 1, 1944, the U.S. secured both Saipan and Tinian. U.S. forces immediately began expanding the Japanese airfields to serve as launching points for B-29 bomber airstrikes on Japanese targets.

Post-War History (1944–Present). The U.S. role in the governance of Saipan, Rota, and Tinian differs from Guam due to differences in how the islands were acquired (Herald 1992, McKibben 1990). Spain ceded Guam to the United States after the end of the Spanish-American War in 1898. Guam's territorial status is managed by the U.S. Congress. Guam is one of the three unincorporated territories currently held by the United States, along with the U.S. Virgin Islands and American Samoa. In contrast, the United States was given supervisory control of the other Mariana Islands and the rest of Japan's Micronesian possessions by the United Nations under the Trust Agreement. The Trust Agreement was a bilateral contract between the United States and the U.N. Security Council that made the United States responsible for providing for the islands' political, economic, and social needs and to promote eventual adoption of self-government. The United States demanded that the United Nations designate the Trust territory a strategic area, a concession that gave the Security Council, not the General Assembly, authority over the Trust Agreement. This ensured that the United States could veto any decisions regarding the islands. Congress increased appropriations for the islands and in 1964 created a Congress of Micronesia. The Marianas chose to become a separate entity from the rest of the Micronesian islands and in 1972 began negotiating commonwealth status, in part because the proximity of the northern Marianas to Guam made them more "Americanized." The resulting formation of CNMI was part of the United Nations mandate under which other Micronesian islands chose to separate into three political entities: the Republic of the Marshall Islands, the Federated States of Micronesia, and the Republic of Palau. Each entity negotiates its relationship with the United States separately and each has its own constitution.

3.8.3.1 Saipan

Previous research suggests that prehistoric material such as ceramic, flaked stone, and ground stone artifacts are likely to exist in the Modified Saipan APE and the Saipan portion of the Alternative 3 APE. However, the significant amount of historic modification of the area has impacted pre-contact sites so that the presence of intact prehistoric features is not likely. Prehistoric remains tend to be isolated artifacts in disturbed contexts. Previous research indicates the APE primarily contains historic artifacts and features associated with the Japanese construction of Aslito Field beginning in 1934 and the U.S. expansion of the facility during World War II (at which time it was renamed Isley Field). Artifacts dating to this period include bottle dumps, military supplies and equipment, refuse piles, and other durable metal objects. Features associated with this period, such as concrete foundations and buildings, are also present in the APE. Traditional use areas that may qualify as TCPs may also exist in the APE.

Most of the Modified Saipan APE and the Saipan portion of the Alternative 3 APE was surveyed in 1980 in preparation for nominating Isley Field to the NRHP (Denfeld and Russell 1984). This survey defined 29 sites that encompass 27 intact structures, an Okinawan farm house foundation, two runways, hundreds of hardstands and foundations from the U.S. period, concrete and asphalt roads, and many other features and artifacts within the airport perimeter fence as it stood in 1980. Some of the historic structures associated with the sites recorded by Denfeld and Russell (1984) are still visible on recent aerial imagery and are presumably intact. The Denfeld and Russell report further suggested that additional features and associated artifacts not specifically mentioned in the report are also likely to be present.

The field was nominated to the NRHP as a historic district on September 16, 1980, and was included in the NRHP on June 26, 1981, as the "Isley Field Historic District" (National Register Information System No.: 81000667). As nominated, the district boundary is defined by the "perimeter road;" probably Flame Tree Road to the north, west, and east and Naftan Road to the south, and encompasses 1,189 acres. The condition of the historic structures contained within the district is listed as deteriorated and altered by the modern airport.

Isley Field was later included in a National Historic Landmark (NHL) recommendation for three of Saipan's World War II-era sites. The separate World War II-related properties were listed together as the Saipan Landing Beaches, Aslito/Isley Field, and Marpi Point National Historic Landmark (SNHL) on February 4, 1985 (National Historic Landmark System No.: 85001789). In the landmark nomination, Isley Field's size is listed as 1,453 acres (compared to 1,189 acres listed in the 1980 district nomination). All of the features noted in the district nomination were recommended for inclusion in the Aslito/Isley Field portion of the SNHL (referred to hereafter as the Aslito/Isley Field National Historic Landmark District [NHLD]), except the site of Kobler Field southwest of Isley Field, which by 1985 was converted into a large housing development.

USAF conducted a cultural resources survey in 2012 to support the Section 106 process. This study, provided in **Appendix D,** resulted in the identification of three pre-contact isolated occurrences (IOs) and 10 historic features (sites) within the boundaries of the Aslito/Isley Field NHLD. The three pre-contact IOs are composed of pre-contact ceramic fragments. All of the prehistoric IOs are recommended not eligible for listing on the NRHP as they retain minimal information potential, most of which was exhausted through field recording, and are located in disturbed contexts. The historic features and artifacts recorded during the survey are associated with the Japanese and U.S. occupations of Aslito/Isley Field from the field's construction in 1934 through the years immediately following World War II (see **Table 3.8-1**). The features include three similar 4-x-4-foot concrete structures that are apparently water catchment devices (Feature 2, Feature 3, Feature 4), one water retention tower (Feature 1), and two concrete foundations (Feature 5, Feature 11). In addition to these spatially isolated historic

Table 3.8-1. Newly Identified Aslito/Isley Field NHLD Features

Feature or Artifact Number	Cultural Material	Temporal Association	NHL Contributing Resource?
Feature 1	Concrete water tower	Japanese Occupation (1934–1944)	N
Feature 2	Concrete foundation with drain with one Japanese porcelain sherd	Japanese Occupation (1934–1944) American Occupation (1944–1945)	Y
Feature 3	Concrete foundation with drain	Japanese Occupation (1934–1944) American Occupation (1944–1945)	N
Feature 4	Concrete foundation with drain	Japanese Occupation (1934–1944) American Occupation (1944–1945)	Y
Feature 5	Concrete slab	Japanese Occupation (1934–1944) American Occupation (1944–1945)	N
Feature 6	Japanese bunker	Japanese Occupation (1934–1944)	Y
Feature 7	Water catchment feature	American Occupation (1944–1945)	Y
Feature 8	Water catchment feature	American Occupation (1944–1945)	Y
Feature 9	Concrete foundation	American Occupation (1944–1945)	N
Feature 10	Bottle dump	American Occupation (1944–1945)	Y
Feature 11	Concrete foundation	Unknown	N

features, a cluster of historic features was recorded 220 feet (67 meters) south of Airport Road that included a Japanese air raid shelter (Feature 6), a large cement pad or foundation (Feature 9), two water catchment features (Features 7, Feature 8), and a large bottle dump (Feature 10).

Historic features identified during the survey were evaluated as contributing or non-contributing elements of the NHL following guidelines published by NPS regarding the evaluation of historic districts (NPS 1993). In order to be a contributing resource, each site, building, structure, or object within the landmark must be evaluated as to whether it possesses the following characteristics (NPS 1993):

- It must have been present during the period that the property achieved its significance. In this case, the applicable periods are the Japanese build-up prior to and during World War II (1934–1944), the Battle of Saipan, or the American occupation after the battle (1944–1945).
- It relates to the documented significance of the property, in this case Japanese and American military use during World War II.
- It possesses historical integrity or is capable of yielding important information relevant to the significance of the property.

All of the cultural resources recorded by the USAF survey, except for the pre-contact IOs, meet the first two criteria for consideration as resources that contribute to the landmark. However, five resources do not meet the third criteria of possessing historical integrity or the capability to yield important information relevant to the district's significance. The USAF recommended these five resources should not be considered contributing elements to the SNHL but recognizes that the determination of whether the features contribute is ultimately a determination made by the Secretary of Interior (see **Table 3.8-1**).

3.8.3.2 Tinian

Previous research suggests that prehistoric material such as ceramic, flaked stone, and ground stone artifacts are likely to exist in the Alternative 2 APE and the Tinian portion of the Alternative 3 APE. However, the APE was extensively modified by the construction of Japan's Gurguan Airfield and the U.S. expansion of the airfield into the much larger West Field during World War II. Traditional use areas that may qualify as TCPs may also exist in the APE.

Most of the APE was surveyed for historic properties in recent decades (Allen and Nees 2001; Athens 2009; Dixon and Welch 2002; Franklin and Haun 1995; Gosser et al. 2001; Henry and Haun 1995; Jones 1991; More et al. 1986; Thursby 2010). Previously surveyed areas include all proposed construction areas at the seaport, all proposed construction areas at Tinian International Airport under both the North and South Options, and portions of the APE incorporating noise contour areas. The only areas that have not been previously surveyed include about 3.5 kilometers (2.2 miles) of existing roads in and around San Jose that would possibly serve as truck routes for construction material and fuel trucks.

In addition to archaeological and architectural surveys, a TCP study was conducted on Tinian in support of a separate undertaking being considered by the U.S. Marine Corps Forces, Pacific (MARFORPAC) (Griffin et al. 2015). The study used ethnographic information from archival research, oral history interviews, and natural resource inventories to identify and evaluate potential TCPs in the Military Lease Area on the northern two-thirds of Tinian.

Previous surveys have recorded a large number of historic resources near Tinian International Airport, especially to the west. Many of these sites may be associated with the pre-war Gurguan Airfield and have been recommended eligible by MARFORPAC in survey reports they have produced for their CNMI Joint Military Training (CJMT) undertaking (Dixon et al. 2014). The site of the WWII-era U.S. Naval Air Base Headquarters (HQ) has been identified at the east end of the modern runway. This site has also been recommended as eligible for listing on the NRHP. These sites lie under the noise effects portion of the APE and are not within proposed construction footprints.

All of West Field, the Japanese-era airstrip as modified by U.S. forces during Word War II and the basis of the modern airport, has also been recorded as a historic resource (Site TN-6-0030, also sometimes referred to as Site 3005) (Dixon et al. 2014). The site is recommended eligible for the NRHP under Criterion A for association with events that have made a significant contribution to the broad patterns of our history and Criterion D for potential to yield information important to understanding history. Pavement, hardstands, and other features associated with West Field are still visible on aerial photographs. However, the exact location of preserved character-defining features associated with the site has not been determined at this time.

3.9 Recreation

3.9.1 Differences Between the 2012 Draft EIS and Revised Draft EIS

Some information in the Recreation sections has changed since the release of the 2012 Draft EIS based on the Modified Alternatives presented in **Section 2.4**, and to provide a more thorough and in-depth analysis of impacts. These changes include updates on information presented in the 2012 Draft EIS and additional analysis beyond that done in the 2012 Draft EIS. The changed information relates to the assessment of impacts in **Section 4.1**. A summary of the changed information is presented below.

3.9.2 Definition of Resource

The term “recreation” refers to both natural and human-made lands designated by planning entities to offer visitors and residents diverse opportunities to enjoy leisure activities. Recreational resources are places or amenities set aside as parklands, beaches, trails, recreational fields, sport or recreational venues, open spaces, open waters, and aesthetically pleasing landscapes along with a variety of other uses. Federal, commonwealth, and local jurisdictions typically have designated land areas with defined boundaries for recreation. Other less-structured activities (e.g., fishing) are performed in broad, less-defined locales. A recreational setting might consist of natural or human-made landscapes and can vary in size from a roadside monument to a designated sport area to a wilderness area. For the purpose of this analysis, recreational activities include any type of outdoor activity in which area residents, visitors, or tourists could participate and pertain to the physical geography of the islands.

3.9.3 Existing Conditions

3.9.3.1 Saipan

Saipan is approximately 115 miles northeast of Guam and 3 miles north of Tinian. Saipan contains a lagoon/barrier reef system along its western coastline and fringing reefs scattered throughout its eastern coastline. Approximately 40 percent of the population lives along Saipan’s coasts and has direct access to marine-related recreational activities. Tourists frequent the larger hotels in Garapan and Susupe. Notable recreational resources include trails, historic and cultural attractions, beaches and parks, scenic points, dive spots, and recreational fishing (see **Figure 3.9-1**).

Trails. The Saipan Beach Pathway is a "boonie stomping" (hiking through "boonies" or large areas of undeveloped jungle and beaches) trail that traverses approximately 3 miles along Saipan's western coast. The trail connects to Kilili Beach Park and has various historic attractions along its path. A pathway from Micro Beach, which is approximately 1 mile southwest of the Port of Saipan, goes through American Memorial Park where a variety of World War II bunkers and memorials are found (MVA 2012).

Historic and Cultural Attractions. As described in detail in **Section 3.8**, Saipan International Airport is wholly contained within the Isley Field Historic District and National Historic Landmark. Because of its modern status as a functioning international airport, most of the historic structures and sites that make up the district are not directly accessible to the public; however, three exceptions exist. Six extant Japanese concrete air raid bunkers are visible from the runway at Saipan International Airport. While few visitors can approach the bunkers directly, the visual reminder of Saipan's critical role in the Pacific theater during World War II provided by the bunkers is an important experience for visitors to the island. The CNMI HPO on Saipan has cited the visual impact of these bunkers as one of the main motivations for their continued preservation. Two additional bunkers, regularly visited by the public, are outside of the airport boundaries along the edge of a current soccer field. A number of Japanese-era buildings just outside of airport boundaries, including an excellent example of a pre-World War II Okinawan farmhouse, and concrete hardstands that served as parking apron for U.S. B-29s during World War II, are included in a small walking tour area with paths and interpretive signage. This interpretive park is popular with school children on field trips and tourists to the island.

Beaches and Parks. Saipan has approximately 50 miles of coastline and there are approximately 29 public beach/shoreline access sites on the island. Public access to the shoreline has a high demand throughout the CNMI. Saipan residents use beaches for a variety of activities including swimming, picnicking, snorkeling/diving access, surfing, playing sports, and relaxing. Kilili Beach is used as an occasional canoe racing site. Laolao Bay and Obyan Beach, on the eastern and southern portions of the island, respectively, are consistently inundated with snorkelers and scuba divers (NOAA 2011). The Beach of Managaha, on Saipan Lagoon, is a widely used snorkel and dive spot, but is also used for viewing wildlife and historical artifacts. Aginan Beach, along Saipan's southern coast, has one of the island's most diverse archaeological areas and can be accessed through the Coral Ocean Point Golf Course. Micro Beach is often used as a staging point for watersports (e.g., windsurfing, parasailing, jet-skiing) (MVA 2012).

American Memorial Park is the only national park on Saipan. The 133-acre park contains beaches, sports fields, picnic sites, boat marinas, playgrounds, walkways, and a 30-acre wetland and mangrove forest. Kilili Beach Park, in Susupe along Beach Road, received an NPS Land and Water Conservation Fund grant in 2004 to develop an access road and paved parking, and to replace picnic shelters, park walkways, and various visitor facilities. Watersports are popular in both parks (NPS 2012).

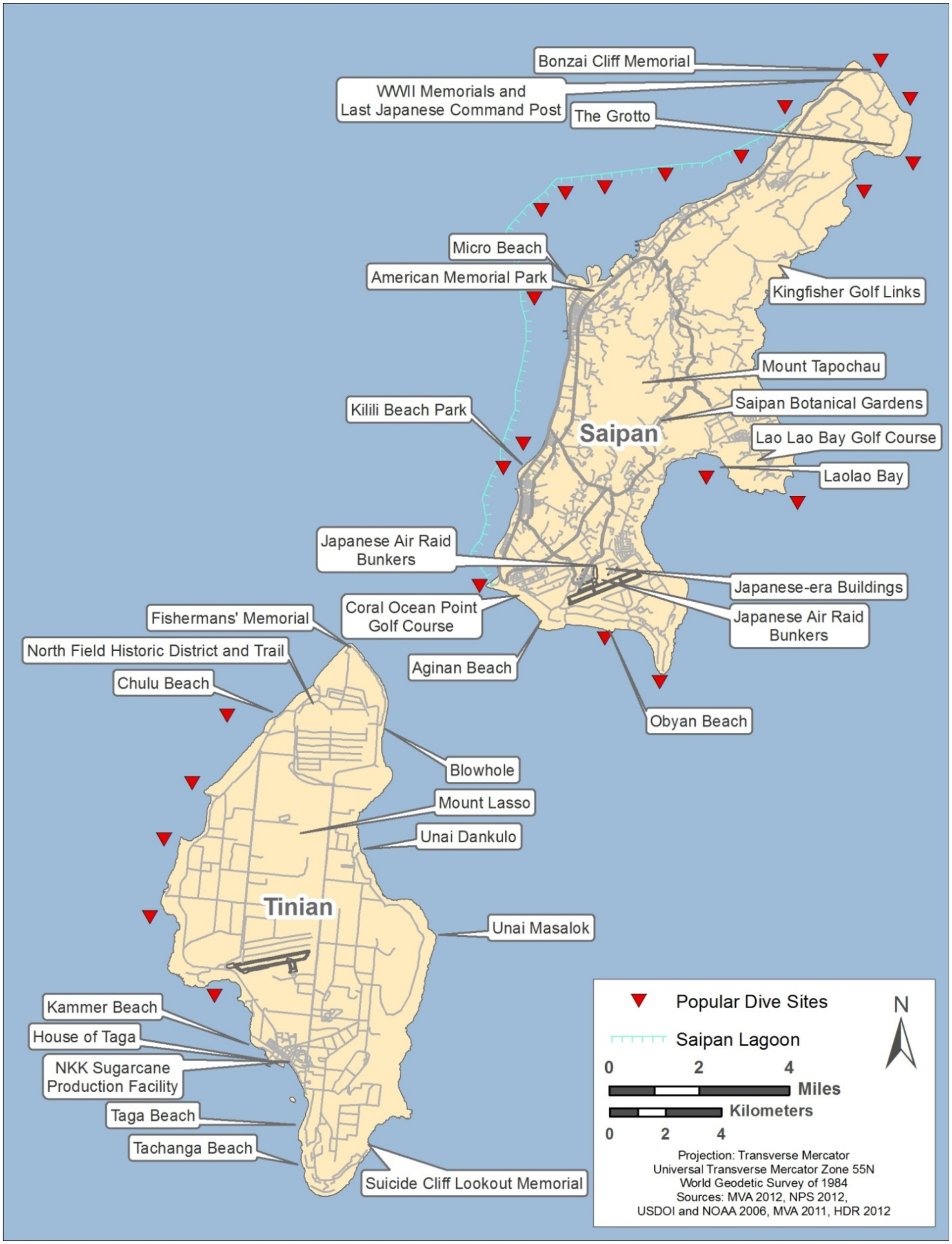


Figure 3.9-1. Popular recreational resources on Tinian and Saipan

Scenic Points. The majority of the scenic points on Saipan are in the northeastern portion of the island. Banzai Cliff is a popular tourist spot. Mount Tapochau, at the center of the island, has a panoramic view of the entire island and is frequented by tourists and other sightseers (USAF 1987).

Dive Spots. The CNMI consistently attracts scuba divers due to warm water and prolific coral reefs, which maintain an incredible amount of diversity. Saipan has more than 18 different dive sites scattered around the island (DON 2010a). Saipan Lagoon, Laolao Bay, and Obyan Beach are among the most popular (USDOI and NOAA 2006).

Recreational Fishing. Recreational fishing is prominent throughout CNMI, and is generally conducted in small fishing fleets. Trips are typically made during the daytime within an approximate 26 NM radius of Saipan (DON 2010a). Launching points for Saipan's annual fishing tournament are the Smiling Cove Marina and the Garapan Fishing Base Complex, both on the western side of the island approximately 1 mile southwest of the Port of Saipan (MVA 2011). Saipan Lagoon is considered to be heavily harvested by recreational fishermen. Coral reefs are not thought to be harvested by recreational fishermen; however, poaching by foreign boats is suspected (DON 2010a).

3.9.3.2 Tinian

Tinian is approximately 100 miles northeast of Guam and 3 miles south of Saipan. Approximately 26 of the 39 square miles Tinian covers are leased to the DOD (DON 2010b). The predominant community and tourism activities are on the southwestern portion of the island, associated with San Jose Village. Tinian is known for its precipitous cliffs, though a few coves and beaches are found throughout the island. Several small and narrow fringing reefs and a small barrier reef are found near Tinian Harbor on the western side of the island. Recreational resources include trails, historic and cultural attractions, beaches and parks, scenic points, and dive spots throughout the island (see **Figure 3.9-1**).

Trails. The most notable recreational trail feature on Tinian is the Ushi Field-North Field Trail. The trail, traversing the northern portion of the island, identifies 14 points of interest from World War II. Before the United States took control of the island, the Japanese had constructed an airfield on northern Tinian (Ushi Field). Afterwards, the Seabees and the Marines constructed six airstrips during the war, four on northern Tinian (dubbed North Field) and two on central Tinian (dubbed West Field), to support B-29 bombers. Each strip on North Field had an alphabetical designation. The northernmost strip, Able, was the launching point for the Enola Gay and Bockscar to drop the atomic bombs on Hiroshima and Nagasaki, Japan, on August 6 and 9, 1945, respectively (DON 2010b). The smaller runway at West Field is now Tinian International Airport. World War II Japanese fortification features, including a bunker, naval battery, command post, and the Bomb Assembly Building, can also be found along the trail.

Historic and Cultural Attractions. There are several publicly enjoyed historic properties on Tinian. The House of Taga, north of the seaport, is the remains of prehistoric latte stone pillars that were originally 15 feet (4.6 meters) high, making them the tallest latte stones in the Mariana Islands. Four NRHP-listed properties from the Japanese-era Nanyo Kohatsu Kabushiki Kaisha sugarcane production facility, including a Nanyo Kohatsu Kabushiki Kaisha administration building, ice storage building, laboratory, and a building known only as the "Japanese structure" that might have been a small store, are found in San Jose. Structures at North Field, including Japanese-era buildings, B-29 hardstands, and the loading point for the atomic bombs that were dropped on Hiroshima and Nagasaki to end World War II, are also popular with tourists. Historic and cultural sites at Tinian International Airport, discussed in **Section 3.8**, are not accessible to the public and, therefore, are not considered recreational attractions.

Beaches and Parks. Unai Dankulo, along Tinian's east coast, is the island's largest beach. A continuous reef crest runs along the entire beach. At least 10 beaches are found along Unai Dankulo over a distance of 4,900 feet. Other notable beaches include Chulu Beach, on the northwestern shore, and Unai Masalok, which is composed of three beaches over a distance of 1,600 feet, on the eastern shore. Kammer Beach is found to the east of the Port of Tinian, south of San Jose Village (DON 2010b).

Tinian has approximately 34 miles of coastline, and there are 12 public beach/shoreline access sites on the island (NOAA 2011). Of note, Taga Beach, along the southern end of Tinian, has picnic facilities, parking, and a place to rent scooters. Tachogna Beach, adjacent to Taga Beach, offers activities including snorkeling, scuba diving, jet skiing, and a variety of other marine activities. Unai Dankulo is a favored spot for shore-based spear fishing (MVA 2012). Although there are no national parks on Tinian, six local parks can be found throughout the island (NOAA 2011).

Scenic Points. Mount Lasso Lookout and Tinian Blowhole, on the southern and eastern sides of North Field, respectively, are frequently visited lookout points (DON 2010a).

Dive spots. Tinian has numerous World War II dive sites, predominantly on the northwestern side of the island (DON 2010a).

3.10 Land Use

3.10.1 Differences Between the 2012 Draft EIS and Revised Draft EIS

Some information in the Land Use sections has changed since the release of the 2012 Draft EIS to provide a more thorough and in-depth analysis of impacts. These changes include updates on information presented in the 2012 Draft EIS and additional analysis beyond that done in the 2012 Draft EIS. The changed information relates to the assessment of impacts in **Section 4.10**. A summary of the changed information is presented below.

Land Use Compatibility and Zoning. Land Use Zoning Maps were updated to the most current available data.

Potential Hearing Loss. An analysis of potential hearing loss on the mental and physical health effects on populations exposed to noise was revised because noise levels associated with the Proposed Action would not exceed 65 dBA DNL

3.10.2 Definition of Resource

Land Use. The term land use refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws. However, there is no nationally recognized convention or uniform terminology for describing land use categories.

Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. In appropriate cases, the location and extent of a proposed action is evaluated for its potential effects on a project site and adjacent existing land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use at the project site, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its "permanence."

Coastal Zone and Submerged Lands. The CZMA was promulgated in 1972 as a means to "…preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zones for this and succeeding generations [through] the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and aesthetic values, as well as the needs for compatible economic development…" (16 U.S.C. 1451–1466). The CZMA is administered through local programs designed in cooperation with the Federal government.

Federal consistency requirements of the CZMA require that Federal activities comply to the greatest extent possible with the enforceable policies of applicable local coastal zone management programs. Non-Federal activities must comply fully with local management programs if they require a Federal permit or license, or if they receive Federal funding (15 CFR Part 930). Land and submerged lands under Federal jurisdiction are excluded from the territorial coastal zone. According to the CZMA, Federal activities that affect any land or submerged land use or natural resource of a territory's coastal zone shall be carried out in a manner that is consistent to the maximum extent practicable with the enforcement policies of the federally approved territorial Coastal Zone Management Program.

Region of Influence. The region of influence for land use is the land and submerged lands of Tinian and Saipan in the CNMI. For Saipan, the land use analysis focuses on Saipan International Airport and the Port of Saipan. For Tinian, the analysis focuses on Tinian International Airport and the Port of Tinian.

3.10.3 Existing Conditions

3.10.3.1 Saipan

The CNMI (including Saipan and Tinian) is located to the east of the Philippine Sea. Saipan has an area of approximately 46.5 square miles; Tinian has an area of approximately 39.5 square miles.

CNMI Land Use and Ownership. The Northern Mariana Islands became self-governing as a Commonwealth to the United States in 1976 under the terms of the "Covenant to Establish the Commonwealth of the Northern Mariana Islands with the United States of America" (hereinafter referred to as the Covenant). Land ownership within the CNMI is subject to the stipulations of Article XI and XII of the CNMI Constitution (CNMI 2012) which states that "lands can be privately owned in the CNMI, but only by persons of Northern Mariana descent." Public lands, which are managed by the CNMI Department of Public Lands (DPL), make up the majority of lands found within Saipan and Tinian.

Public lands are subcategorized as Grant of Public Domain Lands, Designated Public Lands, Leased Lands, Undesignated Public Lands, or Covenant Leased Lands. Grant of Public Domain Lands has been transferred to and are managed by another public agency in the CNMI. Designated Public Lands are actively managed for a particular use, such as a forest or a park. Leased Lands are leased to non-government agencies and require government approval. If the area is greater than 12.4 acres the lease must be approved by the CNMI legislature; if the lease is for an area of less than 12.4 acres it must be approved by the CNMI DPL. Public lands without a specified use are undeveloped and are classified as Undesignated Public Lands (DON 2010b).

Covenant Leased Lands have been leased to the military for training purposes under Article VIII of the Covenant, which states that approximately 17,799 acres on Tinian and 177 acres on Saipan would "be made available to the U.S. by lease to enable it to carry out its defense responsibilities." The lease for these lands was issued on January 6, 1983, for an initial term of 50 years with an option to renew for an additional 50-year term upon expiration. A separate *Technical Agreement Regarding Use of Land to be Leased by the United States in the Northern Mariana Islands* (hereinafter referred to as the Technical Agreement) was simultaneously executed with the Covenant that provided for the leaseback of property and joint use arrangements for San Jose Harbor and West Field on Tinian and Isley Field, Port of Saipan, and other property on Saipan (DON 2010b). Specifically, the United States retained a limited right of use of both airports for the landing and takeoff of military and naval aircraft of the United States, in common with other aircraft at a rate established by agreement between the CNMI government and the U.S. government. The United States has routinely exercised these rights by entering into short-term and long-term agreements with CPA for a variety of military requirements including mooring of the pre-positioned ship squadron at Saipan Harbor; military improvements of dock infrastructure to "Baker" wharf at Saipan harbor to facilitate the mooring of military vessels; intermittent use of Saipan International Airport for refueling of aircraft using FDM; intermittent use of West Field on Tinian for specific military training exercises such as Geiger Fury; and intermittent use of West Field on Tinian for logistics requirements for training and humanitarian efforts, including Marathon Pacific 1999. Furthermore, Article VIII recognizes the right of the United States, as a sovereign government, to acquire property for public purpose. This sovereign right is limited, by mutual agreement between the Commonwealth and the United States, to acquiring the minimum area necessary to accomplish the public purpose.

CNMI Coastal Zone and Submerged Lands. Submerged lands refer to coastal waters extending from the CNMI coastline into the ocean for 3 NM, which is the limit of state, commonwealth, or territorial jurisdiction. Article XI of the CNMI Constitution states that "the submerged lands off the coast of the commonwealth are public lands belonging collectively to the people of the Commonwealth who are of Northern Marianas descent." However, in *CNMI v. U.S.* (399 F.3d 1057, 9th Cir. 2005), it was affirmed that the "U.S. possesses paramount rights in and powers over the waters extending seaward of the ordinary water mark on the

Commonwealth coast and the lands, minerals, and other things of value underlying the waters…"

The CZMA is administered in CNMI by the Coastal Resources Management Office. The coastal zone includes all non-Federal lands on the island, offshore islands, and non-Federal submerged lands, within 3 NM of the coast. The Coastal Resources Management Office has identified Areas of Particular Concern (APCs), which are geographically delineated areas with special management requirements. Before work begins on any project to be located wholly or partially within an APC, a valid coastal permit is required. This is not applicable to Federal-lease lands or federally owned submerged lands. Currently, there are five APCs in CNMI (CNMI CRMO 2012):

- *Shoreline* – The area between the mean high water mark and 150 feet inland.
- *Lagoon and Reef* – The area extending seaward from the mean high water mark to the outer slope of the reef.
- *Wetlands and Mangrove* – Those areas which are permanently or periodically covered with water and where species or mangrove vegetation can be found.
- *Port and Industrial* – Those land and water areas surrounding the commercial ports of Saipan, Tinian, and Rota.
- *Coastal Hazards* – Those areas identified as a coastal flood hazard zones in the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs).

Saipan Land Use and Ownership. Saipan is the most heavily populated island in the CNMI. Land ownership on Saipan is primarily public. A breakdown of land ownership percentages is not currently available. Land use on the Island of Saipan is regulated by the Saipan Zoning Law of 2008 (CNMI Zoning Board 2008), which stipulates that no development shall commence on Saipan without a zoning permit. The primary land use on Saipan is designated as Rural, with much of the interior of the island consisting of lightly or undeveloped areas. Several large areas along the coast of the islands have been designated as Tourist Resort. Additionally, much of the northern part of the island has been designated as Public Resources. The rest of the island has been designated as a mixture of Industrial, Village Commercial, Village Residential, Mixed Commercial, and Agriculture (CNMI Zoning Board 2012).

The DOD does not have any active training areas on Saipan; however, the Technical Agreement allows for leaseback at the Port of Saipan for uses compatible with DOD use. The Technical Agreement also allowed the leaseback of the remaining leased property on Saipan for use as a memorial park to honor those who died in the World War II Mariana Islands campaign. The remaining portion of the lease area at the Port of Saipan is used as a U.S. Army Reserve Center.

Saipan International Airport. Saipan International Airport is situated on approximately 700 acres in the southern portion of the Island of Saipan (see **Figure 2.3-1**). It is owned and operated by the CPA under the Commonwealth Ports Authority Act (P.L. 2-48), which was enacted in October 1981. The airport is designated as an Industrial land use according to the CNMI Zoning Board. The land use surrounding the airport primarily consists of agricultural, recreation, and conservation (see **Figure 3.10-1**). The 2002 Saipan International Airport Master Plan outlines the development strategy for the airport as it prepares for increases in passenger use (CPA 2002).

Port of Saipan. The Port of Saipan is situated on the west coast of Saipan (see **Figure 2.3-7**). It contains 2,600 linear feet of berthing space and a 22-acre container yard. It is owned and operated by the CPA under the jurisdiction of the Commonwealth Ports Authority Act. The Port is designated as industrial according to the CNMI Zoning Board. The land surrounding the harbor is a mixture of undesignated public lands and mixed commercial (see **Figure 3.10-2**) (CPA 2012a).

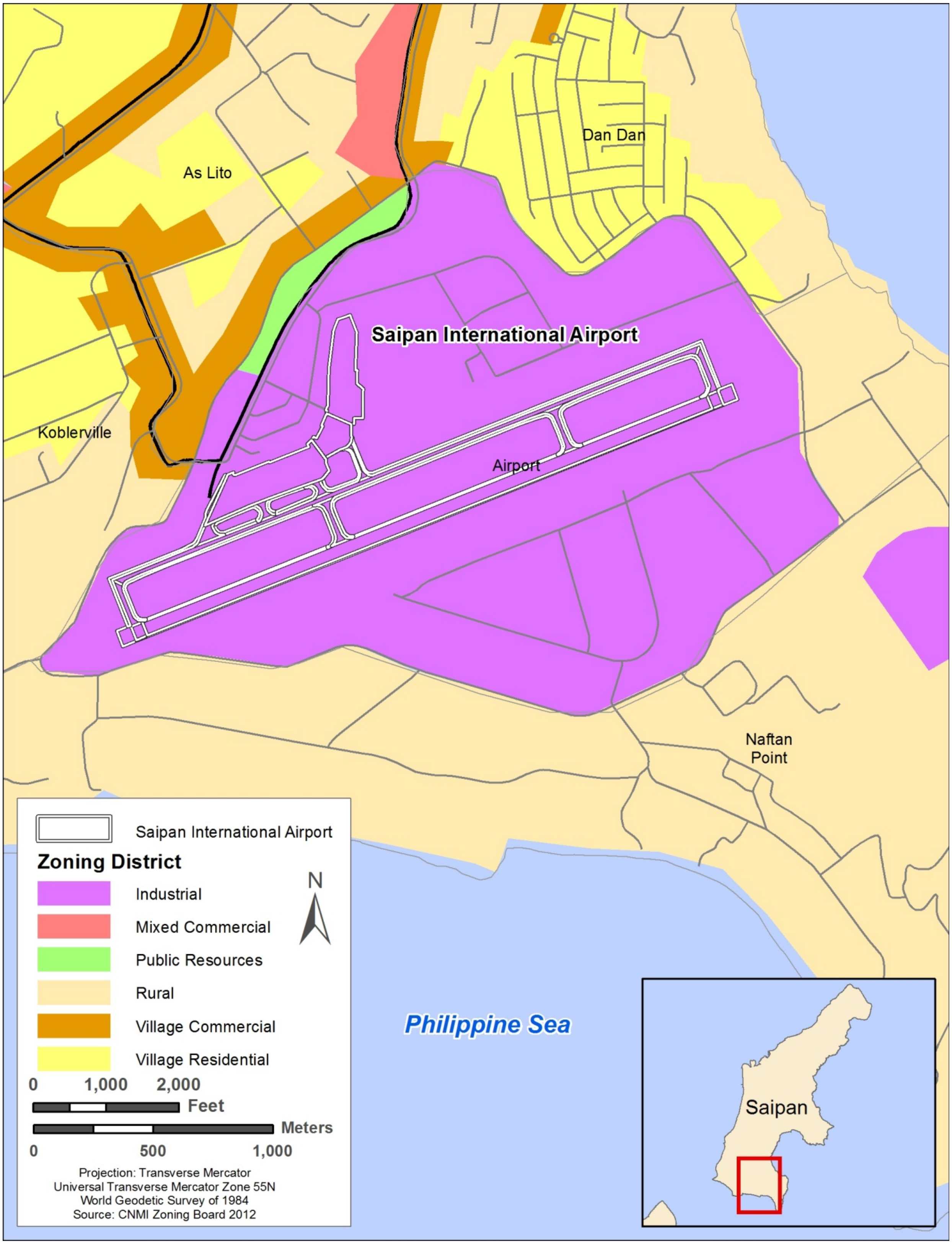
Coastal Zone and Submerged Lands. The coastal zone includes all non-Federal lands on the island, offshore islands, and non-Federal submerged lands within 3 NM of the shoreline.

Noise Levels**.** Noise levels were calculated for noise-sensitive locations around Saipan International Airport. Most of the population around the airport is north of Saipan International Airport. As shown in **Table 3.10-1**, there are numerous noise-sensitive land uses around Saipan International Airport including residences, schools, and recreation areas. Under the Baseline Scenario, none of these land uses are at or above 65 dBA DNL.

Table 3.10-1. Baseline Scenario Noise Levels at Noise Sensitive Locations around Saipan International Airport

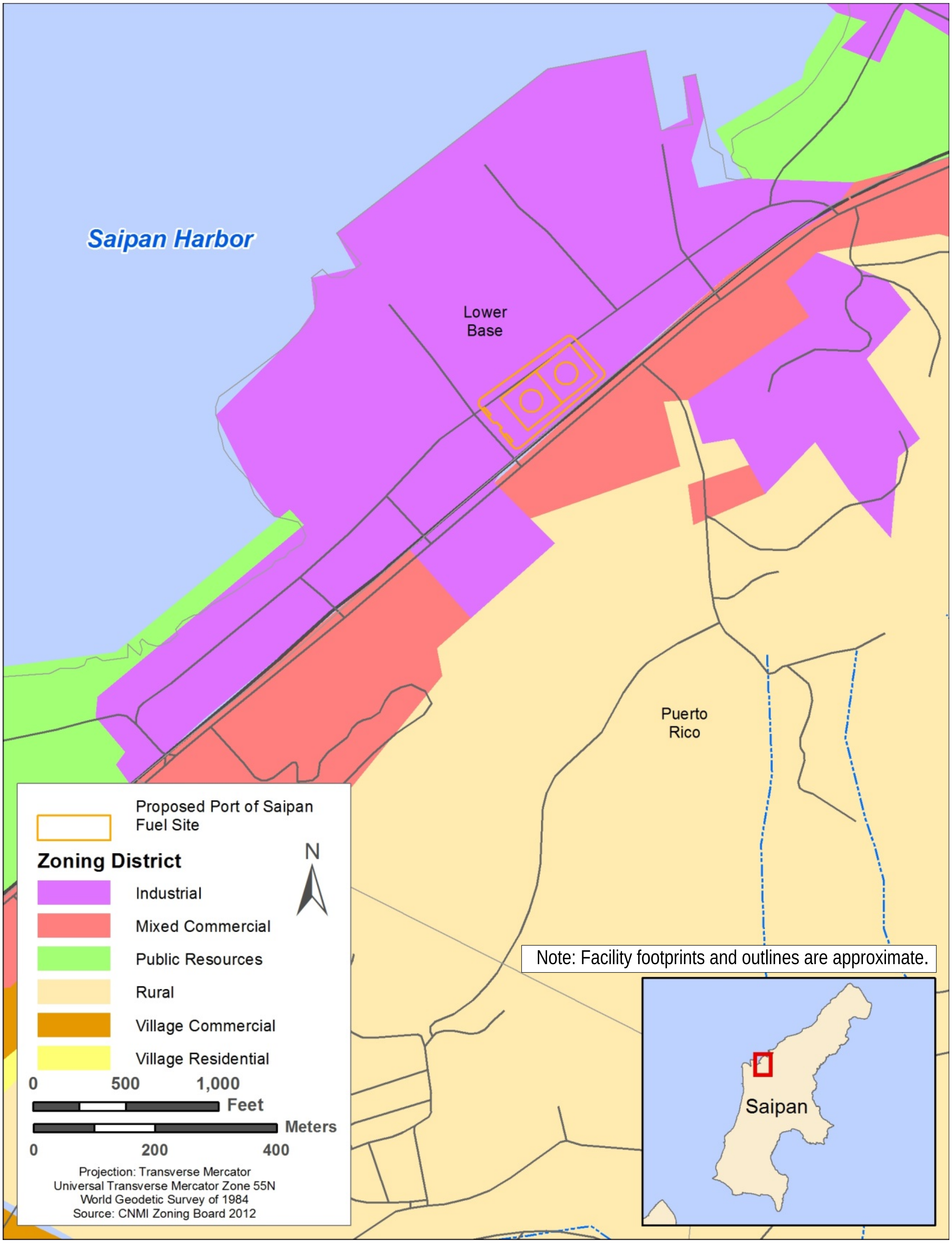
Land Use	DNL Noise Level
Coral Ocean Point Golf Course	58 dBA
Dandan Elementary School	44 dBA
Village Residential	53 dBA
Koblerville Elementary School	47 dBA
Saipan Southern High School	48 dBA
Lao Lao Bay Golf Course	37 dBA
Ladder Beach	55 dBA
Forbidden Island	44 dBA
Babui Beach on Tinian	46 dBA

Source: HDR



Source: HDR

Figure 3.10-1. Land Use Surrounding Saipan International Airport



Source: HDR 2012

Figure 3.10-2. Land Use Surrounding Port of Saipan

3.10.3.2 Tinian

Land Use and Ownership. Private lands account for approximately 2,422 acres (10 percent) and public lands account for approximately 22,729 acres (90 percent) of the lands on Tinian. **Table 3.10-2** presents the breakdown of land ownership on Tinian.

Table 3.10-2. Tinian Land Ownership

Owner	Sub-classification	Acres
Private Lands	Private	2,422
Public	Grant of Public Domain	1,569
	Designated/In Use	663
	Leased	1,639
	Covenant Leased	15,469
	Undesignated/Not in Use	3,389
	Total	**25,151**

Source: DON 2010b

The DOD currently leases 16,100 acres, known as the MLA, in the northern portion of Tinian (NPS 2001). In 1983, the Navy signed a lease for the MLA for a period of 50 years with a renewal option for an additional 50 years. The MLA encompasses approximately the northern two-thirds of Tinian land area, and is divided into two sections. The northern portion is the EMUA and the southern portion is the LBA. The EMUA is used for periodic military training exercises, and is open to the public for recreational purposes when not being used for military training. The roads that connect the EMUA with the Port of Tinian and Tinian International Airport are also used by the Navy during training exercises. The LBA is a joint-use area where both military and non-military activities can occur. The LBA has been leased back to the CNMI for uses determined by the Navy to be compatible with long-term DOD needs, primarily grazing and agriculture. Under the leaseback agreement, the LBA can be used for DOD training activities that would not be detrimental to ongoing CNMI economic and agricultural activities (NPS 2001).

The EMUA covers approximately the northern third of Tinian and contains approximately 7,574 acres of land. The area is used for ground element exercises, including Military Operations in Urban Terrain- type exercises, command and control, logistics, bivouac, vehicle land navigation, convoy training, and other field activities (DON 2010b). The LBA consists of approximately 7,779 acres in the middle third of the island where the U.S. Government has agreed to lease land back to the CNMI government. In consultation with the U.S. Government, the CNMI government issues permits for LBA lands to Tinian residents for grazing and agricultural uses. Within the LBA, there are 35 lessees with 48 parcels totaling approximately 2,552 acres of grazing and agricultural land (DON 2010b).

Land Use on Tinian is overseen by the CNMI DPL. The primary land use is Agriculture, with other primary land uses including Tourism, Natural Resource Extraction/Alteration, Natural Resource Conservation/Preservation, Urban/Buildup, and Undeveloped (DON 2010b).

Tinian International Airport. Tinian International Airport is owned and operated by the CPA under the Commonwealth Ports Authority Act. The airport is situated on approximately 1,400 acres of land (see **Figure 2.3-11**). The airport is designated as urban/buildup and the area surrounding the airport is designated primarily as Agricultural or Undeveloped/Site in a Natural State by the CNMI DPL (see **Figure 3.10-3**) (DON 2010b).

Port of Tinian. The Port of Tinian is situated on the southwest coast of Tinian (see **Figure 2.3-16**). It contains three piers, a small boat ramp, and a bulk fuel plant. The Tinian Harbor has undergone emergent repairs to include the sea wall, bollards, and fenders and supports some shipping vessels. It is owned and operated by the CPA under the jurisdiction of the Commonwealth Ports Authority Act (CPA 2012b). The port is designated as Urban/Buildup and the area surrounding the port includes public and private land is designated as a mixture of Private Land, Agricultural, and Undeveloped/Site in a Natural State by the CNMI DPL (see **Figure 3.10-4**) (DON 2010b).

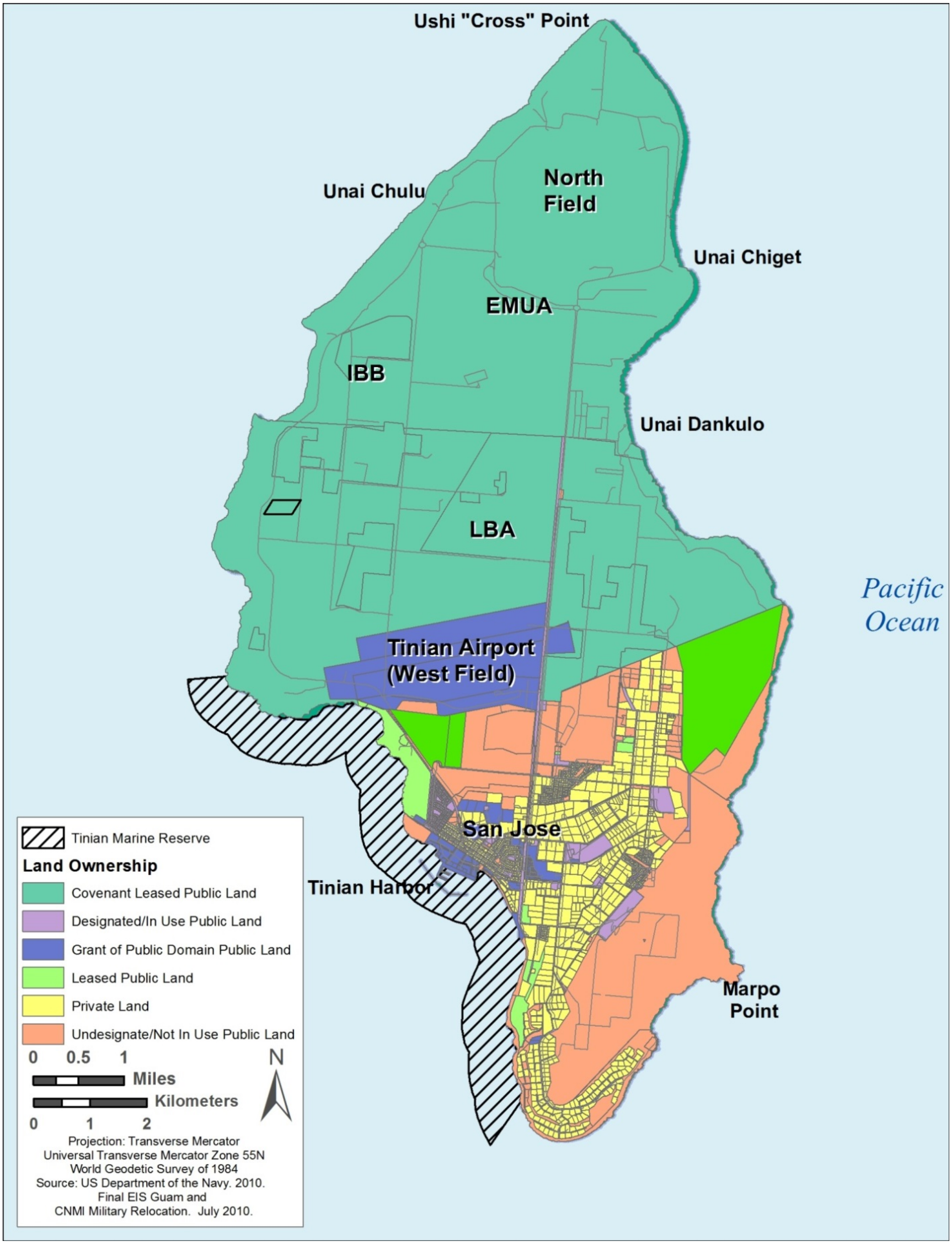
Coastal Zone and Submerged Lands. The coastal zone includes all non-Federal lands on the island, offshore islands, and non-Federal submerged lands within 3 NM of the shoreline. The Coastal Resources Management Office has identified three APCs for Tinian: Shoreline, Wetlands, and Port and Industrial. The shoreline APC encompasses the entire island from the mean high water mark to 150 feet inland. The Wetlands APC consists of two areas: one in the north-central part of the island within the EMUA and a second on the southeast portion of the island. The Port and Industrial APC consists of Tinian Harbor in San Jose (DON 2010b).

Noise Levels**.** Noise levels were calculated for noise-sensitive locations around Tinian International Airport. Since the land north of the airport is leased for military use, the areas on Tinian that are sensitive to noise are south of Tinian International Airport. As shown in **Table 3.10-3**, these land uses are currently exposed to very low noise levels from aircraft operations. These locations include the residential areas, Marpo Heights and the private land east of the airport, and the Old San Jose Bell Tower. The noise level at Marpo Heights, on the private land, and at the Old San Jose Bell Tower is less than 45 dBA DNL.

Table 3.10-3. Baseline Scenario Noise Levels at Noise-Sensitive Locations around Tinian International Airport

Land Use	DNL Noise Level
Marpo Heights–Residential	< 45 dBA
Private Land	< 45 dBA
Old San Jose Bell Tower	< 45 dBA

Source: HDR



Source: HDR 2012

Figure 3.10-3. Land Use Surrounding Tinian International Airport

1

2

Source: HDR 2012

3 **Figure 3.10-4. Land Use Surrounding Tinian Harbor**

3.11 Transportation

3.11.1 Definition of Resource

This section describes the existing roadway facilities that serve the islands of Saipan and Tinian. The CNMI Comprehensive Highway Master Plan was used to identify the existing conditions of the roadway network potentially impacted by the proposed action. The roadways discussed in the following sections are located in proximity to the proposed fuel and construction materials truck routes and personnel transport routes as a result of the proposed action. Roadway conditions and capacities are included in the descriptions where available.

3.11.2 Existing Conditions

3.11.2.1 Saipan

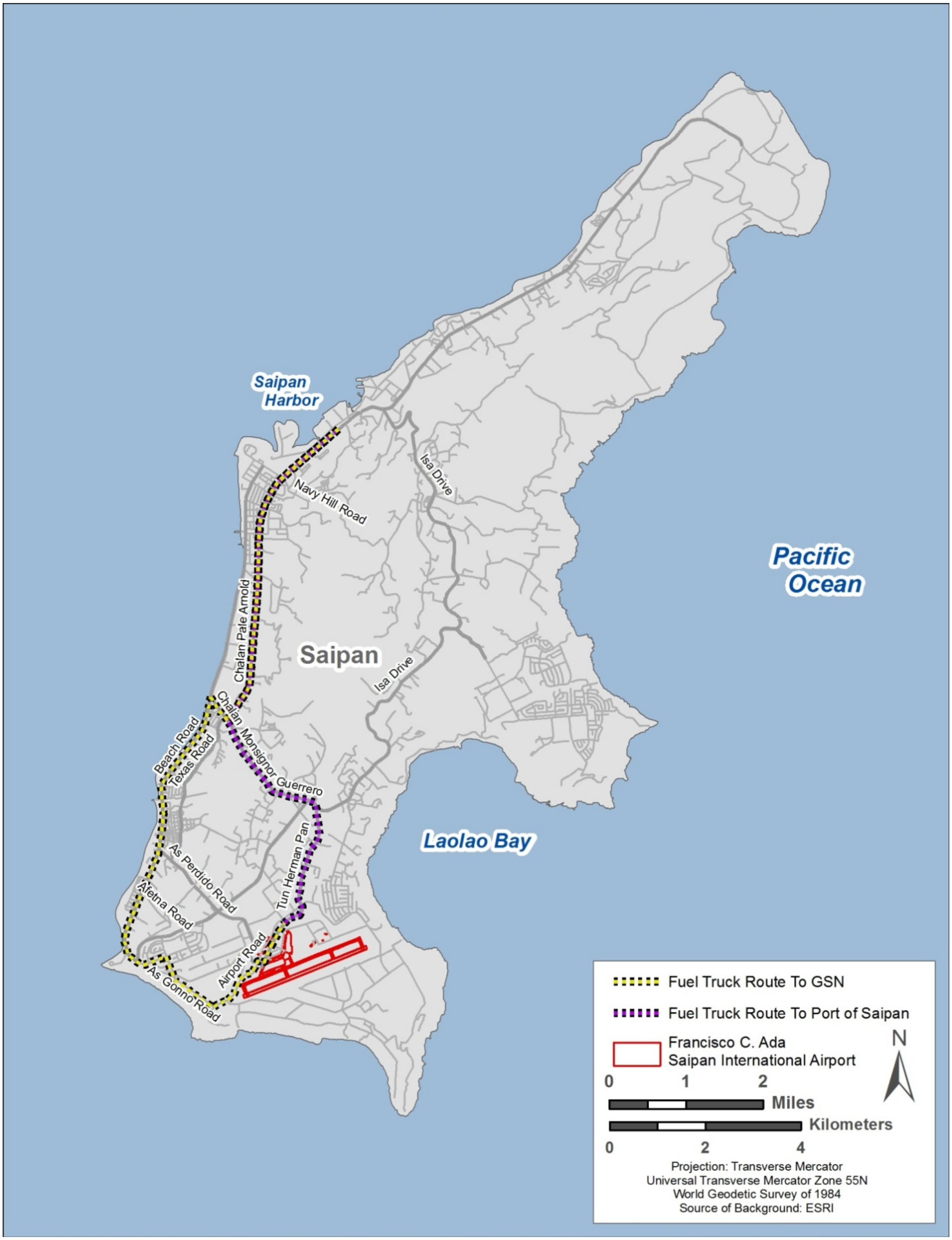
Saipan has the largest roadway network in the Mariana Islands with approximately 80 miles of roads on the Territorial Highway System (CNMI DPW 2009). A majority of Saipan roadways were paved during and shortly after World War II under the auspices of the U.S. Navy Administration. Some of the roadway facilities have been widened or repaved since originally constructed (USDOI-OIA 1999).

Several major traffic generators are located in the vicinity of the project area including several schools and the Commonwealth Health Center. Key roadways identified on Saipan are shown in **Figure 3.11-1** and described in **Table 3.11-1**. Primary aspects of the existing conditions include traffic volume, level of service (LOS), and pavement condition. LOS is a term used to describe the traffic operations of a roadway. LOS is described using letter designations A through F, with A representing excellent traffic operations with little to no delay and F representing failing traffic operations with extensive delay. Most roadways in the vicinity of the project area operate at an acceptable LOS (LOS D or better) with the exception of Beach Road. Beach Road north of As Perdido Road operates at LOS E or F (CNMI DPW 2009).

Table 3.11-1. Year 2008 Existing Conditions: Key Saipan Roadways

Roadway	Cross-Section	Average Daily Traffic (ADT) Volume	Level of Service
Chalan Pale Arnold	4-Lane Undivided	23,180–31,350	C–D
Chalan Monsignor Guerrero	4-Lane Undivided	22,330–29,040	C
Beach Road	4-Lane Undivided/ 2-Lane Undivided south of Afetna Road	20,860–39,890 12,690	D–F D
Airport Road	2-Lane Undivided	6,950	C
Tun Herman Pan	2-Lane Undivided	5,280	B
Isa Drive	2-Lane Undivided	7,530	D

Source: CNMI DPW 2009



Source: HDR 2012

Figure 3.11-1. Existing Roadway Network – Saipan

Pavement conditions on Saipan tend to be poor as a result of drainage issues and the use of coral and acidic-based pavement materials. Chalan Pale Arnold was repaved and Chalan Monsignor Guerrero was widened to four lanes in the past 15 years (since the previous highway master plan was completed) (CNMI DPW 2009).

The CNMI Comprehensive Highway Master Plan identified three signalized intersections in the vicinity of the project area as key intersections of concern, as shown in **Table 3.11-2**. All of these intersections currently operate at LOS D or better.

Table 3.11-2. Year 2008 Existing Conditions: Key Saipan Intersections

Intersection	Level of Service
Beach Road/Chalan Monsignor Guerrero	C
Chalan Pale Arnold/Navy Hill Road	D
Chalan Pale Arnold/Chalan Monsignor Guerrero	B

Source: CNMI DPW 2009

In addition to existing conditions, the CNMI Comprehensive Highway Master Plan includes projected average daily traffic (ADT) volumes and associated future traffic operations (assuming no improvements). **Table 3.11-3** shows the future conditions of key roadways on Saipan. Based on the predicted future LOS, the Comprehensive Highway Master Plan also provides improvement recommendations for several roadways.

Table 3.11-3. Year 2022 Future Conditions: Key Saipan Roadways

Roadway	ADT Volume	Level of Service	Master Plan Proposed Improvements
Chalan Pale Arnold	35,610–40,130	E–F	Intersection Improvements to 3 Intersections
Chalan Monsignor Guerrero	28,580–37,170	C–E	Intersection Improvements to 3 Intersections
Beach Road	26,700–51,060 16,240	E–F F	Install Two-Way Left-Turn Lane Intersection Improvements to 3 Intersections
Airport Road	8,900	D	No Improvements
Tun Herman Pan	9,680	C	Intersection Improvements at Flame Tree Drive Upgrade and Improve
Isa Drive	9,640	E	No Improvements

Source: CNMI DPW 2009

The three signalized intersections that were analyzed for existing conditions were also analyzed under future conditions in the CNMI Comprehensive Highway Master Plan. These intersections and corresponding LOSs are shown in **Table 3.11-4**. Chalan Pale Arnold/Navy Hill Road would fail under future conditions; however it would operate at LOS D if the improvements recommended in the CNMI Comprehensive Highway Master Plan are constructed. The other two intersections would operate with adequate capacity in the future.

Table 3.11-4. Year 2022 Future Conditions: Key Saipan Intersections

Intersection	Level of Service	Master Plan Proposed Improvements
Beach Road/Chalan Monsignor Guerrero	D	Signal Phase Modifications
Chalan Pale Arnold/Navy Hill Road	F	Signal Phase Modifications Northbound Right-Turn Lane Eastbound Dual Left-Turn Lanes Westbound Dual Left-Turn Lanes
Chalan Pale Arnold/Chalan Monsignor Guerrero	C	Signal Phase Modifications Realign Texas Road to Create 4th Leg Free Westbound Right-Turn Movement

Source: CNMI DPW 2009

3.11.2.2 Tinian

Tinian's roadway system consists of approximately 60 miles of two-lane undivided roadways on the Territorial Highway System (CNMI DPW undated). As with Saipan, a majority of Tinian roadways were paved during and shortly after World War II under U.S. Navy Administration (USDOI-OIA 1999). One prominent traffic generator located on Tinian is the Tinian Health Centre. Key roadways identified on Tinian are described in **Table 3.11-5** and shown in **Figure 2.4-6**. **Table 3.11-5** includes ADT volumes and LOS. All of the roadways currently operate at LOS A. No intersections on Tinian were identified and analyzed in the CNMI Comprehensive Highway Master Plan. Similar to Saipan, the pavement conditions tend to be poor as a result of drainage issues and the use of coral and acidic-base pavement materials (CNMI DPW 2009).

Table 3.11-5. Year 2008 Existing Conditions: Key Tinian Roadways

Roadway	ADT Volume	Level of Service
Broadway	390–1,470	A
42nd Street	150	A
8th Avenue	180–300	A
Route 201	2,240	A

Source: CNMI DPW 2009

In addition to existing conditions, the CNMI Comprehensive Highway Master Plan includes projected ADT volumes and associated future traffic operations (assuming no improvements). **Table 3.11-6** shows the future conditions of key roadways on Tinian. Based on the predicted future LOS, the CNMI Comprehensive Highway Master Plan also provides improvement recommendations for several roadways; however no improvements were identified for the key roadways in **Table 3.11-6**.

Table 3.11-6. Year 2022 Future Conditions: Key Tinian Roadways

Roadway	ADT Volume	Level of Service
Broadway	500–1,880	A
42nd Street	190	A
8th Avenue	230–380	A
Route 201	2,870	A

Source: CNMI DPW 2009

3.12 Hazardous Materials and Wastes

3.12.1 Definition of the Resource

Hazardous materials are defined by 49 CFR Part 171.8 as "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR Part 172.101), and materials that meet the defining criteria for hazard classes and divisions" in 49 CFR Part 173. Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations within 49 CFR Parts 105–180.

Hazardous waste is defined by the Resource Conservation and Recovery Act (RCRA) at 42 U.S.C. 6903(5), as amended by the Hazardous and Solid Waste Amendments, as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed." Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and their associated regulatory requirements are specified in 40 CFR Part 273.

Special hazards are those substances that might pose a risk to human health and are addressed separately from other hazardous substances. Special hazards include asbestos-containing material (ACM), polychlorinated biphenyls (PCBs), and lead-based paint (LBP). The USEPA is given authority to regulate these special hazard substances by the Toxic Substances Control Act (TSCA) Title 15 U.S.C. Chapter 53. USEPA has established regulations regarding asbestos abatement and worker safety under 40 CFR Part 763 with additional regulation concerning emissions (40 CFR Part 61). Whether from lead abatement or other activities, depending on the quantity or concentration, the disposal of the LBP waste is potentially regulated by RCRA at 40 CFR Part 260. The disposal of PCBs is addressed in 40 CFR Parts 750 and 761.

AFPD 32-70, *Environmental Quality*, and the AFI 32-7000 series incorporate the requirements of all Federal regulations, and other AFIs and DOD Directives for the management of hazardous materials and hazardous wastes.

Evaluation of hazardous materials and wastes focuses on underground storage tanks (USTs); aboveground storage tanks (ASTs); and the storage, transport, handling, and use of pesticides, fuels, solvents, oils, lubricants, ACMs, PCBs, and LBP. Evaluation might also extend to the generation, storage, transportation, and disposal of hazardous wastes when such activity occurs at or near the project site of a proposed action. In addition to being a threat to humans, the improper release of hazardous materials and wastes can threaten the health and well-being of wildlife species, botanical habitats, soil systems, and water resources. In the event of a release of hazardous materials or wastes, the extent of contamination varies based on the contaminant and the type of soil, topography, and water resources.

3.12.2 Existing Conditions

3.12.2.1 Saipan

Hazardous Materials and Hazardous Wastes. As a full-service commercial and private airport, Saipan International Airport uses, handles, and stores hazardous materials for day-to-day operations. Common hazardous materials at Saipan International Airport include pesticides (discussed separately in the *Pesticides* subsection), industrial and household cleaning products, hydraulic fluids, paints, solvents, and other hazardous materials. Hazardous materials are stored and managed by Saipan International Airport personnel in accordance with applicable Federal and CNMI regulations.

Saipan International Airport is a registered RCRA Small Quantity Generator (SQG) of hazardous wastes (USEPA Identification Number: TTR000128868). To qualify as an RCRA SQG, a facility must generate between 100 kilograms (kg) and 1,000 kg of hazardous waste during any calendar month and accumulate less than 6,000 kg of hazardous waste at any time. The hazardous wastes generated by Saipan International Airport include universal wastes (e.g., used batteries and fluorescent lamps), ignitable hazardous wastes, reactive hazardous wastes, cadmium, chromium, lead, mercury, endrin, methoxychlor, benzene, carbon tetrachloride, 1,2-dichloroethane, trichloroethylene, and vinyl chloride (EDR 2011b). These wastes are managed for safe handling and fire prevention under 40 CFR Part 264 and CNMI regulations. The CNMI DEQ Toxic Waste Management branch regulates the management of hazardous waste activities in the CNMI.

No hazardous materials or hazardous wastes are known to be stored within the proposed project areas for Alternatives 1 and 3 on Saipan.

Petroleum Products. Saipan is supplied with petroleum products that include jet fuel, gasoline, diesel, oils and lubricants, and other miscellaneous petroleum products. As discussed in **Section 3.13.2.1**, liquid fuel is delivered to the island in bulk quantities and stored in ASTs at the Port of Saipan for dispensing throughout the island. The Port of Saipan has two jet fuel and nine diesel and gasoline fuel ASTs (AFCEE/PACAF 2010). Petroleum products on Saipan are stored and managed in accordance with applicable Federal and CNMI regulations.

The most prominent petroleum product used at Saipan International Airport is jet fuel, which is used to fuel aircraft. Jet fuel originates from Singapore and arrives on ocean-going tankers. The tankers berth at the Port of Saipan and jet fuel is transferred from the tankers to ASTs at the seaport through a 10-inch dedicated pipeline. Tankers make fuel deliveries approximately once per month and deliver a maximum of 10,000 barrels (420,000 gallons) of jet fuel per trip. The seaport has two jet fuel ASTs, each with 15,000 barrels (630,000 gallons) of capacity. Head-space requirements on the ASTs limit the maximum jet fuel usable storage capacity at the seaport to 24,000 barrels (1,008,000 gallons). Both ASTs are considered to be in good condition, and there is no record of any releases (AFCEE/PACAF 2010).

Jet fuel is transported from the Port of Saipan to Saipan International Airport by two Mobil-operated bridger trucks. The bridger trucks are capable of transporting a combined volume of 19,000 gallons of jet fuel per trip, and can transport a maximum of 190,000 gallons per day assuming 24-hour operations (AFCEE/PACAF 2010). The distance between the seaport and

Saipan International Airport is approximately 8 miles, and the route uses paved roadways through residential, industrial, and undeveloped portions of the island.

After arriving at Saipan International Airport, the jet fuel is transferred from the bridger trucks into two 1,100-barrel (46,200-gallon) ASTs and one 2,800-barrel (117,600-gallon) AST at the Mobil-owned bulk fuel area to the north of the Saipan International Airport. An in-ground hydrant system dispenses the jet fuel from the ASTs to 13 hydrant outlets on the aircraft parking apron via a 10-inch pipeline. The hydrant system is capable of dispensing at a rate of 1,200 gallons per minute. The condition of the hydrant system is deteriorated because the pipeline between the ASTs and the hydrant outlets no longer has cathodic protection and there is no plan to restore this service (AFCEE/PACAF 2010). One release of jet fuel from the hydrant system was reported in 2001 and is further discussed in the *Existing Contamination Areas* subsection. Saipan International Airport does not own any trucks capable of refueling or defueling aircraft (AFCEE/PACAF 2010). All fueling and defueling of aircraft must be conducted from fuel systems and fuel trucks approved by the CPA. Due to requirements in 14 CFR Part 139, only airlines, the fuel system operator, and fixed base operators are authorized to perform into-plane fueling services.

While jet fuel is the most prominent petroleum product used at Saipan International Airport, other petroleum products are used at the airport for aircraft maintenance and day-to-day operations. Oils and lubricants are used for aircraft and airport facility maintenance. Diesel and gasoline are used for ground vehicles, such as trucks, cargo loaders, and push tractors. Saipan International Airport maintains a 4,000-gallon AST, with separate compartments for gasoline and diesel, adjacent to the Continental cargo building. No underground pipelines are associated with this AST and no releases have been reported (Kretzers 2009).

All ASTs and USTs in the CNMI are managed by the CNMI DEQ, which requires owners of ASTs and USTs to obtain a Permit to Install and Permit to Operate for each AST and UST. The CNMI DEQ published the latest AST regulations for the CNMI in the Commonwealth Register, Volume 27, Number 04, May 18, 2005, at pages 24139 through 24165: *Commonwealth of Northern Mariana Islands Aboveground Storage Tank Regulations* (CNMI DEQ 2005). The latest UST regulations for the CNMI are published in Northern Mariana Islands Administrative Code *Title 65: Division of Environmental Quality, Chapter 65-100 Underground Storage Tank Regulations* (CNMI DEQ 2004b).

Existing Contamination Areas. There are no known areas of environmental contamination at the project areas for Alternatives 1 and 3 on Saipan. However, a review of historical aerial photographs indicates that World War II-era structures formerly were located throughout much of the project areas at the Saipan International Airport. The area at and surrounding Saipan International Airport was used during World War II by both Japanese and American forces as a military airfield where aircraft servicing occurred. The World War II-era predates modern environmental regulations; therefore, there is the potential for improper onsite disposal of hazardous materials, hazardous wastes, and petroleum products during the former airfield operations. All of the areas at Saipan International Airport for Alternatives 1 and 3 have the potential to have been impacted by former airfield operations.

Due to the history of Saipan during World War II, there is the potential for unexploded ordnance (UXO) to be present at the project areas for Alternatives 1 and 3 on Saipan. UXO is most likely to be discovered in heavily vegetated areas that have not been developed since World War II. While the presence of UXO has not been confirmed and is unlikely, the possibility remains that it exists at the project areas for Alternatives 1 and 3 on Saipan.

Several areas of known contamination have been identified in the vicinity of Alternatives 1 and 3 on Saipan. A summary of these sites is included as follows:

- In June 2000, approximately 26 55-gallon drums were discovered during land clearing on a CPA-owned parcel just south of Continental Drive. The parcel is legally known as Lot 028 K 11 Parcel “B.” Subsequent investigations of the discovered drums determined that all but one of these drums was filled with soil, partially buried, and rusting. The remaining drum was one-third full of waste oil. One drum was labeled “U.S. Army,” which suggests that it dates from World War II. A preliminary site inspection indicated the presence of contaminants in the soil at levels greater than USEPA reporting limits. The parcel currently is listed as a Brownfields property and is considered an area for uncontrolled dumping of municipal wastes, tires, construction debris, bottles, and cars. World War II-era UXO contamination is a possibility due to the suspected age of some materials deposited on the property (CNMI DEQ 2010b, CNMI DEQ undated). There is no record of remedial action being conducted at the property. The proposed bulk fuel storage area at Saipan International Airport for Alternatives 1 and 3 on Saipan is approximately 200 feet to the north of this property.
- On January 1, 2001, a pipe flange within a surge suppression vault on an underground jet fuel line between the main and commuter terminals failed, resulting in a release of 7,418 gallons of jet fuel. Of this quantity, 5,873 gallons were not recovered and impacted soil. A soil vapor extraction system was installed to remediate subsurface soil contamination, and groundwater sampling has been occurring on a periodic basis to ensure that contaminants have not impacted groundwater. The proposed parking apron is the nearest component of Alternative 1 on Saipan to this release site at a distance of approximately 700 feet, while the proposed maintenance facility is the nearest component of Alternative 3 on Saipan at approximately 2,500 feet.
- An inspection of Saipan International Airport property during 2005 identified seven Areas of Concern (AOCs) with the potential for environmental contamination. These AOCs included the CPA Incinerator Area, CPA Operational Maintenance Facility, Freedom Air Maintenance Facility, Pacific Island Aviation Maintenance Facility, Continental Airlines Maintenance Facility, Continental Cargo Facility, and the Former Fuel Storage and Dispensing Facility. A total of 50 surface and subsurface soil samples were taken from these AOCs and analyzed for petroleum hydrocarbons and heavy metals. All seven AOCs were found to contain some form of soil contamination greater than CMNI DEQ clean-up goals. No areas of soil contamination were found below 48 inches of ground surface, and while groundwater sampling was not conducted, impacts on groundwater were determined unlikely. Excavation of contaminated soil and bioremediation was recommended for each of the seven AOCs; however, there is no record of these actions ever taking place (CPA 2006).

- The "Isley Field Commonwealth Utilities Corporation Power Plant #3" property was used formerly as an electrical power generation facility, but after operations ceased, the property was used for the storage of waste oils and discarded electrical transformers, some containing PCBs. A December 2010 Site Investigation of the property identified several hundred 55-gallon drums, some containing waste oils, on the property. The Site Investigation recommended the removal and proper disposal of these materials, which equated to approximately 2,500 gallons of oily wastewater, 950 gallons of total petroleum hydrocarbons (TPHs) sludge, 8 yds^3 of TPH-contaminated soil in 55-gallon drums, and less than 4 cubic feet (ft^3) each of paint chips, oil pads, and oily metallic debris. No groundwater contamination was identified, but the Site Investigation recommended the excavation of several areas of contaminated soil. Removal actions for the site were completed in October 2011 under USEPA oversight and are documented in a letter report dated June 19, 2012, from the Ecology and Environment, Inc. Superfund Technical Assessment and Response to the USEPA (E&E 2012). The proposed bulk fuel storage area at Saipan International Airport for Alternatives 1 and 3 on Saipan is approximately 50 feet to the east of Power Plant #3.
- The Puerto Rico Dump is an approximately 20-acre, unlined, inactive landfill adjacent to Tanapag Harbor and immediately to the south of the Port of Saipan. The landfill received military, industrial, and domestic solid wastes between World War II and 2003. The dump became inactive in 2003 after a new sanitary landfill opened; however, the dump has not yet received official closure. Groundwater and soil contamination have been identified at the Puerto Rico Dump and some contamination has entered the marine environment of Tanapag Harbor (NOAA 2007). The proposed seaport fuel tank area for Alternatives 1 and 3 on Saipan is approximately 200 feet east of the Puerto Rico Dump.

Asbestos-Containing Material. Asbestos is regulated by the USEPA under the CAA, TSCA, and CERCLA. The USEPA has established that any material containing more than 1 percent asbestos by weight is considered an ACM.

There are no known ACMs at the project areas for Alternatives 1 and 3 on Saipan. These areas do not contain structures; therefore, ACMs in standing buildings is not present. However, the potential exists for ACMs in the soils of the project areas at Saipan International Airport for these alternatives. As noted in the *Existing Contamination Areas* subsection, review of historical aerial photographs indicates that World War II-era structures formerly were located throughout much of the project areas at Saipan International Airport for Alternatives 1 and 3. As such, there is the potential for asbestos to be present in abandoned utility lines and demolition debris buried in surface or near-surface soil. There is no record of soil investigations to determine the presence of buried ACMs at Saipan International Airport being conducted.

Lead-Based Paint. Federal agencies are required to comply with applicable Federal, CNMI, and local laws relating to LBP activities and hazards.

There is no known LBP at the project areas for Alternatives 1 and 3 on Saipan. These areas do not contain structures; therefore, LBP in standing buildings is not present. However, because of the former presence of World War II-era structures at the project areas at Saipan International

Airport, the potential exists for finding buried debris containing LBP and lead-contaminated soils. There is no record of soil investigations to determine the presence of buried debris containing LBP or lead-contaminated soils at Saipan International Airport being conducted.

Polychlorinated Biphenyls. PCBs are a group of chemical mixtures used as insulators in electrical equipment. Chemicals classified as PCBs were widely manufactured and used in the United States throughout the 1950s and 1960s. PCBs can be present in products and materials produced before the 1979 ban. Common products that might contain PCBs include electrical equipment (e.g., transformers and capacitors), hydraulic systems, and fluorescent light ballasts.

Some electrical equipment (e.g., electrical transformers) at the project areas for Alternatives 1 and 3 on Saipan might contain PCBs. However, because the project areas do not contain buildings, the quantity of equipment possibly containing PCBs is limited. There is no known PCB contamination at Saipan International Airport or the seaport.

Pesticides. Pesticides in CNMI are managed under *Title 65: Division of Environmental Quality, Chapter 65-70: Pesticide Regulations* of the Northern Mariana Islands Administrative Code. The CNMI DEQ issues permits for the application of pesticides and controls the importation of pesticides to the island (CNMI DEQ 2004c). Pesticides are assumed to be applied at Saipan International Airport and the seaport on a regular basis to control noxious weeds and other nuisance species. It is assumed that all pesticide applications are conducted in accordance with manufacturer specifications and CNMI regulations. There are no areas of known pesticide contamination at Saipan International Airport or the seaport.

Radon. Radon is a naturally occurring radioactive gas found in soils and rocks. It comes from the natural breakdown or decay of uranium. Radon has a tendency to accumulate in enclosed spaces that are usually below ground and poorly ventilated (e.g., basements). Radon is an odorless, colorless gas that has been determined to increase the risk of developing lung cancer. In general, the risk of lung cancer increases as the level of radon and length of exposure increase.

The USEPA has established a guidance radon level of 4 picocuries per liter (pCi/L) in indoor air for residences; however, standards have not been established for commercial structures. Radon gas accumulation greater than 4 pCi/L is considered to represent a health risk to occupants. The USEPA has not established formal radon designations on Saipan. There are no records of radon testing being conducted at the existing buildings at Saipan International Airport or the seaport.

3.12.2.2 Tinian

Hazardous Materials and Hazardous Wastes. Much like Saipan International Airport, Tinian International Airport uses, handles, and stores hazardous materials for day-to-day airport operations; however, due to the limited aircraft maintenance and repair capabilities available at Tinian International Airport, the amounts of these hazardous materials are limited. Common hazardous materials at Tinian International Airport include pesticides (discussed separately in the *Pesticides* subsection), industrial and household cleaning products, hydraulic fluids, paints, solvents, and other hazardous materials. Hazardous materials are stored and managed by

Tinian International Airport personnel in accordance with applicable Federal and CNMI regulations.

The use of hazardous materials generates various quantities of hazardous wastes. Tinian International Airport is not identified as a RCRA hazardous waste generator or handler, which implies that it doesn't generate any hazardous waste or is a conditionally exempt small quantity generator (EDR 2011a). Hazardous wastes generated at Tinian International Airport are managed for safe handling and fire prevention under 40 CFR Part 264 and CNMI regulations. The CNMI DEQ Toxic Waste Management branch regulates the management of hazardous waste activities in the CNMI.

No hazardous materials or hazardous wastes are known to be stored within project areas for Alternatives 2 and 3 on Tinian.

Petroleum Products. Tinian is supplied with petroleum products that include gasoline and diesel fuel, oils and lubricants, and other miscellaneous petroleum products. Diesel and gasoline are delivered to Tinian monthly on shallow-draft barges that originate from Guam. Liquid fuels are offloaded via a 4-inch pipeline into two ASTs at the Port of Tinian. One of these ASTs is dedicated to diesel and has capacity for 12,000 barrels (500,000 gallons); the other AST is dedicated to gasoline and has capacity for 1,500 barrels (63,000 gallons). Diesel and gasoline fuel are used at Tinian International Airport for ground vehicles, such as trucks, cargo loaders, and push tractors; however, diesel and gasoline are not delivered or stored at Tinian International Airport. The nearest commercial source of diesel or gasoline to Tinian International Airport is approximately 3 miles away on Broadway Street (AFCEE/PACAF 2010).

Jet fuel is not available on Tinian. The only aviation fuel available to Tinian International Airport is 100 Low Lead Aviation Gasoline, which is for piston-engine aircraft. The 100 Low Lead Aviation Gasoline is delivered from Saipan via isotanks. Tinian International Airport exchanges one empty isotank at the seaport when a full tank arrives (AFCEE/PACAF 2010).

Tinian International Airport also uses oils and lubricants for aircraft maintenance and day-to-day operations. However, because the airport has limited aircraft maintenance and repair capabilities, the amount of these products are limited.

Existing Contamination Areas. There are no known areas of environmental contamination at the project areas for Alternatives 2 and 3 on Tinian. However, much of the area at and surrounding Tinian International Airport was used during World War II by both Japanese and American forces as a military airfield where aircraft servicing occurred. The World War II-era predates modern environmental regulations; therefore, there is the potential for improper onsite disposal of hazardous materials, hazardous wastes, and petroleum products during the former airfield operations. The project areas at Tinian International Airport for Alternatives 2 and 3 have the potential to have been impacted by former airfield operations.

Due to the history of Tinian during World War II, there is the potential for UXO to be present at the project areas on Tinian. UXO is most likely to be discovered in heavily vegetated areas that have not been developed since World War II. Because the area north of the existing Tinian International Airport was extensively cleared during construction of West Field, it is likely that most of the UXO has been removed (CPA and FAA 1998). While the presence of UXO has not been confirmed and is unlikely, the possibility exists for its discovery at the project areas for Alternatives 2 and 3 on Tinian.

A Defense Environmental Restoration Program for Formerly Used Defense Sites site, known as the “Tinian Asphalt Drum Dump Site” at Puntan Diablo, has been identified at the western end of Tinian International Airport runway. Few details regarding the extent of possible contamination at this dumpsite are available; however, this site is believed to have resulted from military activities during World War II (USACE 1994). The western end of the proposed taxiway is the nearest component of the North Option of Alternatives 2 and 3 on Tinian to the site at approximately 1,000 feet, while the proposed cargo pad is the nearest component of the South Option of Alternatives 2 and 3 on Tinian at more than 800 feet distance.

Asbestos-Containing Materials. There are no known ACMs at the project areas for Alternatives 2 and 3 on Tinian. These areas presently do not contain structures; therefore, ACMs in standing buildings are not present. However, the potential exists for ACMs in the soils of these project area at Tinian International Airport due to former development and use of Tinian International Airport during World War II. There is the potential for asbestos to be present in abandoned utility lines and demolition debris buried in surface or near-surface soil. There is no record of soil investigations to determine the presence of buried ACMs at Tinian International Airport being conducted.

Lead-Based Paint. There is no known LBP at the project areas for Alternatives 2 and 3 on Tinian. These areas do not contain structures; therefore, LBP in standing buildings is not present. However, because of the former development and use of Tinian International Airport during World War II, the potential exists for finding buried debris containing LBP and lead-contaminated soils. There is no record of soil investigations being conducted to determine the presence of buried debris containing LBP or lead-contaminated soils at Tinian International Airport.

Polychlorinated Biphenyls. Some electrical equipment (e.g., electrical transformers) at the project areas for Alternatives 2 and 3 on Tinian might contain PCBs. However, because these areas do not contain buildings, the quantity of equipment possibly containing PCBs is limited. There is no known PCB contamination at Tinian International Airport or the seaport.

Pesticides. Pesticides are assumed to be applied at Tinian International Airport and the seaport on a regular basis to control noxious weeds and other nuisance species. It is assumed that all pesticide applications are conducted in accordance with manufacturer specifications and CNMI regulations. There are no areas of known pesticide contamination at Tinian International Airport or the seaport.

Radon. The USEPA has not established formal radon designations on Tinian. There are no records of radon testing being conducted at the existing buildings at Tinian International Airport or the seaport.

3.13 Infrastructure and Utilities

3.13.1 Definition of Resource

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as "urban" or developed. The availability of infrastructure and its capacity for expansion are generally regarded as essential to the economic growth of an area. The infrastructure components discussed in this section include airfield, port, utilities, and solid waste management.

The airfield includes all pavements, runways, taxiways, overruns, aprons, cargo pads, navigational aids, hangars, and facilities and equipment that are associated with aircraft maintenance and aircraft operations. The port includes berthing space and yard area. Utilities include electrical supply, central heating and cooling, liquid fuel supply, natural gas supply, water supply, sanitary sewer and wastewater systems, storm water drainage, and communications systems. Solid waste management primarily relates to the availability of systems and landfills to support a population's residential, commercial, and industrial needs. The infrastructure information contained in this section provides a brief overview of each infrastructure component and comments on its existing general condition.

3.13.2 Existing Conditions

3.13.2.1 Saipan

***Airfield*.** Saipan International Airport has one FAA-compliant runway, which is surfaced with asphalt. Runway 07/25 is 8,700 feet long and 150 feet wide. A former runway, Runway 06/24, is 7,001 feet long and 100 feet wide and is shown on the Saipan Airport Layout Plan as a parallel taxiway. Runway 07/25 has four taxiways on which aircraft can transit to and from the parking aprons. The runway is designed to accommodate aircraft up the size and dimensions of a 747. The lighting along the runway consists of a MALSR, distance remaining markers, runway end identifier lights, 12 precision approach path indicator systems, a middle marker, a non-directional beacon, a glidescope, a localizer, and edge lights (AFCEE/PACAF 2010).

The 34.4-acre parking apron has a commercial hydrant fueling system and parking capacity for six 747 aircraft. The concrete portion of the parking apron is adjacent to the main terminal building. The asphalt portion of the parking apron is adjacent to the cargo-handling area and does not have adequate width for most large-frame aircraft.

A summary of commercial aircraft usage at Saipan International Airport is presented in **Table 3.3-2**. The combination of air carrier, air taxi, and general aviation operations compose the majority of air traffic using Saipan International Airport. Approximately 391 military operations occur at Saipan International Airport per year, or less than one percent of all annual operations according to available data.

***Port*.** The Port of Saipan features 2,600 linear feet of berthing space, a 22-acre container yard, and an underground fuel line protected by concrete. The channel, turning basin, and berthing area have all been expanded to 40 feet deep to receive deep draft vessels. The tanker schedule is currently on an approximate 1-month schedule but out-of-cycle deliveries can be requested as needed. The typical Jet A1 (jet fuel) resupply load is between 378,000 and 420,000 gallons (AFCEE/PACAF 2010). The seaport has two loading racks; one is dedicated to loading ground product and the other is dedicated to loading Jet A1 fuel to transfer trucks. The storage tanks at the seaport are addressed in the *Liquid Fuel Supply* subsection. The location of the proposed seaport bulk fuel site is currently a vacant lot with a few shipping containers on federally leased land adjacent to the existing fuel storage area.

Electrical Supply. Saipan has a maximum electrical power capacity of 57 megawatts (MW), a peak load of 45 MW, and a base load of 39 MW (CNMI undated). For the past several years, Saipan's annual electrical power production has remained below 300,000 Megawatt Hours (MWh). The majority of this production was for general residential and light commercial consumption. The daily load is generally consistent throughout the year with approximate lows of 30 MW and highs of 45 MW. Saipan International Airport uses about 1 MW of electricity per day (CNMI 2011).

Saipan is powered by diesel generators from three power plants near the central port of Tanapag. One of the plants is operated under a power purchase agreement with the private company Pacific Marine Industrial Corporation. The other two are operated by the Commonwealth Utilities Corporation (CUC). The two power plants operated by the CUC are in the same location and together make up the central power plant. The central power plant generators are in poor condition with two of them decommissioned and several others were undergoing rehabilitation and overhauls as of July 2011 (CNMI 2011).

Most commercial power on the island is provided via a 13.8-kVA multiple feeder distribution system with a single 34.5-kVA transmission link between the central power plant and the Kiya Substation. Some commercial sites use onsite generation instead of purchasing power. The electrical distribution system is underused and the Kiya Substation has an electrical capacity more than double its current load of approximately 16 MW. However, a more expansive high-voltage transmission backbone would be needed to tap into this potential for certain locations of the island. A considerable amount of energy is required to pump and treat potable water, and to collect, pump, and treat wastewater on Saipan (CNMI 2011).

Saipan International Airport's electricity is supplied by the Kiya Substation, which has ample capacity but limited feeder distribution (CNMI 2011). The Port of Saipan has sufficient electrical capacity for the few operations that occur there.

Central Cooling and Heating. The Saipan International Airport has its own separate cooling system (CNMI undated).

Natural Gas Supply. There is currently no natural gas infrastructure on the island (CNMI undated).

Liquid Fuel Supply. Currently, Saipan International Airport has limited capacity for the receipt, storage, and distribution of jet fuel. The existing Mobil A1 fuel storage capacity of the airport includes two 94,000-gallon fixed roof ASTs and one 117,600-gallon fixed roof AST. Until all the ASTs have been inspected, upgraded, and repaired, as necessary, one AST will be out of service at a time. No timeline has been provided for when all ASTs will be simultaneously in operation. All jet fuel is issued using a hydrant system, but currently there is no capability for defueling an aircraft. The hydrant system consists of two 600-gpm pumps that issue fuel to 13 hydrants via a 10-inch pipeline. The jet fuel is issued via three commercial hydrant servicing vehicles (AFCEE/PACAF 2010).

At the Port of Saipan, fuel tankers offload A1 jet fuel via an aboveground 10-inch dedicated pipeline. The Jet A1 fuel storage capacity consists of two 630,000-gallon Mobil-owned ASTs with fixed roofs. However, each AST has a “safe fill” level of 504,000 gallons limiting the actual combined storage capacity to 1,008,000 gallons. The ASTs are in good condition and have recently passed API 653 inspection. Both ASTs can be in use simultaneously during high-consumption periods. Jet A1 fuel is delivered to the airport via two locally owned, Mobil-operated, bridger trucks (one 9,000 gallons and one 10,000 gallons). It has been estimated that the maximum transfer rate between the Port of Saipan and Saipan International Airport is 190,000 gallons every 24 hours (AFCEE/PACAF 2010).

There is potential to improve the infrastructure at the Port of Saipan. Joint Logistics over the Shore operations and training currently take place at unimproved ports around the world, including the Port of Saipan (CNMI 2009).

Current vulnerabilities and inadequacies of the existing Mobil fueling system at the airport and seaport include the following (AFCEE/PACAF 2010):

- Inadequate jet fuel supply and storage capability on Saipan
- Jet fuel hydrant pumping rate at Saipan International Airport is insufficient for high-volume tanker requirements
- The cathodic system has been disabled for years and as a result, the condition of the hydrant system at Saipan International Airport remains unknown
- No fuel trucks are capable of refueling or defueling aircraft at Saipan International Airport
- If both seaport Jet A1 fuel storage tanks were subjected to Quality Control hold for aviation fuel testing, re-supply to airport operational storage tanks would cease.

Water Supply. Potable water on Saipan is from groundwater sources (i.e., wells), with the exception of one small catchment system near Saipan International Airport (CNMI 2011). Groundwater is pumped and distributed by the CUC (USGS 2003). There are about 140 groundwater wells on Saipan, which produce approximately 90 percent of the island’s water supply (USGS 2003). The groundwater pumps typically operate at maximum capacity 24 hours per day; however, many parts of the water supply system lack 24-hour supply and residents do not have a continuous potable water supply (USGS 2003, CNMI Department of Commerce 2009, DON 2010a). The existing water supply system on Saipan produces approximately 10 million gallons per day (gpd); however, the CUC estimates that approximately 50 percent of the potable water supply in the CNMI is lost due to leaks in the piping system (CNMI 2011). Additionally, due to high chloride concentrations, only about 1.5 million gpd meet USEPA drinking standards (CNMI Department of Commerce 2009).

Another factor contributing to water insecurity on Saipan is that all fresh groundwater originates as rain and the island has a distinct wet and dry season (USGS 2003). Water supply issues are intensified during the dry season and periods of drought (DON 2010a). Saipan gets approximately 80 inches of rainfall per year and 30 percent of precipitation is estimated to recharge the groundwater (USGS 2003).

The airport area has a combination of artesian wells and a catchment system that contribute to approximately 10 percent of the island's total water supply (AFCEE/PACAF 2010). The catchment system consists of three springs and one rainwater collector (DON 2010a).

***Sanitary Sewer and Wastewater Treatment*.** The only provider of wastewater treatment on Saipan is the CUC. Wastewater treatment occurs at the Marpi Solid Waste Facility (MSWF), which also includes solid waste management and storm water-control systems, and Sadog Tasi Wastewater Treatment Plant (CNMI 2011, CEEC 2006). The wastewater treatment system is highly deficient and the resulting leaks and runoff contribute to the degradation of Saipan's marine ecosystems, which is a key concern of the island's residents (CEEC 2006).

The 2009 Comprehensive Economic Development Strategic Plan for the U.S. Commonwealth of the Northern Mariana Islands highlighted that the existing wastewater and sewer systems need major rehabilitation and upgrades to be USEPA-compliant and achieve sufficiency (CNMI Department of Commerce 2009).

Saipan International Airport is connected to the sewer main line at the intersection of Flame Tree Road and Airport Access Road.

Storm Water. Water pollution and coral reef degradation caused by storm water runoff and sewage operations is by far the most important environmental threat perceived by the residents of Saipan (CEEC 2006). A large lagoon (locally referred to as "Saipan Lagoon") that parallels virtually the entire western coastline serves as a natural sink for mobilized pollutants during storm events. Saipan Lagoon actually consists of three smaller lagoons (i.e., Tanapag Lagoon, Garapan Lagoon, and Chalan Kanoa Lagoon). It receives storm water from numerous storm drains along its entire length and receives sewer outfall from the Sadog Tasi Wastewater Treatment Plant (CEEC 2006, USGS 2009a).

A study by Winzler and Kelly discussed the storm water drainage issues on Saipan. The study highlighted the negative influence of paved and developed areas on drainage discharges and the sensitive benthic environment. It also identified infiltration issues and mobilized pollutants over paved areas as key issues contributing to the complex storm water and degradation threats. Impervious surfaces and deforestation diminish infiltration, evapotranspiration, and groundwater recharge; and increase runoff, which is generally discharged to the ocean and degrades the coral reefs. In addition, the limited available land due to development constrains options for BMPs. In order to properly address the existing drainage issues and resulting degradation threat, Saipan needs to implement a range of BMPs and low-impact development such as permeable and porous pavements to reduce storm water runoff (Allen and Kaspari undated).

The 2007 *CNMI DEQ's Round Table with Developers* discussed the deficiencies of the storm water management system. For example, many areas do not have adequate drainage systems (e.g., Mount Carmel Church). In addition, many projects are not constructed according to the plans approved by the government agencies. An example of this includes improperly sloped parking lots that discharge runoff off site instead of into an onsite drainage system approved by DEQ. The DEQ published a two-volume design manual with additional regulations in 2007 (CNMI DEQ 2007). New regulations include the following:

- A menu of BMPs instead of only ponding basins
- Location-specific storm water quality and quantity requirements
- 70% impervious cover limits for developments greater than 1 acre except for "infill" projects, which are project locations surrounded by existing development.

Saipan International Airport is about 1,300 feet from the eastern coastline and 3,000 feet from the western coastline. It is relatively flat; however, storm water sheet flows to the south, west, and east. Localized flooding occurs in the developed portions of the airport, such as the terminal area, during heavy rainfalls (CPA 2002).

Storm water at the seaport area sheet flows to the coastline, except for the areas around the ASTs, which have secondary containment systems.

Communications. Saipan International Airport's transmitters and receivers are sufficient for providing very high-frequency and ultra high-frequency capabilities to communicate between the control tower, radar control, and aircraft. Saipan's air traffic control has one radio to support backup radio capabilities. Saipan International Airport does not have an Air Traffic Control and Landing System (ATCALS). However, they do get ATCALS support from Guam (AFCEE/PACAF 2010).

Solid Waste. Solid waste processing on Saipan includes the MSWF, the Refuse Transfer Station, and eight recycling centers. Saipan uses private waste collectors for all waste collection. After the waste is collected, it is taken to either the Refuse Transfer Station or the landfill at the MSWF. As much of the waste as possible is recycled. At the Refuse Transfer Station there is an area for sorting, grinding, and storing green waste (i.e., vegetation). The transfer facility is an 8,000-square-foot building with all utilities (i.e., water, sewer, power, and communications) where civilian and commercial vehicles can drop off solid waste. If recycled materials cannot be re-used, they can often be used for energy or liquid fuels production (CNMI 2011).

The MSWF was constructed in 2003 at the north end of the island in the Marpi depression after the Puerto Rico Dump was closed due to environmental concerns. The MSWF uses state-of-the-art waste reduction and diversion technologies and implements recycling programs, a new solid waste transfer station and materials recovery facility, and a new municipal solid waste landfill. In addition to non-recyclable materials, the landfill receives waste from the sewage treatment plant and the hospital (CNMI 2011).

Logistical information for the MSWF is sparse. In 2009, the input into the landfill was about 100 tons per day. The facility was expected to receive a total of 43,000 tons of materials (10,449 tons of which was expected to be diverted) in 2010 (CNMI 2011). **Table 3.13-1** shows the actual inventory of the materials diverted from the landfill in 2010.

Table 3.13-1. Diverted Materials in 2010

Item	Tons/Year
Backfill	7,600
Green Waste	1,671
Sewage Sludge	480
Cardboard	445
Tires	158
Paper	109
Metals	83
Mixed Recyclables	61
Total	**10,607**

Source: CNMI 2011

3.13.2.2 Tinian

Airfield. The Tinian International Airport airfield is currently designed to accommodate aircraft up to the size and dimensions of a 747. The existing runway (08/26) is 8,600 feet long, 150 feet wide, and has two 25-foot-wide paved shoulders. It is grooved for flight safety and drainage purposes. The lighting along the runway consists of runway end identifier lights, a precision approach path indicator, medium-intensity runway edge lights, an instrument landing system, a rotating beacon, and distance remaining markers (AFCEE/PACAF 2010).

Runway 08/26 has two taxiways, one at each end of the runway, in which aircraft can transit to and from the parking aprons. Taxiway A runs parallel to the runway and its centerline is 750 from the centerline of the runway. The taxiway is 70 feet wide and has a 30-foot shoulder. The parking apron is approximately 6 acres, has little capability to park large frame aircraft, and has no fuel hydrant system infrastructure (AFCEE/PACAF 2010).

Tinian International Airport is not as built up as Saipan International Airport and has an average of 36 aircraft operations per day; therefore, it has a higher capability for infrastructure expansion (FAA 2011).

Port. The main wharf at the Port of Tinian is 2,200 feet long with depths between 25 and 29 feet. There are two piers (Pier 1 and Pier 2) on the southwest of the main wharf, both of which are in a state of disrepair. The main wharf is used to moor commercial barges operating between Tinian and Saipan. No tugboats operate in Tinian Harbor.

The Tinian Harbor has undergone emergent repairs to include the sea wall, bollards, and fenders and supports some shipping vessels. According to the Tinian Harbor Master Plan, the current usable depth of the Tinian Harbor is approximately 26.5 feet, or 23 feet by some accounts (Tenorio and Dashiell 1997).

The Port of Tinian receives, stores, and issues diesel and unleaded gasoline, but has no aviation fuel capacity. The seaport's storage tanks are discussed in the *Liquid Fuel Supply* subsection. One of the ships that commonly delivers fuel to Tinian is considered a small tanker, the MV Golden Micronesia (PACAF 2010). This ship has a maximum draft (i.e., fully loaded) of approximately 25.5 feet and its capacity is approximately 61,300 barrels (2,574,600 gallons). The tanker AKRI, which has a maximum draft of 21.3 feet, has also been observed delivering fuel to Tinian. The Golden Micronesian fuel barge offloads fuel products to the seaport via a 4-inch pipeline once a month. The seaport has one fuel truck loading rack for diesel and unleaded gasoline.

Electrical Supply. The electrical infrastructure at Tinian is capable of satisfying considerably more demand than the current base and peak loads with a maximum electrical capacity of around 20 MW. This is because the plant was built during a time of high resort development interest. The energy infrastructure is also in good condition and well-maintained. The power plant consists of five 4-MW Wartsilla diesel generators located just outside San Jose. Telesource owns and operates the power system on the island under a power purchase agreement contract (CNMI 2011). Tinian has a peak load of 5.2 MW and a base load of 4.7 MW. The current load is almost consistently between 4 and 5 MW year round (CNMI 2011, CNMI undated). The distribution is through four 13.4-kV feeders, one of which is dedicated solely to the U.S. Government International Broadcasting Bureau (IBB) (CNMI 2011). A more expansive electrical grid would be needed to tap into this potential for certain locations of the island (CNMI 2011).

The population of Tinian is approximately 4,000 people and about 50 percent of its power consumption is from two customers: Tinian Dynasty Hotel & Casino and the IBB. The airport is a much smaller, yet still considerable consumer of power (CNMI 2011). A significant amount of energy is required to pump and treat potable water, and to collect, pump, and treat wastewater on Tinian (CNMI 2011).

Tinian International Airport is connected to the existing power system; however, it has a highly limited feeder distribution network (CNMI 2011). An electrical line runs on the east end of the airport property but does not extend throughout the entire Tinian International Airport property (AFCEE/PACAF 2010).

Central Heating and Cooling. Tinian International Airport has its own separate cooling system.

Natural Gas Supply. There is no natural gas infrastructure on Tinian.

Liquid Fuel Supply. Currently, Tinian International Airport has limited capacity for the receipt, storage, and distribution of aviation fuel. The airfield has no A1 jet fuel infrastructure. Current aviation fuel inadequacies of Tinian include the following (AFCEE/PACAF 2010):

- No capability for Jet A1 fuel supply or storage on Tinian
- No fuel hydrant system on the airfield
- No fuel trucks capable of servicing aircraft on Tinian
- No deepwater port capable of offloading ship to shore.

The Port of Tinian is currently in disrepair and has a limited capability to accept fuel shipments at the port. It can support limited cargo ships and the main wharf can support up to 4,500 tons of cargo per day (AFCEE/PACAF 2010, DON 2010a). Fuel storage at the seaport includes a 12,000-bbl (500,000-gallon) diesel AST and a 1,500-bbl (63,000-gallon) unleaded gasoline AST. The Mobil seaport has no aviation fuel storage capability (AFCEE/PACAF 2010).

***Water Supply*.** Potable water on Tinian is primarily withdrawn from groundwater wells; however, some households use catchment basins (CNMI 2011, AFCEE/PACAF 2010). Most of the agricultural and domestic water supply originates in the Makpo wetland area and is collected in storage tanks at Makpo Heights and Carolinas Heights (DON 2010a).

Data on water supply, withdrawals, and consumption on Tinian is sparse. From 1945 to 1999 all municipal water was supplied by the Municipal Well (a 300-foot long horizontal trench). In 1999, two vertical wells (i.e., TH04 and TH06) were added to the system. By 2001, a new 400-foot long infiltration gallery replaced the Municipal Well in a nearby location. Pumps are generally operated 24 hours a day, except during maintenance and low demand in the rainy season. Withdrawals have fluctuated less than 10 percent throughout the years. The new infiltration gallery can supply about 875 gpm. Well TH06 produces approximately 60 gpm and well TH04 is capable of producing 50 gpm; however, they are generally only used to maintain pressure in the distribution system used during peak demand hours (Gingerich 2002). Based on the available withdrawal data, Tinian is capable of producing approximately 1,260,000 gallons of water per day. Due to the lack of considerable amounts of heavy water usage activities on Tinian, such as irrigation, ranching, aquaculture, and mining, it is assumed that the per capita usage of water is similar to the U.S. domestic water usage rate, which is 98 gallons per day per person (USGS 2009b). Based on the Tinian population of 3,136 people, the island is estimated to use approximately 307,328 gallons per day. The CUC estimates that approximately 50 percent of CNMI's potable water supply is lost as a result of leaks in the piping system (CNMI 2011). Given these assumptions, Tinian has a water supply surplus of approximately 322,672 gallons per day.

***Sanitary Sewer and Wastewater Treatment*.** There are no wastewater processing facilities on Tinian (CNMI Department of Commerce 2009). Residents and businesses on Tinian, including Tinian International Airport, use septic systems for wastewater treatment (CNMI 2011).

Storm Water. There is limited information on the storm water infrastructure on Tinian and at Tinian International Airport. Most of the precipitation on Tinian either evaporates or percolates into the limestone substrata. During periods of intense rainfall, approximately 6 to 12 percent of total rainfall becomes runoff that flows toward the low-lying coastal areas (Gingerich 2002). Tinian International Airport is surrounded by pervious soil with vegetation. Storm water at Tinian International Airport is handled by open drainage ditches and sheet flow overland to lower elevations. Tinian International Airport is about 1,600 feet from the eastern coastline.

Storm water at the seaport area sheet flows to the coastline, except for the areas around the ASTs, which have secondary containment systems.

***Communications*.** Tinian International Airport has no ATCALS, instrument landing system, or air traffic control tower. Tinian International Airport receives ATCALS support from the Guam tower and uses their voice communications equipment for both air-to-ground and in- and out-bound activities. Tinian International Airport has one radio to support backup radio capabilities (AFCEE/PACAF 2010).

Solid Waste. The CNMI uses private waste collectors for all waste collection. There is only one recycling center on Tinian (CNMI 2011). Currently, all solid waste is collected and transported off the Island of Tinian using commercial solid waste haulers and commercial barges or ships.

In November 2006, the Mayor of Tinian declared a “state of disaster emergency” due to the failure to close Tinian’s unsafe dumpsite (i.e., Tinian landfill). On January 20, 2010, the DEQ issued an administrative order to the CNMI Department of Public Works and the Mayor’s Offices of Tinian for failure to comply with landfill operating requirements at the municipal dump. The DEQ stated that the office’s “non-compliance posed a threat to human health and the environment.” The municipal dump received violations for air quality regulations for the open burning of solid wastes. They also failed to cover the solid waste at the end of each operating day, control disease carriers, implement a waste exclusion plan to prevent receiving hazardous wastes and PCB wastes, have trained operators, and have control of public access to prevent unauthorized disposal within and outside the dump (Saipan Tribune 2010). A new sanitary landfill and a corresponding transfer station are planned for Tinian (Marianas Variety 2012); however, as of August 2015, the landfill and transfer station had not yet begun construction.

3.14 Socioeconomics and Environmental Justice

3.14.1 Differences Between the 2012 Draft EIS and Revised Draft EIS

Some information in the Socioeconomics and Environmental Justice sections has changed since the release of the 2012 Draft EIS based on the availability of 2010 U.S. Census data and other more recent data, and to provide a more thorough and in-depth analysis of impacts. These changes include updates on information presented in the 2012 Draft EIS and additional analysis beyond that done in the 2012 Draft EIS. The changed information relates to the update of data and the assessment of impacts in **Section 4.14**. A summary of the changed information is presented below.

2010 U.S. Census and Updated Data. The Revised Draft EIS contains socioeconomic and environmental justice data from the 2010 U.S. Census, the latest for which information is available, and other updated data, which has been changed since the 2012 Draft EIS because this data was not available during preparation of the 2012 Draft EIS. The 2012 Draft EIS used 2010 U.S. Census data for total population of CNMI, Saipan, and Tinian; however, all other socioeconomic and environmental justice population data was obtained from the 2000 U.S. Census, the 2005 CNMI Household, Income, and Expenditures Survey (HIES) (CNMI Department of Commerce, Central Statistics Division 2008), and other sources. The Definition of Resource, Existing Conditions, and Environmental Consequences sections have been revised to include data from the 2010 U.S. Census and other updated data sources, where available.

3.14.2 Definition of Resource

Socioeconomics. Socioeconomics is defined as the basic attributes and resources associated with the human environment. Two fundamental socioeconomic indicators, population and economic activity, are the primary focus of this analysis.

Population size and demographics identify the population levels and changes to population levels of a region. Demographics data might also identify a region's characteristics in terms of race, ethnicity, poverty status, and other broad indicators. Economic activity typically encompasses employment, personal income, and industrial or commercial growth. Data on employment might identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on personal income in a region can be used to compare the "before" and "after" effects of any jobs created or lost as a result of a project. Data on industrial or commercial growth or growth in other sectors provide baseline and trendline information about the economic health of a region. Changes in demographic and economic conditions are typically accompanied by changes in other community components, such as housing availability and the provision of public services, which are also discussed in this section. Sociocultural issues, such as land ownership, quality of life, and cultural identity, are also important indicators of the socioeconomic condition of a region.

The geographic area in which a majority of the socioeconomic effects of a proposed action and alternatives would occur is defined as the socioeconomic area of impact. The area of impact is considered a primary effect area because it receives direct and indirect economic benefits from a proposed action due to residency distribution of employees, commuting distances and times, and the location of businesses providing goods and services during construction and operation of the action, and their dependents. Other components include regional economic activity, population, housing, and public services.

Due to the small size of the CNMI, most anticipated socioeconomic impacts under the Proposed Action would likely affect CNMI as a whole. However, socioeconomic data are presented in this section at the island or municipality level (i.e., Saipan and Tinian) and, when available, for geographic subsets such as election districts and villages that are in the project area. Tourism is highlighted in this document as the industry most likely to be affected by the Proposed Action. Data have been collected from previously published documents issued by Federal, CNMI, and local agencies.

Environmental Justice. On February 11, 1994, EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued. EO 12898 also requires each Federal agency to identify and address whether their proposed action results in disproportionately high and adverse environmental and health impacts on low-income or minority populations. The EO was created to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, tribal, and local programs and policies. This EO also requires that each

Federal agency conduct its programs, policies, and activities that substantially affect human health and the environment in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participating in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under such programs, policies, and activities because of their race, color, or national origin.

A Presidential memorandum accompanying EO 12898 states that existing Federal statutes should be used to evaluate environmental justice concerns. One of the referenced statutes is NEPA, and the memorandum highlights the importance of NEPA in addressing environmental hazards in minority and low-income communities. The memorandum states, "Each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4321 et seq."

Consideration of environmental justice concerns includes the race, ethnicity, and poverty status of populations in the vicinity of a proposed action. Such information aids in evaluating whether a proposed action would render vulnerable any of the populations targeted for protection. In addition, the USAF has issued guidance (*Guide for Environmental Justice Analysis with the Environmental Impact Analysis Process [EIAP]*) on environmental justice analysis in determining the environmental effect on populations in the vicinity of a proposed action (USAF 1997).

The environmental justice area of impact is the area within which potential impacts from a proposed action could occur. As defined by the CEQ, the environmental justice area of impact is considered to have disproportionately high percentage of minority or low-income residents if the percentage of persons characterized as being a minority or low-income within the area of impact is either greater than 50 percent, or is disproportionately higher than the community of comparison. CEQ also states, "A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds (CEQ 1997)." The community of comparison is the smallest jurisdiction for which U.S. Census data are collected that encompasses the footprint of impacts for all resource areas.

For purposes of this EIS, minority, and low-income populations are defined as follows:

1. Minority Population: The CEQ defines minority populations as members of the following population groups: Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and multi-race that includes one of the aforementioned races; and Hispanic or Latino (CEQ 1997). The U.S. Census Bureau considers race and Hispanic or Latino origin (ethnicity) as two separate concepts and these data are recorded separately. However, the U.S. Census Bureau collects race, ethnic, and Hispanic origin data differently in the Pacific Island Areas (i.e., CNMI) than on the U.S. mainland. Race and ethnic origin data are collected together through one census question and, therefore, are presented as one subject in the Census data. Therefore, this report uses racial and ethnic categories to identify ethnicity of the CNMI population. Some of the single and combined ethnic origins/races identified are

Chamorro, Carolinian, Filipino, Chinese, Hispanic or Latino, White, and two or more ethnic origins or races. There is no definition of minority populations that is specific to the CNMI. Therefore, for the purposes of the environmental justice analysis, the total minority population will include ethnic origin and racial minority populations as defined by and collected during the 2010 U.S. Census, the latest available. However, data from the Report on the 2005 CNMI HIES (CNMI Department of Commerce, Central Statistics Division 2008) is also presented in this section to supplement 2010 U.S. Census socioeconomic data.

2. Low-income Population: Populations whose income is below the Federal poverty threshold according to 2009 income data collected in the 2010 U.S. Census. For the 2010 U.S. Census, the Federal poverty threshold for an individual under 65 years old was $11,161 (U.S. Census Bureau 2014).

For purposes of this analysis, the environmental justice areas of impact are the election districts that encompass the Proposed Action activities at Saipan International Airport, Tinian International Airport, Ports of Saipan and Tinian, and the proposed fuel truck routes (Saipan Districts 1, 2, and 3 and Tinian District 6), and the communities of comparison are the islands of Saipan and Tinian.

3.14.3 Existing Conditions

Because all alternatives are within the CNMI, existing socioeconomics and environmental justice conditions will be presented in this EIS together.

Overview. Following World War II, the Mariana Islands were administered by the United States as part of the United Nations Trust Territory of the Pacific. In the 1970s, the Mariana Islands decided to form closer ties with the United States. A Covenant Agreement to establish a CNMI in political union with the United States was approved in 1975 and took effect in 1976. In 1978, the CNMI became self-governing when its first elected governor took office; however, the United States was responsible for CNMI’s foreign affairs and defense. The Covenant Agreement was fully implemented in 1986 at which time legally qualified CNMI residents attained U.S. citizenship.

Terms of the Covenant Agreement allowed the CNMI to set its own immigration, labor, and wage laws, which played an important role in the CNMI’s socioeconomic development and racial/ethnic composition. The CNMI took advantage of this economic autonomy and experienced a large increase in the private sector between 1980 and 2004 (McPhee & Associates and Conway 2009). Garment manufacturing and tourism emerged as leading industries in the CNMI economy due to its relationship with the United States, its proximity to cheap labor from Asian nations, its appeal as a tourist destination, and foreign investment from Asian countries (McPhee & Associates and Conway 2009). The success of these industries relied on favorable economic conditions created under the terms of the Covenant Agreement, which allowed for the hiring of foreign workers at low wages.

Foreign workers, primarily from China and the Philippines, were hired for difficult-to-fill positions in the garment manufacturing industry on Saipan and the tourism sector because there were an insufficient number of local workers to populate the workforce and support the growing economy

(U.S. GAO 2000). These workers were exempt from U.S. visa and immigration regulations, and were paid less than the U.S. minimum wage. Therefore, manufacturers, particularly those in the garment industry, were able to sell “American-made” products duty-free and quota-free to the U.S. market using cheap foreign labor. The importance of the garment manufacturing and tourism industries to the CNMI economy and the reliance of these industries on foreign workers were evident in economic and workforce statistics. In 1995, the garment manufacturing and tourism industries directly supported more than 50 percent of CNMI employment, and foreign workers made up more than 90 percent of the garment manufacturing industry and more than 70 percent of the tourism industry (McPhee & Associates and Conway 2009). According to An Economic Study of the Commonwealth of the Northern Marianas Islands prepared by the Northern Marianas College in 1999, these two industries produced approximately 96 percent of the CNMI’s exports and generated 85 percent of the CNMI’s total economic activity (U.S. GAO 2000).

While the large influx of foreign workers was needed to support the economy, it also changed the demographics of the CNMI. Between 1990 to 2000 during the peak years of the garment manufacturing and tourism industries, the annual population growth rate of the CNMI was among the highest in the world. The population growth rate slowed during the early 2000s, but still remained high (U.S. Census Bureau International Programs 2012). In 2003, the CNMI was the only Pacific island entity where foreign-born residents outnumbered indigenous residents by a ratio of nearly 2 to 1 (Bank of Hawai’i and East-West Center 2003). As of January 2010, it was reported that there were 20,859 aliens (i.e., non-U.S. citizens) in the CNMI of which 99 percent were legally in the CNMI, and 16,304 were alien workers. More than 18,500 of these aliens had been in the CNMI more than 5 years (Secretary of the Interior 2010). The 2010 U.S. Census reports that noncitizens comprised 43 percent of the CNMI population (U.S. GAO 2014).

During the 2000s, several factors affected the CNMI economy contributing to the collapse of the garment manufacturing industry and to the decline of the tourism industry, which, in turn, affected the demographics. Following are some of the factors affecting the socioeconomic characteristics of the CNMI:

- *World Trade Organization (WTO) Agreement on Textiles and Clothing.* In 2005, as part of the WTO Agreement on Textiles and Clothing, the United States lifted quotas for textile and apparel imports from other countries to conform to the General Agreement on Tariffs and Trade. The effect of this action exposed CNMI garment manufacturers to greater competition from previously restricted countries such as China and Vietnam that had lower labor costs. Without their quota-free economic advantage, garment manufacturers in the CNMI were unable to compete in the global marketplace and began shutting down. All garment manufacturers had closed by early 2009. The closure of the garment factories also affected the tourism industry because there was a large reduction in revenue for the CNMI government, which was previously spent on critical services, infrastructure, destination enhancement, and overseas tourist marketing (CNMI Department of Commerce 2009).
- *Federalization of the minimum wage.* The Fair Minimum Wage Act of 2007 (Title VIII of P.L. 110-28) as amended by P.L. 111-117, P.L. 111-244, and P.L. 113-34 applied

Federal minimum wage rates to the CNMI. According to the legislation, the CNMI minimum wage will increase $0.50 per hour each year on September 30 (except 2011, 2013, and 2015, when no increase occurred or will occur) until it reaches the minimum wage generally applicable in the United States ($7.25 as of August 2015). The first increase occurred in May 2007 when the CNMI minimum wage increased from $3.05 per hour to $3.55 per hour. As of August 2015, the minimum wage in the CNMI is $6.05 per hour. Based on responses to surveys conducted by the Government Accountability Office, minimum wage increases instituted through 2015 would affect more than 80 percent of workers at private sector employers that responded to the survey (U.S. GAO 2010), and increases through 2018 would affect 94 percent of hotel industry workers employed by questionnaire respondents (U.S. GAO 2014). Direct effects from the minimum wage increases are difficult to determine due to the existence of other variables affecting the economy.

- *Federalization of immigration.* The Consolidated Natural Resources Act of 2008 (Title VII of P.L. 110-229) applied Federal immigration law to the CNMI in November 2009 with provisions affecting access to the CNMI by foreign workers (using permits referred to as conditional worker, or CW-1, permits), tourists, and foreign investors. The law mandated an annual reduction in the number of CW-1 permits for foreign workers during a 5-year transition period that would result in zero permits by December 31, 2014; however, the transition period has been extended to December 31, 2019. AOCs due to implementation of the Federal immigration law include the availability of foreign workers, status of existing foreign workers, and ease of entry for Chinese and Russian visitors and businesspeople that have to be paroled into the CNMI on a case-by-case basis (U.S. GAO 2011b). The latter is important because tourists and investors from China and Russia are important to the CNMI economy. Given the importance of foreign citizens to the CNMI labor market, tourism industry, and as investors, the long-term impact of the federalization of immigration on the CNMI economy is uncertain (U.S. GAO 2014).
- *Factors affecting tourism.* Tourism in the CNMI peaked in the mid-1990s and has been declining since that time. The decline began with the Asian financial crisis in the late 1990s, which abruptly decreased tourist arrivals (Bank of Hawai'i and East-West Center 2003). Several other unexpected events, including the severe acute respiratory syndrome epidemic; 9/11 terrorist attacks; war in Iraq; decisions by Korean Air Lines and Japan Air Lines to suspend flights to the CNMI; and the 2011 Japanese earthquake, tsunami, and ongoing nuclear disaster contributed to decreased visitor arrivals. Total visitor arrivals to the CNMI dropped from a peak of 726,690 in 1997 to 433,925 in 2013 (U.S. GAO 2014).

In recent years the CNMI has been working to develop new industries and encourage foreign development. This has been difficult due to the instability of transportation, high cost of utilities, and the uncertainty of labor supply availability (CNMI Department of Commerce 2009). In January 2008, the CNMI Comprehensive Economic Development Strategic (CEDS) Planning Commission, a public-private organization, was appointed by the CNMI governor to improve the quality of life of CNMI residents through the growth and development of the economy and the promotion of investment in the CNMI. Within the resulting 2009 CEDS Plan, the CEDS Commission identified and prioritized approximately $500 million of projects to address infrastructure upgrades needed to improve quality of life and the economy, and to encourage the U.S. military's use of Tinian for training (CNMI Department of Commerce 2009). As of 2011, approximately 40 percent of the projects and needs listed in the 2009 CEDS Plan had been completed, funded, or were under construction. These projects include upgrades to water and wastewater systems, public school facilities, and CNMI broadband infrastructure; energy efficiency and renewable energy projects; and expansion of the CNMI road system.

As a supplement to the CEDS Plan, the CNMI conducted two Economic Restoration Summits (ERSs) in 2009 and 2011. The goal of the 2009 ERS was to solicit public input to identify several industries for development. Four industries (agriculture, aquaculture, educational tourism/eco-tourism, and call/data centers) were identified during the 2009 ERS (CNMI Department of Commerce 2011). While the 2009 ERS resulted in economic development recommendations, it failed to consider the fiscal constraints on the CNMI, and to provide examples of implementation measures used under economic conditions similar to the CNMI. A 2011 ERS was conducted to solicit feedback from experts in the targeted industries to assess the CNMI's opportunities and challenges associated with introducing and developing each industry. The 2011 ERS resulted in a general set of "next steps" required to introduce, grow, and make the targeted industries sustainable (CNMI Department of Commerce and USDA 2011).

In June 2013, the 2013 Economic Development Forum (EDF) 2013 was launched to streamline CNMI economic planning through an assessment that integrates the CEDS, ERS, American Recovery & Reinvestment Act, and other relevant available planning documents into a single format. The goal is to focus the CNMI's economic priorities by assessing the CNMI's project inventory based on projects that contain elements critical to economic contribution, development and sustainment. Participants ranked energy, infrastructure (especially that related to transportation), and workforce preparedness among top priorities for CNMI's economic health. For purposes of the EDF, the CNMI identified seven criteria to determine project priorities. Based on these criteria, CEDS projects and industries identified in the ERS were assessed to determine the most beneficial projects. The resulting short-listed projects were grouped into four clusters, including alternative energy, tourism, inter-island transportation, and public service (health) (CNMI Department of Commerce 2013a).

The CNMI has also recognized the potential benefits to the CNMI economy and community from the military buildup in the region. The Military Integration Management Committee was established to guide the planning and policymaking for all activities related to the expansion of military training activities in the CNMI. The CNMI has identified the following three areas where it can provide goods and services to facilitate the military buildup:

- *Operational support:* Alternate aerial and surface port capabilities to support training and operations, maintenance infrastructure and services, and staging of prepositioned equipment and supply stocks).

- *Maintenance and supply support:* Logistics support including management, handling, and distribution of necessary supplies and services; subsistence items such as food and potable water; and human capital and other technical expertise.
- *Quality of life services:* Rest and relaxation infrastructure and services such Armed Forces Recreation Center and other Morale, Welfare, and Recreation activities; and use of the CNMI's natural resources such as weather, beaches, pristine scenes, recreational activities, and historic sites (CNMI 2009).

3.14.3.1 Socioeconomics

Population Characteristics. From 1973 through 2000, the population of the CNMI more than tripled from 14,333 to 69,221 people (see **Table 3.14-1**). The most drastic growth occurred from 1980 to 1990 when the population more than doubled and experienced an annual growth rate of 9.5 percent (CNMI Department of Commerce 2002). The primary reason for dramatic growth has been attributed to the in-migration of foreign nationals, primarily to Saipan, for employment and business opportunities (CNMI Department of Commerce, Central Statistics Division 2000). From 2000 to 2010, the CNMI population trend reversed and the populations of CNMI, Saipan, and Tinian decreased. The populations of CNMI and Saipan decreased approximately 22 percent, while the population of Tinian decreased 11 percent since 2000. In 2010, more than 95 percent of CNMI's population resided in Saipan and Tinian (89.5 percent in Saipan and 5.8 percent in Tinian) (U.S. Census Bureau 2010b). Population projections provided by the Secretariat of the Pacific Community show the CNMI population increasing, albeit slightly, through 2015 and 2020 (SPC-SDP 2013).

Table 3.14-1. Actual and Projected Population, 1973–2020

Geographic Area	1973	1980	1990	2000	2010	2015	2020
CNMI	14,333	16,780	43,345	69,221	53,883	56,900	59,700
Saipan	12,382	14,549	38,896	62,392	48,220	N/A	N/A
Tinian	714	866	2,118	3,540	3,136	N/A	N/A

Sources: CNMI Department of Commerce 2002, U.S. Census Bureau 2010b, SPC-SDP 2013
Note: N/A = Not applicable. Projected population data are not available for Saipan and Tinian.

Saipan is divided into 77 villages. Saipan International Airport is within the village of I Fadang and the Port of Saipan is within the village of Puerto Rico. In 2010, I Fadang and Puerto Rico had no residents (see **Table 3.14-2**). Tinian is divided into 8 villages; Tinian International Airport is in the village of Western Tinian and the Port of Tinian is in the village of San Jose. Western Tinian did not have any residents in 2010; however, San Jose has 1,939 residents, which is 61.8 percent of the Tinian population. **Table 3.14-2** presents the population of villages in the project areas (i.e., proposed airports, seaports, and fuel and construction material truck routes). The proposed fuel/construction material truck route on Saipan traverses or is adjacent to 30 villages, which account for 71.1 percent of the island's population. The proposed fuel/construction material truck route on Tinian traverses or is adjacent to 4 villages within which 88.4 percent of Tinian's population resides (U.S. Census Bureau 2010c).

1 **Table 3.14-2. Population Data for Villages in the Proposed Project Areas, 2010**

Geographic Area	2010 Population	Percent of Population
Saipan	**48,220**	**100**
Airport and Seaport		
I Fadang	0	0.0
Puerto Rico	0	0.0
Along Fuel Truck Route		
Afetnas	1,486	3.1
Agingan	308	0.6
American Memorial Park	0	0.0
As Gonna	157	0.3
As Lito	920	1.9
As Palacios	718	1.5
As Terlaje	282	0.6
Chalan Kanoa II	921	1.9
Chalan Kanoa IV	631	1.3
Chalan Kiya	1,062	2.2
Chalan Laulau	1,096	2.3
Chalan Piao	1,282	2.7
Chalan Rueda	257	0.5
China Town	1,274	2.6
Dagu	780	1.6
Dandan	3,280	6.8
Fananganan	1,201	2.5
Finasisu	2,451	5.1
Garapan	3,983	8.3
Gualo Rai	1,660	3.4
I Liyang	917	1.9
Kannat Tabla	874	1.8
Koblerville	2,493	5.2
Opyan	20	0.0 *
San Antonio	1,149	2.4
San Jose (Oleai)	954	2.0
San Vincente	2,091	4.3
Susupe	2,078	4.3
Tinian	**3,136**	**100**
Airport and Seaport		
San Jose	1,939	61.8
Western Tinian	0	0.0
Along Fuel Truck Route		
Eastern Tinian (Marpo Valley)	155	4.9
Marpo Heights	679	21.7

Source: U.S. Census Bureau 2010c
Note: * Due to rounding, percentages less than 0.1 percent are shown as 0.0 percent.

In 2010, the population of the CNMI was relatively young; the median age was 33.4 years old. The median age of the population of Saipan (33.3 years old) and Tinian (33.8 years old) was similar to that of CNMI as whole. Persons under 18 years old accounted for approximately one-third of the populations of the CNMI, Saipan, and Tinian (31.8 percent, 31.9 percent, and 29.9 percent, respectively), while the population over 65 years old was small accounting for 2.9 percent of the populations of the CNMI and Saipan and 1.9 percent of the Tinian population. Approximately 38 percent of the populations of the CNMI (37.9 percent) and Saipan (37.6 percent), and 43.6 percent of the population of Tinian were between 20 and 44 years old (U.S. Census Bureau 2010d).

Males slightly outnumbered females in the CNMI, Tinian, and Saipan, representing 51.5 percent, 51.3 percent, and 53.4 percent, respectively, of the populations (U.S. Census Bureau 2010d).

Table 3.14-3 shows the birthplace of residents of the CNMI, Saipan, and Tinian in 2010. Approximately 45 percent of the residents of CNMI and Saipan were foreign born, while slightly less Tinian residents were born outside the CNMI or the United States. Of foreign born residents, those born in the Philippines and China make up the largest percentages of the populations of the CNMI, Saipan, and Tinian (U.S. Census Bureau 2010e).

Table 3.14-3. Residents by Birthplace, 2010

Total Population	Saipan	Tinian	CNMI
	48,220	**3,136**	**53,883**
Percent U.S. Born	**54.4%**	**56.8%**	**55.1%**
CNMI	48.9%	50.9%	49.4%
Elsewhere in the U.S. [a]	5.5%	5.9%	5.7%
Percent Foreign Born	**45.6%**	**43.2%**	**44.9%**
Philippines	27.0%	26.3%	26.9%
China [b]	6.6%	7.0%	6.3%
Korea [c]	3.8%	1.5%	3.5%
Japan	1.3%	1.2%	1.3%
Other foreign [d]	6.8%	7.2%	6.8%

Source: U.S. Census Bureau 2010e
Notes:
a. Includes persons born to U.S. parents regardless of location.
b. Includes persons who reported their country of birth as China, Hong Kong, Macau, Paracel Islands, or Taiwan.
c. Includes persons who reported their country of birth as Korea, North Korea, or South Korea.
d. Includes persons born in Federated States of Micronesia and Palau, which are United States associated states.

Asians (i.e., persons reporting one Asian ethnic origin/race) made up half of the populations of the CNMI (49.9 percent) and Saipan (50.9 percent), and slightly less than half of the population (46.7 percent) of Tinian. Filipinos were the largest single ethnic origin/race in the CNMI and Saipan at 35.3 percent and 35.8 percent of the populations, respectively. Chamorro was the largest single ethnic origin/race on Tinian representing 37.7 percent of the population. Chamorro made up 23.9 percent of the CNMI population and 21.6 percent of Saipan population. Approximately 5 percent of the residents in the CNMI (4.6 percent) and Saipan (5.1 percent) reported their ethnic origin/race as Carolinian, while only 0.3 percent of those in Tinian did. Residents reporting their ethnic origin/race as White made up approximately 2 percent of the populations of the CNMI (2.1 percent), Saipan (2.1 percent), and Tinian (1.8 percent). Persons reporting two or more ethnic origins or races made up approximately 12 percent of the residents in the CNMI, Saipan, and Tinian (U.S. Census Bureau 2010d).

Housing. In 2010, approximately 77.1 percent of Saipan's 18,683 housing units were occupied and 78.2 percent of Tinian's 1,118 housing units were occupied (see **Table 3.14-4**). Of the occupied housing units on Saipan and Tinian, most were occupied by renters (56.2 percent on Saipan and 51.0 percent on Tinian) (U.S. Census Bureau 2010g). The median house value of owner occupied units and median gross rent on Saipan was slightly more than those in the CNMI and Tinian. Renters in the CNMI and on Saipan paid approximately 21 percent, of their household income toward rent, while renters on Tinian paid 15 percent (U.S. Census Bureau 2010h). The median household income in Tinian ($24,470) was almost $5,000 more than those in the CNMI and Saipan. In CNMI, Saipan, and Tinian, median household incomes of owner occupied households was moderately higher than those of renter occupied households (U.S. Census Bureau 2010i).

Table 3.14-4. Housing Characteristics, 2010

Housing Characteristic	Saipan	Tinian	CNMI
Total Housing Units	18,683	1,118	20,850
Occupied Units	14,406	874	16,035
Owner Occupied	3,906	304	4,537
Renter Occupied	10,500	570	11,498
Vacant Units	4,277	244	4,815
Median Value of Owner Occupied Units	$127,632	$121,212	$123,777
Median Gross Rent *	$328	$261	$324
Median Gross Rent as Percentage of Household Income	21.3%	15.0%	20.9%
Total Median Household Income	$19,607	$24,470	$19,958
Owner Occupied	$38,525	$44,444	$39,032
Renter Occupied	$16,295	$17,744	$16,341

Source: U.S. Census Bureau 2010g, U.S. Census Bureau 2010h, U.S. Census Bureau 2010i
Note: * Gross rent is the amount of contract rent plus the estimated average monthly cost of utilities and fuels if these are paid for by the renter.

Economic Characteristics. Economic activity in the CNMI declined sharply in 2009 as real gross domestic product decreased 19.8 percent reflecting decreases in exports (by 40 percent) and in real consumer spending (by 12.8 percent) (Hamano 2011). Decreased exports are primarily attributed to the collapse of the garment manufacturing industry in 2009 and the decline in tourism. Tourism services were the CNMI's only significant export in 2009. From 2008 to 2009, the number of employed people decreased approximately 13 percent based on CNMI government tax data (U.S. GAO 2011a).

In 2010, the labor forces in Saipan and Tinian were approximately 34,500 people and 2,300 people, respectively. The current unemployment rate in the CNMI has not been determined; however, in 2005, 8 percent of Saipan's labor force and 17 percent of Tinian's labor force was unemployed (CNMI Department of Commerce, Central Statistics Division 2008). Due to the economic downturn since 2005, it is likely that the current unemployment rates are higher.

In 2010, the largest industry in the CNMI, Saipan, and Tinian was arts, entertainment, recreation and accommodation and food services (i.e., tourism), which accounted 38.4 percent of employment in Tinian and approximately 20 percent on the CNMI (22.2 percent) and Saipan (21.2 percent) (see **Table 3.14-5**). The educational services, healthcare, and social assistance industry was the second largest employer in the CNMI and on Saipan employing 12.4 percent and 12.3 percent of workers, respectively. Public administration was the second largest employer on Tinian. The construction industry accounted for approximately 7 percent of the workforces of the CNMI (1,786 people) and Saipan (1,554 people), and 4.5 percent of the Tinian workforce (79 people) (U.S. Census Bureau 2010f). In 2005, 93 percent of the construction workers in the CNMI were not U.S. citizens (CNMI Department of Commerce, Central Statistics Division 2008).

Table 3.14-5. Overview of Employment by Industry, 2010

Employment Characteristics	Saipan	Tinian	CNMI
Persons 16 Years Old and Over	34,581	2,311	38,679
Persons 16 Years Old and Over in the Labor Force*	24,709	1,878	27,949
Employed Persons 16 Years Old and Over	21,816	1,752	24,826
Percent Employed Persons 16 years old and over (by industry)			
Agriculture, forestry, fishing, hunting, mining	1.7	2.3	1.9
Construction	7.1	4.5	7.2
Manufacturing	3.0	0.3	2.8
Wholesale trade	3.1	0.6	2.8
Retail trade	11.4	4.3	10.7
Transportation and warehousing, utilities	5.7	7.2	5.8
Information	2.1	1.7	2.0
Finance and insurance, real estate and rental/leasing	4.6	1.8	4.3
Professional, scientific, management, administrative and waste management services	8.6	3.0	8.0
Educational services, healthcare and social assistance	12.3	10.2	12.4
Arts, entertainment, recreation and accommodation and food services	21.2	38.4	22.2
Other services (except public administration)	10.6	7.5	10.3
Public administration	8.4	18.3	9.7

Sources: U.S. Census Bureau 2010f

Note: * Labor force includes persons 16 years old and over that are defined as employed or unemployed civilians.

According to the U.S. Census Bureau's 2013 County Business Patterns, Saipan businesses accounted for more than 90 percent of paid employees and annual payroll in the CNMI (see **Table 3.14-6**). As of March 2013, the accommodation and food services and retail trade sectors had the first and second highest number of paid employees and highest annual payrolls in CNMI and Saipan. These two sectors accounted for 41.7 percent of paid employees in Saipan, and more than $64 million in annual payroll. Specific data regarding the number of paid employees and annual payroll by sector was incomplete for Tinian (U.S. Census Bureau 2015).

Table 3.14-6. Payroll Employment, 2013

	Saipan	Tinian	CNMI
Number of establishments	1,342	31	1,401
Number of paid employees *	10,662	626	11,436
Annual payroll	$176,176,000	$9,150,000	$188,129,000

Sources: U.S. Census Bureau 2015
Note: * During week of March 12, 2013.

The CPA manages Saipan International Airport, Tinian International Airport, and the Ports of Saipan and Tinian. In Fiscal Year (FY) 2011, CPA employed 136 employees on Saipan and 28 employees on Tinian. CPA reported that in FY 2011, 404,652 people enplaned and 388,030 people deplaned in Saipan, while 35,225 people enplaned in Tinian and 18,351 people deplaned (CPA 2013). Saipan International Airport also handles cargo and airmail; in 1999, approximately 42,800,000 pounds of cargo was enplaned and deplaned and 635,000 pounds of mail was enplaned (CPA 2002). In FY 2011, the Port of Saipan imported 340,472 revenue tons (RT)[2] and exported 13,901 RT, while the Port of Tinian imported 14,220 RT and exported 1,237 RT (CPA 2013).

Tourism. After the closure of the last garment manufacturer in early 2009, tourism became the only major industry supporting the CNMI (CNMI Department of Commerce 2009).

Several airlines provide service to the CNMI through Saipan International Airport. International flights are provided by Asiana Airlines, Delta Air Lines, and Jeju Air from cities in Japan, Korea, Hong Kong, China, and Guam. Domestic inter-island flights are provided by Cape Air (doing business as United Express), Freedom Air, Star Marianas Air, and Arctic Circle Air Company (cargo and charter flights). Charter flights are provided by China Eastern, Sichuan Airlines, and Shanghai Airlines (CPA 2015a). There were 188 average aircraft operations per day at Saipan International Airport for the 12-month period ending May 22, 2015. Commercial flights represented 7 percent of these operations, while air taxi was 50 percent (AirNav.com 2015a).

Passenger traffic originating from or terminating at Tinian International Airport consists of inter-island travel from Saipan, Rota, and Guam. Star Marianas Air is the only airline currently operating regularly scheduled flights to/from Tinian International Airport; however, Star Marianas Air provides charter flights to/from Tinian International Airport and Saipan International Airport.

[2] A revenue ton is a measurement on which shipments are freighted. If cargo is rated as weight or measure, whichever produces the higher revenue will be considered the revenue ton. Weights are based on metric tons and measures are based on cubic meters. Therefore 1 revenue ton = 1 metric tonne or 1 cubic meter.

Arctic Circle Air Company provides cargo and charter flights to Tinian International Airport (CPA 2015b). There is an average of 113 aircraft operations per day at Tinian International Airport. Eighty-five percent of these operations were air taxi (AirNav.com 2015b).

Visitor arrivals to the CNMI have decreased since their peak in the mid-1990s; visitor arrivals in the CNMI during 2013 were approximately 438,908 (see **Table 3.14-7**). Japanese tourists represent the largest segment of the tourist population, although the number of Japanese tourists has been decreasing in recent years and are generally equal to those from Korea. Visitors from China also make up a significant portion of arrivals to the CNMI accounting for approximately 27 percent of tourists (CNMI Department of Commerce 2013b).

Table 3.14-7. CNMI Visitor Arrivals by Market, 2006–2013

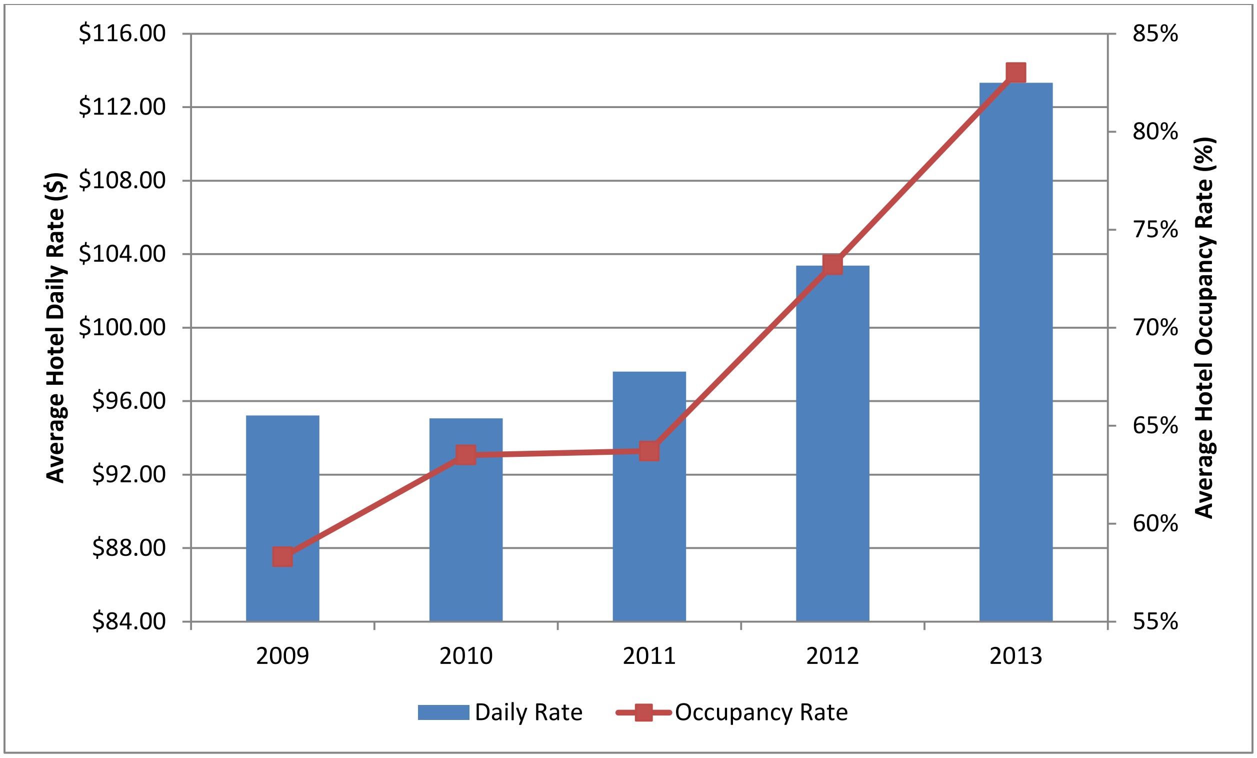
Geographic Area	2009	2010	2011	2012	2013
Total Visitors	353,956	379,091	340,957	401,219	438,908
Percent of Total Visitors by Market					
Japan	54.0%	48.8%	41.9%	38.2%	32.3%
Korea	25.2%	30.5%	31.5%	32.3%	31.9%
U.S. and Guam	8.3%	7.2%	7.0%	5.5%	4.8%
China *	8.4%	11.1%	16.2%	21.5%	26.6%
Hong Kong *	-	-	0.2%	0.1%	0.2%
Philippines	0.4%	0.2%	0.2%	0.1%	0.1%
Russia	1.8%	1.2%	1.5%	1.6%	2.8%
Taiwan *	0.1%	0.1%	0.0%	-	-
Other areas *	1.8%	1.0%	1.3%	0.8%	1.2%

Source: CNMI Department of Commerce 2010, CNMI Department of Commerce 2012, CNMI Department of Commerce 2013b

Notes: * For 2009 and 2010 and January-June 2011, arrivals from China included persons arriving from China and Hong Kong. Effective July 2011, arrivals from Hong Kong were counted separately, and arrivals from Taiwan were included in Other Areas.

The average CNMI hotel occupancy rate and hotel daily rate have varied over the past several years (see **Figure 3.14-1**). In 2013, CNMI hotels had an average occupancy rate of 83 percent and the average daily hotel rate was $113.32 (CNMI Department of Commerce 2013b).

Saipan is the capital, principal island, and major commercial center of the CNMI and, therefore, has more tourist opportunities than other islands in the CNMI. Tourist-related activities include outdoor/nature activities (hiking, golfing, and adventure tours), water sports (fishing, parasailing, snorkeling, and scuba diving), and touring cultural and historic sites. The Hotel Association of the Northern Mariana Islands (HANMI) represents 12 hotels on Saipan, although there are several other hotels and lodging options on Saipan and one hotel under construction in San Antonio (DIVERT1.280). There are approximately 3,000 hotel rooms on Saipan (Licanto 2015). The Commonwealth Casino Commission has granted a casino license to operate an integrated casino/resort on Saipan; currently a ‘temporary’ casino is operating as a live training facility (Pinaroc 2015, Marianas Variety 2015). Because Saipan International Airport is the only airport in the CNMI that can accommodate international flights, it accounts for most visitor arrivals to the CMNI



Source: CNMI Department of Commerce 2010, CNMI Department of Commerce 2012, CNMI Department of Commerce 2013b

Figure 3.14-1. CNMI Average Hotel Daily Rate and Occupancy Rates, 2009–2013

The focus of tourism on Tinian has been the development of the gaming industry. Five casino licenses were approved for Tinian; however only one licensed full-scale casino is operating (Tinian Dynasty Hotel and Casino) (CNMI Department of Commerce 2011). In 2002, Tinian had 452 total hotel rooms and 440 of these rooms were at the Tinian Dynasty Hotel and Casino (Bank of Hawai'i and East-West Center 2003). A 300-room hotel resort (Tinian Ocean View Resort) is under construction at Tinian Harbor; the project has also submitted an application for a license to operate a casino at the site (Villegas Zotomayor 2015). Other tourism-related activities include cultural and historic sites, and marine activities such as snorkeling, scuba diving, fishing, and beach going. To promote tourism, the runway at Tinian International Airport was expanded to allow for direct flights from China; however, Tinian International Airport does not currently have international flights (Shin 2007).

While tourism is the major industry on Saipan and Tinian, other smaller industries exist. Saipan supports small-scale agriculture, an aquaculture operation, one small call center, and many retail businesses (CNMI Department of Commerce 2011). Other industries on Tinian include commercial agriculture consisting of small-scale vegetable and fruit cultivation that is marketed locally and shipped to Saipan, a few family-owned ranches, and retail establishments in the village of San Jose (NPS 2001).

Public Services. This section addresses health and human services and public safety as these are two public services most likely to be affected by the Proposed Action.

Health and Human Services. Health and medical services on Saipan are primarily provided by the Commonwealth Healthcare Corporation via the Commonwealth Health Center (CHC) and various out-patient clinics. CHC is an 86-bed hospital that began operations in 1986. It can accommodate inpatient and outpatient medical/surgical services including obstetrics, adult and neonatal intensive care, general medicine, pediatrics, and psychiatry; emergency care; public health services; dental services; other ancillary and diagnostic services such as hemodialysis, physical therapy, respiratory care, and radiology; and has a pharmacy and medical laboratory (CHCC 2015a). As of June 2015, Commonwealth Healthcare Corporation employed 31 physicians in Saipan (Camacho 2015) and various other medical professionals such as physician's assistants, nurses, nursing assistants, and other allied health professionals. There are also several private health, dental, and optical clinics on Saipan, including the Pacific Medical Center-Saipan, a 137-bed acute care facility (PMC-Saipan 2015).

Tinian Health Center, built in 1987, is the island's only medical facility. The health center, which has a 5-bed capacity as well as an emergency room and out-patient clinic, provides emergency services, treatment, laboratory, X-ray, ultrasound, pharmacy, and public health services. The Tinian Health Center is staffed by 31 personnel, including 1 family nurse practitioner, currently the only medical provider; 4 registered nurses; 5 licensed practical nurses, and 2 nursing assistants (CHCC 2015a).

Public Safety. The CNMI Department of Public Safety (DPS) consists of four major divisions: State Police Division, State Fire Division; Bureau of Motor Vehicles; and Bureau of Investigation. The DPS Fire Division has five stations on Saipan.

The Saipan International Airport ARFF department, which is managed by the CPA, has approximately 35 personnel and 6 firefighting vehicles and equipment. It runs two 24-hour shifts with 15 personnel assigned to each shift and an average of 8 personnel on duty per shift each day. A Fire Captain is in charge of each shift. Administration of the Saipan International Airport ARFF department includes the Fire Chief, Assistant Fire Chief, Secretary, Training Officer, Training Coordinator, Fire Inspector/Logistics, ARFF Chief Mechanic, and ARFF Mechanic (CPA 2005). In addition, the Pacific Region ARFF Training Center is operated from Saipan International Airport.

DPS has a 24-hour operations center and police, fire, traffic, criminal investigation, and motor vehicle sections on Tinian. The DPS facilities are in the village of San Jose and, as of late 2008, were staffed by 20 police officers, 12 firefighters, and 6 administrative support personnel (DON 2010b).

The Tinian International Airport ARFF department has 3 firefighting vehicles and a staff of 10 personnel who have dual roles as ARFF personnel and Ports police officer. Tinian International Airport ARFF operates on three 8-hour shifts with an average of two to three personnel on duty per shift each day. A Fire/Police Captain runs the daily operation for both law enforcement and ARFF protection (CPA 2005). Tinian International Airport's firefighting capability can be made available to DPS in the event of a major emergency (DON 2010b).

The CNMI has correctional facilities on Saipan and Tinian. These facilities consist of a detention facility, jail, a women's unit, and a work release unit in Saipan and a police lockup in Tinian. These facilities are inadequate and are overcrowded (USDOI-OIA 2008).

Sociocultural Issues. A 45-day Public Scoping Period occurred from September 27 through November 10, 2011, and several public scoping meetings were conducted in the CNMI in October 2011 to present preliminary information on the Proposed Action and to identify potential issues of concern. Some concerns that were identified related to the socioeconomic impact of the Proposed Action beyond areas discussed in the preceding sections. This section describes some of these other issues such as land ownership, quality of life, and cultural identity.

The U.S. citizen population of the CNMI is primarily of Chamorro cultural descent, although Carolinians and immigrants from East Asia and Micronesia have also settled in the Mariana Islands. English is the official language of the CNMI, but Chamorro and Carolinian are the spoken native tongues. Spanish culture, which influenced the Chamorro culture for approximately 400 years, is still present today. Japanese is also spoken in some areas of the CNMI and is a reflection of the importance of Japanese to the tourism industry. Filipino and Chinese make up a large portion of the non-U.S. citizen population with some representation from other Asian countries (see **Table 3.14-8**).

Chamorro life revolves around family and clans. Family loyalty is seen as important in both politics and business in the CNMI. One of the most distinctive aspects of family life in the CNMI is the fiesta, which is held for events such as births, baptisms, religious holidays, and weddings (Shin 2007).

Quality of life is a person's overall well-being. It is a difficult concept to measure, but standard indicators of quality of life include not only wealth and employment (i.e., standard of living), but also available infrastructure, environmental quality, personal safety/security, health, education, recreation and leisure opportunities, and social belonging. Quality of life includes many of the resource areas discussed in this EIS. Generally, it relates to the ability of Saipan and Tinian to support the Proposed Action adequately, including how the island's general tranquility, family and community relations, cultural identity, infrastructure, social services, and standards of living could be affected.

3.14.3.2 Environmental Justice

Table 3.14-8 presents ethnic origin and race, and poverty status characteristics collected in the 2010 U.S. Census for Saipan; Tinian; Saipan Districts 1, 2, and 3; Tinian District 6; and the CNMI. Native Hawaiian and Other Pacific Islanders made up 33.6 percent of Saipan's population and 39.0 percent of Tinian's population. Percentage of Native Hawaiian and Other Pacific Islanders in Districts 1, 2, and 3 ranged from 23.8 percent of the population in District 3 to 37.7 percent of the population in District 1. Native Hawaiian and Other Pacific Islanders made up 39.0 percent of the population of Tinian (and District 6). Among people reporting to be Native Hawaiian and Other Pacific Islander alone and identifying one specific ethnic origin and race, the majority in the CNMI and Saipan (including Districts 1,2, and 3) identified as Chamorro. People identifying as Chamorro made up more than 20 percent of the populations of the CNMI, Saipan, and District 1, and approximately 16 percent and 13 percent of the

Table 3.14-8. Ethnic Origin and Race, and Poverty Status Characteristics, 2010

Demographic	Saipan	Saipan District 1	Saipan District 2	Saipan District 3	Tinian & Tinian District 6	CNMI
Total Population	**48,220**	**15,160**	**6,382**	**15,624**	**3,136**	**53,883**
Native Hawaiian and Other Pacific Islander	**33.6%**	**37.7%**	**25.5%**	**23.8%**	**39.0%**	**34.9%**
Carolinian *	5.1%	4.4%	3.1%	5.4%	37.7%	4.6%
Chamorro	21.6%	24.7%	15.8%	12.8%	0.2%	23.9%
Chuukese	2.5%	3.1%	2.3%	2.8%	0.0%	2.3%
Kosraean	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%
Marshallese	0.1%	0.2%	0.1%	0.1%	0.4%	0.1%
Palauan	2.3%	2.9%	2.1%	1.6%	0.1%	2.2%
Pohnpeian	0.9%	0.9%	0.9%	0.4%	0.2%	0.8%
Yapese	0.5%	0.7%	0.6%	0.2%	0.0%	0.4%
Other Native Hawaiian and Other Pacific Islander	0.6%	0.6%	0.3%	0.4%	37.7%	0.5%
Asian	**50.9%**	**47.9%**	**62.7%**	**63.4%**	**46.7%**	**49.9%**
Bangladeshi	0.8%	0.7%	1.3%	1.0%	1.8%	0.9%
Chinese (except Taiwanese)	7.1%	6.9%	9.2%	9.7%	7.6%	6.8%
Filipino	35.8%	34.0%	44.9%	43.3%	30.3%	35.3%
Japanese	1.5%	0.7%	0.6%	2.8%	1.2%	1.5%
Korean	4.6%	4.5%	5.7%	5.4%	1.3%	4.2%
Nepalese	0.3%	0.3%	0.2%	0.3%	3.1%	0.4%
Thai	0.5%	0.7%	0.5%	0.4%	0.3%	0.5%
Other Asian	0.3%	0.2%	0.4%	0.4%	1.1%	0.4%
Black or African American	**0.1%**	**0.0%**	**0.1%**	**0.1%**	**0.2%**	**0.1%**
Hispanic or Latino	**0.1%**	**0.1%**	**0.0%**	**0.1%**	**0.2%**	**0.1%**
White	**2.1%**	**1.4%**	**0.8%**	**2.6%**	**1.8%**	**2.1%**
Other Ethnic Origin or Race	**0.2%**	**0.2%**	**0.6%**	**0.2%**	**0.3%**	**0.2%**
Two or more Ethnic Origins or Races	**12.9%**	**12.6%**	**10.3%**	**9.8%**	**11.9%**	**12.7%**
Individuals Below Poverty Level	53.3%	55.1%	62.7%	53.1%	43.6%	52.3%

Source: U.S. Census Bureau 2010j, U.S. Census Bureau 2010k

Notes: * Carolinian includes Caroline Islander, Eauripikese, Faisian, Ifalukese, Lamotrekese, Satawalese, Ulithian, and Woleaian.

populations of District 2 and District 3, respectively. The population of Tinian (and District 6) was only 0.2 percent Chamorro, but Carolinians represented almost 38 percent of the population. Those reporting to be Asian made up more than 50 percent of the populations of Saipan and Districts 1 and 2, and slightly less than 50 percent of the populations of the CNMI, Tinian (and District 6), and District 1. Filipinos and Chinese were the largest ethnic origins and races within populations of those reporting to be Asian alone. Filipinos made up more than 30 percent and Chinese made at least 7 percent of the populations of the CNMI, Saipan, Tinian (and District 6), and Districts 1, 2, and 3 (U.S. Census Bureau 2010j). More than 50 percent of the populations of the CNMI, Saipan, and Districts 1, 2, and 3 were below the poverty level. Approximately 44 percent of the population of Tinian was below the poverty level (U.S. Census Bureau 2010k).

As described in **Section 3.14.3.1**, the CNMI has a complex and dynamic ethnic history due to the influences of many cultures throughout its past history and the in-migration of many foreign workers in recent history. Based on the Federal definition of a minority, most of the CNMI population would be considered a minority. There is no regional or CNMI-specific definition of a minority; therefore, the Federal definition is used in this analysis.

Data from the 2010 U.S. Census was used to identify minority and low-income populations within the areas of impact on Saipan and Tinian, which are the election districts that encompass the Proposed Action (i.e., Saipan International Airport, Tinian International Airport, Saipan and Port of Tinians, and fuel truck routes) in Saipan (Districts 1, 2, and 3) and Tinian (District 6). District 6 encompasses the whole island of Tinian as well as the island of Aguijan, which is uninhabited.

To determine whether each election district contains a disproportionately high percentage of minority or low-income residents, these districts are compared to the islands of Saipan and Tinian, which are the communities of comparison, using the methodology described in **Section 3.14.2**. Because District 6 is the island of Tinian, it will be compared to the CNMI.

Based on 2010 U.S. Census data, Saipan District 3 had a lower percentage of minorities than Saipan. Districts 1 and 2 had a higher minority percentage than Saipan. All differences (higher or lower) between the districts' minority percentages and those of Saipan were less than 1 percent, except for difference between District 2 and Saipan which was 1.3 percent. However, each district had minority percentages higher than 50 percent. The low-income population of District 3 was lower than that of Saipan; however, Districts 1 and 2 had higher percentages of low-income residents when compared to Saipan. Tinian District 6 had a higher percentage of minorities than the CNMI, but a lower percentage of low-income residents. **Table 3.14-9** presents the data used in determining if minority and low-income populations within the areas of impact on Saipan and Tinian (Saipan Districts 1, 2, and 3 and Tinian District 6) were higher than that of the areas of comparison (Saipan and the CNMI, respectively).

Table 3.14-9. Minority and Low Income Populations

Demographic	Total Population	Percent Minority *	Percent Low-Income	Disproportionate Minority Population	Disproportionate Low-Income Population
CNMI	53,883	97.9%	52.3%	-	-
Saipan	48,220	97.9%	53.3%	-	-
Tinian (Election District 6)	3,136	98.2%	43.6%	Yes	No
Election District 1 (Saipan)	15,160	98.6%	55.1%	Yes	Yes
Election District 2 (Saipan)	6,382	99.2%	62.7%	Yes	Yes
Election District 3 (Saipan)	15,624	97.4%	53.1%	No	No

Sources: U.S. Census Bureau 2010j, U.S. Census Bureau 2010k
Notes: * Within Table 3.14-9, the definition of "minority" is Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and multi-race that includes one of the aforementioned races; and Hispanic or Latino as defined by the CEQ (CEQ 1997).

3.15 Human Health and Safety

3.15.1 Definition of Resource

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Human health and safety addresses workers' and the public's health and safety during facility demolition and construction activities and subsequent operation of the newly constructed facilities.

The OSHA developed standards to promote a safe working environment. These standards establish general environmental controls, including personal protective equipment (PPE), wherever necessary because of hazards, processes, or the environment. Exposure limits for noise, ionizing and nonionizing radiation, and toxic and hazardous substances have been established; and requirements for handling and storing compressed gases and flammable liquids.

Contractor safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous DOD and USAF regulations designed to comply with standards issued by the OSHA and the USEPA. These standards specify the amount and type of training required for industrial workers, the use of PPE and clothing, engineering controls, and maximum exposure limits for workplace stressors.

Safety and accident hazards can often be identified, and reduced or eliminated. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself together with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the location of the hazard to the population. Activities that can be hazardous include transportation, maintenance and repair activities, and the creation of extremely noisy environments. The proper operation, maintenance, and repair of vehicles and equipment carry important safety implications. Any facility or human-use area with potential explosive or other rapid oxidation process creates unsafe environments for nearby populations. Extremely noisy environments can also mask verbal or mechanical warning signals such as sirens, bells, or horns. Refer to **Sections 3.1** and **4.1** for information regarding noise.

AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program*, implements AFPD 91-3, *Occupational Safety and Health*, by outlining the AFOSH Program. The purpose of the AFOSH Program is to minimize loss of USAF resources and to protect USAF personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the USAF Mishap Prevention Program, these standards ensure all USAF workplaces meet Federal safety and health requirements. This instruction applies to all USAF activities.

UFC 3-260-01, *Airfield and Heliport Planning and Design*, and other applicable criteria such as FAA Advisory Circular 150/5300-13A provide standardized airfield, heliport, and airspace criteria for the layout, design, and construction of runways, helipads, taxiways, aprons, and related permanent facilities. It details dimensional and geometric layout criteria for safety standards for airfields, landing zones, heliports and helipads, related permanent facilities, and the navigational airspace surrounding such facilities. USAF installations on a municipal airport or FAA-controlled airfields must apply FAA criteria to facilities such as runways and taxiways that are jointly used by civilian and military aircraft. However, facilities that are for military use need to comply with USAF/DOD criteria only.

An RSA is a defined surface surrounding a runway that enhances the safety of and reduces the risk of damage to airplanes in the event of an undershoot (i.e., aircraft landing short of the runway), an overshoot (i.e., aircraft landing on the runway but not able to stop on the runway), or an excursion from the runway (i.e., aircraft moving off the runway to the right or left). RSAs also provide accessibility for firefighting and rescue equipment responding to such incidents. The requirement to ensure that all certificated airports have RSAs compliant with 14 CFR Part 139 was brought about by aircraft accidents that resulted in passenger and crew fatalities or injuries and property damage.

Threat to human safety and the potential for damage to aircraft prompted the FAA to require all airfields handling commercial aircraft with 30 or more passenger seats to address wildlife hazards if a real or potential wildlife problem is present. The FAA is responsible for setting and enforcing FARs and policies to ensure commercial aviation safety. FAR Part 139.337 requires certificated airports to conduct a Wildlife Hazard Assessment (WHA) to identify and quantify wildlife hazards to aviation safety.

3.15.2 Existing Conditions

3.15.2.1 Saipan

Contractor Health and Safety. All contractors performing activities are responsible for following ground safety regulations and workers compensation programs and are required to conduct those activities in a manner that does not pose an undue risk to workers or personnel. Industrial hygiene programs address exposure to hazardous materials, use of PPE, and availability of Safety Data Sheets. Industrial hygiene is the responsibility of the contractors, as applicable. Contractor responsibilities are to review potentially hazardous workplace operations; to monitor exposure to workplace chemicals (e.g., asbestos, lead, hazardous materials), physical hazards (e.g., noise propagation, falls), and biological agents (e.g., infectious waste, wildlife, poisonous plants); to recommend and evaluate controls (e.g., prevention, administrative, engineering) to ensure personnel are property protected or unexposed; and to ensure a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures.

Military Health and Safety. Military personnel do not currently operate at Saipan International Airport, except for occasional divert operations.

Public Health and Safety. Saipan International Airport has a 24-hour Aircraft Rescue and Fire Fighting unit. It includes approximately 35 personnel and 6 pieces of firefighting apparatus (CPA 2012c).

Airfield Safety. The RSA for the runway at Saipan International Airport is an area 500 feet wide centered on the runway centerline and extending 1,000 feet beyond each runway end

(CPA 2002) and has been certified per 14 CFR Part 139. Refer to **Section 3.3** for information on aircraft operations at Saipan International Airport.

The WHA prepared in August 2008 recommended that Saipan International Airport develop and implement a Wildlife Hazard Management Plan (WHMP) to reduce aviation safety hazards (CPA 2008). The WHMP for Saipan International Airport outlines applicable wildlife control measures. Refer to **Section 3.6** for additional information regarding the WHA and BASH statistics at Saipan International Airport.

Explosive Safety. Currently, there are no munitions facilities, firing ranges, or FAA restricted areas at Saipan International Airport or the seaport. Additionally, no munitions facilities, or ordnance storage is planned at Saipan International Airport or the seaport and is thus further removed from analysis.

3.15.2.2 Tinian

Contractor Health and Safety. The existing conditions for contractors at Tinian are identical to that at Saipan.

Military Health and Safety. Military personnel do not currently operate at Tinian International Airport.

Public Health and Safety. Tinian International Airport has an Aircraft Rescue and Fire Fighting unit that includes approximately 10 personnel working three 8-hour shifts. The unit has 3 pieces of firefighting apparatus (CPA 2012c).

Airfield Safety. The RSA for the runway at Tinian International Airport is an area 500 feet wide centered on the runway centerline and extending 1,000 feet beyond each runway end (CPA 2012d) and has been certified per 14 CFR Part 139. Refer to **Section 3.3** for information on aircraft operations at Tinian International Airport.

The WHA prepared for Tinian International Airport recommended the development and implementation of a WHMP to reduce aviation safety hazards (CPA undated). The WHMP for Tinian International Airport outlines applicable wildlife control measures. Refer to **Section 3.6** for additional information regarding the WHA and BASH statistics at Tinian International Airport.

Explosive Safety. Currently, there are no munitions facilities, firing ranges, or FAA restricted areas at Tinian International Airport or the seaport. Additionally, no munitions facilities, or ordnance storage is planned at Tinian International Airport or the seaport and is thus further removed from analysis.

4. Environmental Consequences

Changes Since the 2012 Draft EIS. Since the release of the 2012 Draft EIS, PACAF has considered the environmental impacts presented and analyzed in the 2012 Draft EIS **Section 4**, in addition to comments and input received on the 2012 Draft EIS. Some information and analysis presented in **Section 4** has changed since the release of the 2012 Draft EIS based on the Modified Alternatives presented in **Section 2.4** and to provides a more thorough and in-depth analysis of impacts.

4.1 Noise

Noise impact analyses typically evaluate potential changes to the existing noise environment that would result from implementation of a proposed action. Potential changes in the acoustical environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to high noise levels or reduce the ambient sound level), negligible (i.e., if the total number of sensitive receptors exposed to high noise levels is essentially unchanged), or adverse (i.e., if they result in increased sound exposure to high noise levels or ultimately increase the ambient sound level).

Noise annoyance is defined by the USEPA as any negative subjective reaction to noise by an individual or group. DNL is an accepted metric for quantifying community annoyance to general environment noise, including aircraft noise. **Table 4.1-1** presents the percentages of people that would be projected to be “highly annoyed” when exposed to various levels of noise measured in DNL. This table presents the results of more than a dozen studies of the relationship between noise and annoyance levels. This relationship was suggested in 1977 by the National Academy of Sciences and was recently reevaluated for use in describing people’s reaction to semicontinuous (transportation) noise (Finegold et al. 1994). The data shown provide a perspective on the level of annoyance that might be anticipated.

Table 4.1-1. Percentage of Population Highly Annoyed by DNL Noise Levels

DNL Noise Contours	Percentage of Persons Highly Annoyed	
	Low	High
65–70 dBA	12	22
70–75 dBA	22	36
75–80 dBA	36	54
80+ dBA	> 54	

Source: Finegold et al. 1994

For this analysis, the NOISEMAP noise modeling program was used to analyze the military aircraft operations. NOISEMAP is a DOD-approved computer modeling program used to define noise levels in areas near USAF installations. For civilian aircraft, the INM was used. INM is the FAA’s preferred model when assessing aircraft noise for environmental documentation. The output from NOISEMAP and INM was combined in NMPlot to create one set of noise contours for each scenario. NMPlot is a software program sponsored by the USAF and the FAA to produce contour plots for their airport noise models. An analysis of existing and proposed conditions was estimated from the flying operations including types of aircraft, flight patterns, variations in altitude, power settings, number of operations, and hours of operation. This information was used to develop the noise contours contained in this document.

4.1.1 Alternative 1– Modified Saipan Alternative

4.1.1.1 Construction Phase

Short-term, direct, minor, adverse impacts on the noise environment would be expected from construction associated with Alternative 1. Impacts associated with construction noise under Alternative 1 would result from the projects identified in **Section 2.4.1.1** and would be constructed at different times and locations over 24 to 36 months. Individual equipment used for construction would be expected to result in noise levels comparable to those shown in **Table 4.1-2**. New temporary sources of noise would be imposed by construction at the specific selected construction sites and the vehicle traffic on public roads associated with the mobilization/demobilization of construction equipment, delivery of construction materials, and the daily transport of construction workers to and from the construction sites.

Table 4.1-2. Predicted Peak Noise Levels for Construction Equipment

Construction Equipment	Predicted Noise Level at 50 feet (dBA)
Backhoe	72–93
Concrete mixer	74–88
Crane	75–87
Front loader	72–83
Grader	80–93
Jackhammer	81–98
Paver	86–88
Pile driver	95–105
Roller	73–75
Truck	83–94

Source: USEPA 1971

Noise from construction varies depending on the type of equipment being used, the area that the action would occur in, and the distance from the noise source. Additionally, noise from construction equipment is estimated without the use of enclosures, mufflers, or other sound reducing equipment. Individual equipment used for construction would be expected to result in noise levels comparable to those shown in **Table 4.1-2.** To predict how these activities would impact adjacent populations or other nearby sensitive noise receptors, noise levels from the probable equipment was estimated. For example, as shown in **Table 4.1-2**, construction usually involves several pieces of equipment (e.g., bulldozers and trucks) that can be used simultaneously.

Under Alternative 1, the cumulative noise from the equipment during the busiest day was estimated to determine the total impact of noise from construction at a given distance. Examples of expected cumulative construction noise during daytime hours at specified distances are shown in **Table 4.1-3**. These sound levels were estimated by adding the noise from several pieces of equipment and then calculating the decrease in noise levels at various distances from the source of the noise.

Table 4.1-3. Estimated Peak Noise Levels from Construction Activities

Distance from Noise Source	Estimated Peak Noise Level
50 feet	90–94 dBA
100 feet	84–88 dBA
150 feet	81–85 dBA
200 feet	78–82 dBA
400 feet	72–76 dBA
800 feet	66–70 dBA
1,200 feet	< 64 dBA

Source: HDR

The majority of the projects under Alternative 1 would occur on or adjacent to Saipan International Airport property. The closest residences to the construction sites are approximately 700 feet north of the fuel storage and hydrant system infrastructure. As shown in **Table 4.1-3**, at this distance, peak noise levels from construction equipment would be approximately 67 to 71 dBA. This means there would be some periods of time during construction when instantaneous noise levels could be in the 67 to 71 dBA range, but this would be short term and periodic.

In addition to the projects at Saipan International Airport, fuel tanks would be constructed at the Port of Saipan. Most of the property around this site consists of industrial land use. The closest noise-sensitive receptors are residences approximately 300 feet away. At this distance, noise levels from construction equipment would be approximately 75 to 79 dBA.

Short-term, direct, minor, adverse impacts from construction noise under Alternative 1 would be expected. However, noise generation would only last for the duration of construction activities. Since noise is typically less annoying during normal working hours, restricting activities to these hours (i.e., between 7:00 a.m. and 5:00 p.m.) could reduce the annoyance to adjacent populations. Common measures such as using equipment exhaust mufflers could minimize noise impacts. It is not anticipated that the short-term increase in noise levels resulting from construction associated with Alternative 1 would cause significant adverse impacts on the surrounding populations.

Construction-related traffic would add to existing traffic noise levels. As a rule of thumb, doubling the noise source, in this case the number of vehicles, would result in a 3-dBA increase in the existing noise level. This increase over the ADT volume shown in **Table 3.11-1** in **Section 3.11.2.1** for any of the roadways anticipated to be primarily used represents only a fractional increase in terms of noise generation. There are numerous noise-sensitive receptors adjacent to the roadways that construction traffic would travel on including schools (such as the Northern Marianas College), recreational facilities (such as the Saipan Country Club), and residences. These trips would be dispersed throughout the day, and noise levels from construction trucks generally range between 83 to 94 dBA, 50 feet from the source. During this time period, short-term, minor to moderate impacts would occur on receptors adjacent to the roadways. For the remaining construction period, substantially fewer construction-related trips would occur. Therefore, impacts from construction traffic are not anticipated to be significant.

4.1.1.2 Implementation Phase

AIRCRAFT OPERATIONS

Aircraft operations under Alternative 1 were analyzed using the KC-135 aircraft because it is the design aircraft for the Proposed Action. As described in **Section 1.5.3**, the ISR/Strike capability proposed to establish 12 KC-135 aircraft in the region at Andersen AFB. Because the purpose and need of the Proposed Action presented in this EIS is to provide a divert airfield to Andersen AFB, the noise analysis was completed for the operation of these 12 KC-135 aircraft from Saipan International Airport. However, as described in **Section 2.4.1.2**, a typical military exercise conducted at Saipan International Airport as part of this proposal would only include the operation of two to four KC-135 aircraft. Therefore, noise impacts from aircraft operations at Saipan International Airport would typically be less than those described below.

Additional analysis related to noise impacts, including impacts on land use and sensitive populations, is provided in **Section 4.10.1.2**.

Average Annual Day (AAD). Direct, minor, adverse impacts on the noise environment would be expected from Alternative 1. Impacts would be periodic and short-term because they would only occur during planned military exercises for a maximum of 8 weeks per year. To model the Alternative 1 noise contours, the current aircraft operations under the baseline scenario were increased by 1 percent based on the FAA's Terminal Area Forecast, as shown on **Table 4.1-4**. The Terminal Area Forecast system is the official forecast of aviation activity at FAA facilities. Consequently, the increase in operations from 2011 to 2018 was looked at to determine the change in operations at Saipan International Airport and Tinian International Airport. At Saipan International Airport, a 1 percent increase, per year from 2011 data through 2016, in aircraft operations is forecasted (FAA 2011). The baseline aircraft operations under Alternative 1 were increased by 1 percent to reflect the FAA's Terminal Area Forecast. The percentage of operations between 10 p.m. and 7 a.m. and the flight tracks did not change as compared to baseline conditions. In addition to the aircraft that were modeled under the Baseline Scenario, Alternative 1 includes operations with the KC-135 aircraft.

The aircraft operations were modeled using an AAD. The AAD is calculated by looking at the total number of aircraft operations that are conducted per year and dividing by 365 days to obtain an average number of operations per day. The AAD method is used to evaluate significance.

To model an AAD, it was estimated that each KC-135 aircraft would complete four operations per day, two arrivals and two departures, during military exercises. The aircraft would likely fly 8 weeks per year, for 5 days a week, which equals 40 flying days per year. Therefore, each aircraft would complete approximately 160 operations per year; 12 aircraft would complete 1,920 operations per year. However, as stated above, a typical military exercise conducted at Saipan International Airport as part of this proposal would only include the operation of two to four KC-135 aircraft and a total of 720 operations (i.e., 360 take-offs and 360 landings). Therefore, noise impacts from aircraft operations at Saipan International Airport would typically be less than those described in the following sentences.

Table 4.1-4. Alternative 1–Forecasted AAD Aircraft Operations at Saipan International Airport

Aircraft Category[1]	Aircraft[2]	Average Daily Operations[1]
Air Carrier	A-330	2.02
	A-321	2.02
	B-757	4.04
	B-767	2.02
Air Taxi/ General Aviation[3]	ATR-42	22.22
	C-172	15.15
	SD3-60	4.04
	Piper Cherokee	89.53
Military	C-130H	0.72
	F-16C	0.35
	KC-135	5.26
	Total	**147.37**

Source: FAA 2011[1] and HDR[2]
[3] Air taxi flights also occasionally include operations by a Piper Navajo, differences in noise levels are negligible.

To estimate the AAD, the total number of operations was divided by 365 days, which equals 5.26 operations per day with the KC-135. It was assumed that 90 percent of the KC-135 operations would occur during the day (7 a.m. to 10 p.m.) and 10 percent at night (10 p.m. to 7 a.m.). KC-135 flight tracks were modeled heading to the airspace areas to the north and south, where the aircraft would train. **Table 4.1-5** shows the acreage within the AAD noise contours under Alternative 1. The total number of acres within the 65 to 80+ dBA DNL noise contours is 374 which is an increase of 21 acres as compared to the baseline scenario. However, there is an increase of only 6 acres of off-airport property as compared to the baseline scenario (5 acres within the 65 to 69 dBA DNL contours and 1 acre within the 70 to 74 dBA DNL contours). This is the result of the minor increase in aircraft operations (by approximately 7) and the addition of the KC-135 operations. Of the total number of acres, approximately 23 include off-airport property.

Table 4.1-5. Alternative 1 – Projected AAD Noise Contour Acreage at Saipan International Airport

Noise Contours	Alternative 1 (in acres)		
	Off-Airport Property	Airport Property	Total Acres
65–70 dBA DNL	21	185	206
70–75 dBA DNL	2	123	125
75–80 dBA DNL	0	35	35
80+ dBA DNL	0	8	8
Total	**23**	**351**	**374**

Source: HDR

Figure 4.1-1 shows the Alternative 1–AAD and the baseline scenario noise contours at Saipan International Airport. The noise contours extend slightly farther out from the runway ends as compared to the baseline scenario. The 65 and 70 dBA DNL noise contours remain close to airfield facilities. The 75 to 80 dBA DNL contours remain within airfield facilities. There would be a slight increase in acreage under the Alternative 1–AAD (21 acres) as compared to the baseline scenario.

Average Busy Day. The ABD was modeled to depict the increased noise exposure that would occur during an exercise activity. The ABD looks at the total number of aircraft operations conducted per year and divides by the number of annual flying days to obtain an average number of operations per day. To model the ABD, each KC-135 aircraft would complete four operations per day, two arrivals and two departures, during a military exercise. As stated above, the noise analysis was completed for the operation of 12 KC-135 aircraft from Saipan International Airport. Since the analysis was completed for 12 KC-135s, and each aircraft would complete four operations per day, the number of KC-135 daily operations was modeled at 48. Except for the KC-135 aircraft, the daily operations shown in **Table 4.1-4** would remain the same under the ABD scenario since those aircraft typically operate from Saipan International Airport 365 days per year. The other assumptions discussed for the AAD would also remain the same.

Figure 4.1-2 shows the Alternative 1 – ABD noise contours at Saipan International Airport. As expected, the noise contours are larger than under the AAD. The contours follow the flight tracks, which extend out from the runway. The 65 dBA DNL contour extends off airport property over the Pacific Ocean. The 70 dBA DNL contour also extends off airport property, mostly to the northeast.

Table 4.1-6 shows a summary of the noise contour acreage at Saipan International Airport under the Baseline Scenario and the AAD. The acreage calculations only include the land areas that the noise contours encompass; acreage over water was not calculated.

Table 4.1-6. Summary of Saipan International Airport Noise Contour Acreage for the Baseline Scenario and AAD

DNL Noise Contours	Baseline Scenario (in acres)	Alternative 1–AAD (in acres)
65–70 dBA	214	206
70–75 dBA	105	125
75–80 dBA	26	35
80–85 dBA	8	8
85+ dBA	0	0
Total	**353**	**374**

Source: HDR

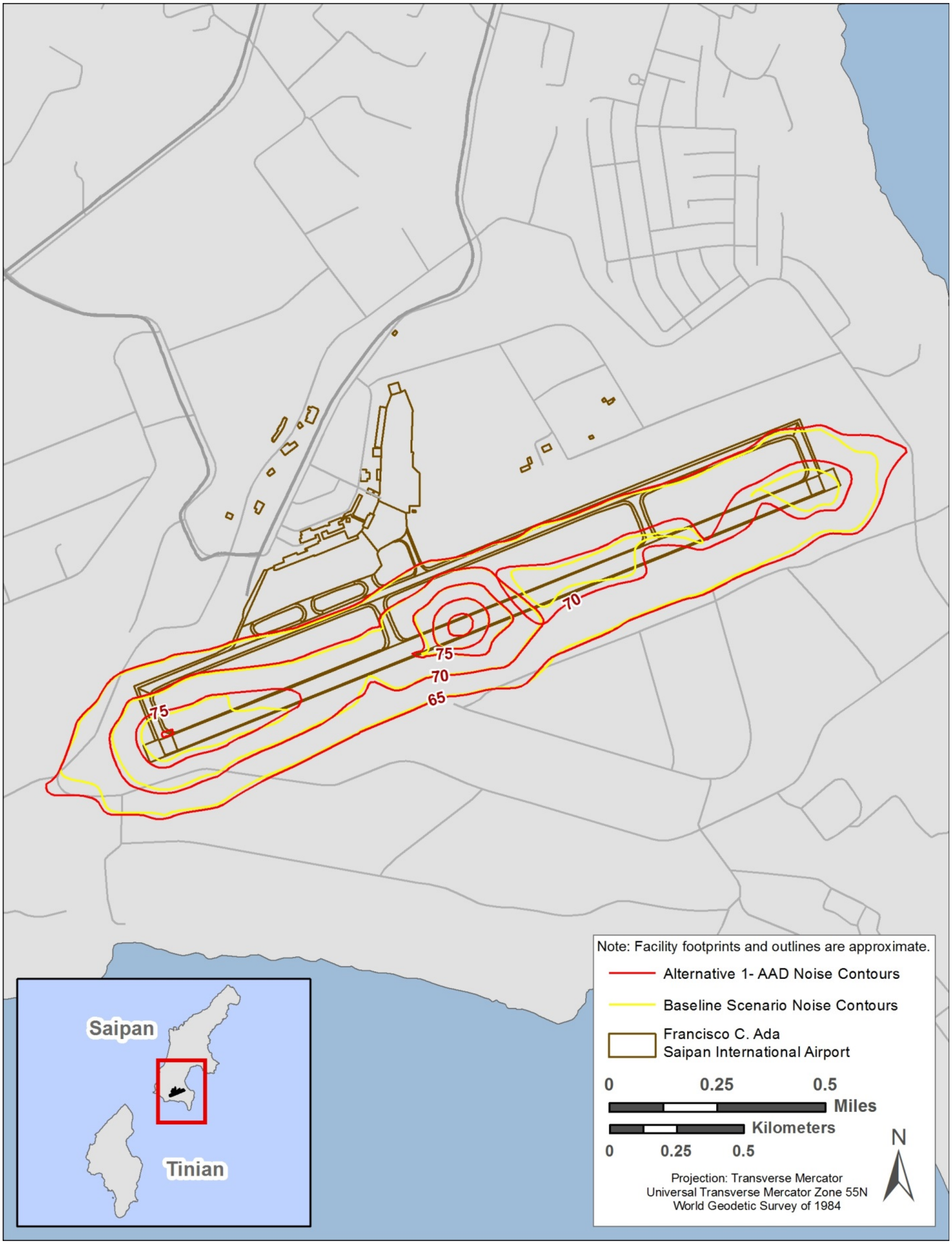


Figure 4.1-1. Alternative 1–AAD Noise Contours at Saipan International Airport

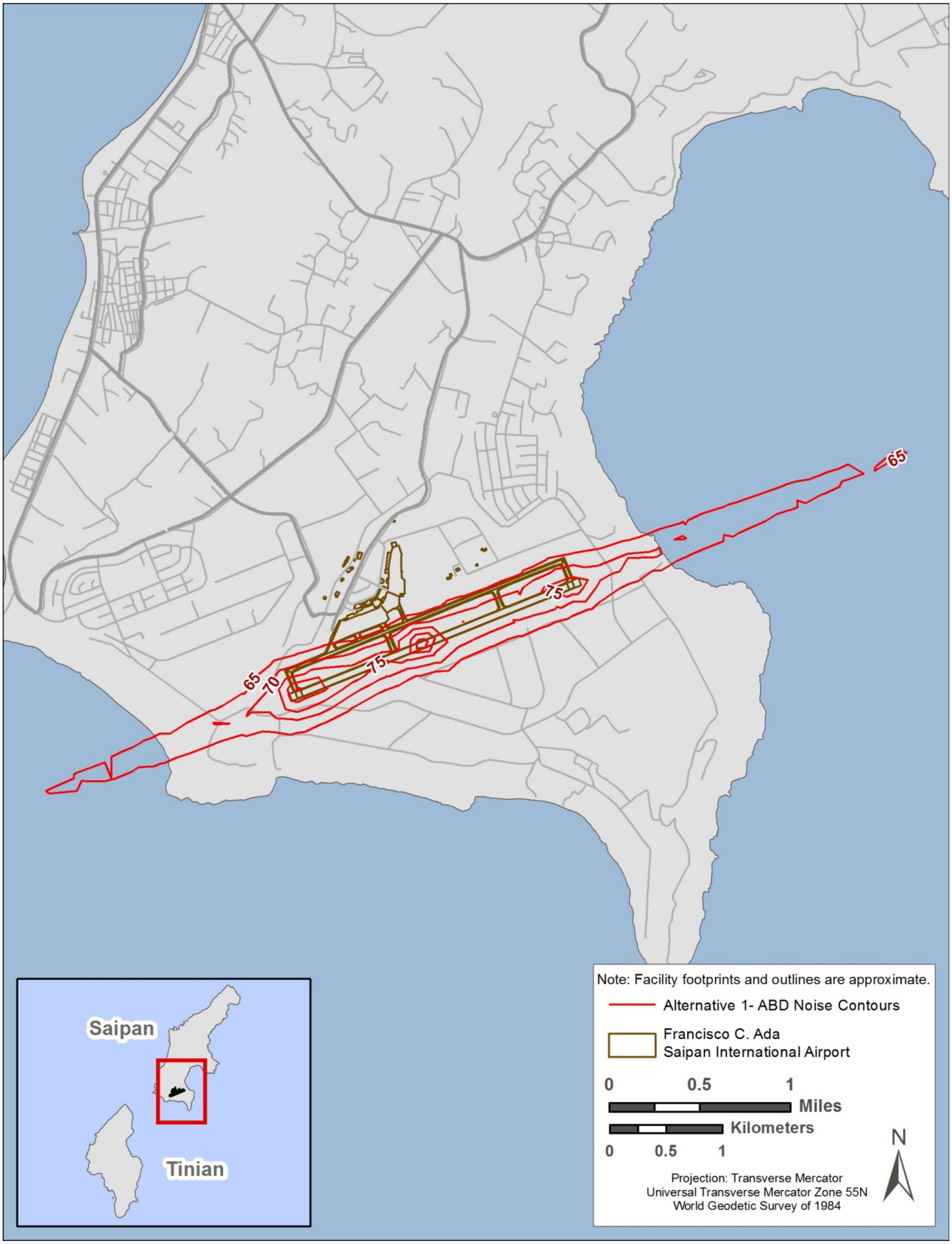


Figure 4.1-2. Alternative 1 – ABD Noise Contours at Saipan International Airport

VEHICLE USE AND LODGING

Under Alternative 1, vehicle traffic would increase due to fuel truck delivery from the fuel storage at the port to the proposed airfield fuel storage facility. These short-term impacts would be realized during a 14-day period to initially fill the 100,000-bbl bulk storage tank at the airport and throughout the 8 weeks of anticipated operations each year. The short-term periodic increase in fuel truck deliveries would use existing roadways commonly used by similar delivery trucks on each island. For initial fuel supply to fill the proposed new bulk storage facility at the airport, 84 daily one-way trips of the fuel truck would be required over the 14-day period. During each day of the 8 weeks of annual operations, 60 one-way trips by the fuel trucks would be required. Noise levels from trucks generally range between 83 and 94 dBA, 50 feet from the source. During this time period, short-term, minor to moderate, direct adverse impacts would occur on receptors adjacent to the roadways.

Other potential vehicle use increases would be associated with bus transportation of support personnel on Saipan from the hotel to the airfield on a daily basis during the 8-week training operations. This short-term increase would be realized from commercial lodging to the airport and return. Buses would use existing roadways on Saipan, and the level of increased traffic as compared to existing average daily traffic levels shown in **Section 3.11** would not impose a significant increase in current noise levels associated with traffic.

4.1.2 Alternative 2 – Modified Tinian Alternative

4.1.2.1 Construction Phase

4.1.2.1.1 North Option

Short-term, direct, moderate, adverse impacts on the noise environment would be expected from construction associated with the Alternative 2 North Option. Impacts associated with construction noise under Alternative 2 North Option would result from the projects identified in **Section 2.4.2.1** and would be constructed at different times and locations over 24 to 36 months. New temporary sources of noise would be imposed by construction at the specific selected construction sites and the vehicle traffic on public roads associated with the mobilization/demobilization of construction equipment, delivery of construction materials, and the daily transport of construction workers to and from the construction sites.

Noise from construction varies depending on the type of equipment being used, the area that the action would occur in, and the distance from the noise source. Additionally, noise from construction equipment is estimated without the use of enclosures, mufflers, or other sound-reducing equipment. Individual equipment used for construction would be expected to result in noise levels comparable to those shown in **Table 4.1-2**. To predict how these activities would impact adjacent populations or other nearby sensitive noise receptors, noise levels from the probable equipment was estimated. For example, as shown in **Table 4.1-2**, construction usually involves several pieces of equipment (e.g., bulldozers and trucks) that can be used simultaneously. Under the Alternative 2 North Option, the cumulative noise from the equipment, during the busiest day, was estimated to determine the total impact of noise from construction at a given distance. Examples of expected cumulative construction noise during daytime hours at specified distances are shown in **Table 4.1-7**. These sound levels were estimated by adding

Table 4.1-7. Estimated Peak Noise Levels from Construction

Distance from Noise Source	Estimated Noise Level
50 feet	90–94 dBA
100 feet	84–88 dBA
150 feet	81–85 dBA
200 feet	78–82 dBA
400 feet	72–76 dBA
800 feet	66–70 dBA
1,200 feet	< 64 dBA

Source: HDR

the noise from several pieces of equipment and then calculating the decrease in noise levels at various distances from the source of the noise.

The majority of the projects under the Alternative 2 North Option would occur on Tinian International Airport property. The closest noise-sensitive receptors to the airport are residences on the south side if the airport, approximately 5,200 feet away of the southern airport boundary. At this distance, noise levels from construction equipment would be below 55 dBA, typically the levels heard in suburban residential areas (see **Table 3.1-2**). In addition to the projects at Tinian International Airport, a fuel tank would be constructed at the Port of Tinian. The closest noise-sensitive receptors to this site are residences, approximately 700 feet away. At this distance, noise levels from construction equipment would be approximately 67 to 71 dBA.

Short-term, direct, minor, adverse impacts from construction noise under Alternative 2 North Option would be expected. However, noise generation would only last for the duration of construction. Since noise is typically less annoying during normal working hours, restricting activities to these hours (i.e., between 7:00 a.m. and 5:00 p.m.) could reduce the annoyance to adjacent populations. Measures such as using equipment exhaust mufflers could minimize noise impacts. It is not anticipated that the short-term increase in noise levels resulting from construction under the Alternative 2 North Option would cause significant adverse impacts on the surrounding populations.

Construction-related traffic would add to existing traffic noise levels. As a rule of thumb, doubling the noise source, in this case the number of vehicles, would result in a 3-dBA increase in the existing noise level. This increase over the ADT volume shown in **Table 3.11-5** in **Section 3.11.2.2** for any of the roadways primarily anticipated to be used represents only a fractional increase in terms of noise generation. Roadways that would likely receive the majority of the construction traffic include 8th Avenue and Broadway. Noise-sensitive receptors adjacent to these roadways include Kramer Beach and residences. These trips would be dispersed throughout the day noise levels from construction trucks generally range between 83 and 94 dBA, 50 feet from the source. However, during this time period, short-term, moderate impacts would occur on receptors adjacent to the roadways. During the remaining construction period, substantially fewer construction-related trips would occur. Noise levels would be temporary, occurring several times a day during work hours. Therefore, the impacts from construction traffic are not anticipated to be significant.

4.1.2.1.2 South Option

Impacts on the noise environment from the Alternative 2 South Option would be less than those described in **Section 4.1.2.1.1.** The construction footprint under the South Option is approximately 1,500,000 ft^2 smaller than the North Option and would therefore require less construction equipment and vehicle use. While the noise level from construction equipment and vehicles would remain there same, the noise would also be less frequent than that described under the Alternative 2 North Option. Therefore, direct, minor, adverse impacts on the noise environment would be expected from the Alternative 2 South Option.

4.1.2.2 Implementation Phase – North and South Options

Noise impacts from aircraft operations during military exercises, vehicle use, and lodging would be the same for the Alternative 2 North and South Options. They are discussed as one alternative in the impacts analysis below.

AIRCRAFT OPERATIONS

Aircraft operations under Alternative 2 were analyzed using the KC-135 aircraft because it is the design aircraft for the Proposed Action. As described in **Section 1.5.3**, the ISR/Strike capability proposed to establish 12 KC-135 aircraft in the region at Andersen AFB. Because the purpose and need of the Proposed Action presented in this EIS is to provide a divert airfield to Andersen AFB, the noise analysis was completed for the operation of these 12 KC-135 aircraft from Tinian International Airport. However, as described in **Section 2.4.1.2**, a typical military exercise conducted at Tinian International Airport as part of this proposal would only include the operation of two to four KC-135 aircraft. Therefore, noise impacts from aircraft operations at Tinian International Airport would typically be less than those described below.

Section 4.10.1.2 provides an additional analysis related to noise impacts, including impacts on land use and sensitive populations.

Average Annual Day. Direct, minor, adverse impacts on the noise environment would be expected from Alternative 2. Impacts would be periodic and short term because they would only occur during planned military exercises for a maximum of 8 weeks per year. To model the Alternative 2 noise contours, the aircraft operations under the baseline scenario were increased by 1 percent, based on the FAA's Terminal Area Forecast, as shown on **Table 4.1-8**. In addition, charter flights scheduled to begin flying locally and between China and Tinian were included under Alternative 2 at Tinian International Airport because they would be considered the baseline noise environment when military exercises would begin (Star Marianas Air 2012). This includes the Cessna 441 and the 737-500 aircraft. The number of Piper Cherokee and Cessna 172 operations that occur between the hours of 10 p.m. and 7 a.m. was not expected to change from the Baseline Scenario. It was assumed that the Cessna 441 and the 737-500 would fly during daytime hours (7 a.m. to 10 p.m.). Alternative 2 includes operations with the KC-135 aircraft.

Table 4.1-8. Alternative 2 – Forecasted AAD Aircraft Operations at Tinian International Airport

Aircraft	Daily Operations
Piper Cherokee[1]	27.76
C-172	8.45
737-500	0.13
C-441	0.07
KC-135	5.26
Total	**41.67**

Source: HDR
[1] Air taxi flights also occasionally include operations by a Piper Navajo, differences in noise levels are negligible.

To model the AAD, each KC-135 aircraft would complete four operations per day, two arrivals and two departures, during military exercises. The aircraft would likely fly 8 weeks per year, for 5 days a week, which equals 40 flying days per year. Therefore, each aircraft would complete approximately 160 operations per year, and 12 aircraft would complete 1,920 operations per year. However, as stated above, a typical military exercise conducted at Tinian International Airport as part of this proposal would only include the operation of two to four KC-135 aircraft and a total of 720 operations (i.e., 360 take-offs and 360 landings). Therefore, noise impacts from aircraft operations at Saipan International Airport would typically be less than those described in the following sentences.

To estimate the AAD, the total number of operations was divided by 365 days, which equals 5.26 operations per day. It was assumed that 90 percent of the KC-135 operations would occur during the day (7 a.m. to 10 p.m.) and 10 percent at night (10 p.m. to 7 a.m.). KC-135 flight tracks were modeled heading to the airspace areas where they would train, which is to the north and south. **Table 4.1-9** shows the acreage within the noise contours under the Alternative 2 – AAD. The total number of acres within the 65 to 80+ dBA DNL noise contours is 18. Under the baseline scenario, the total number of acres within the 65 to 80+ dBA DNL is 0. This is the result of the increase in aircraft operations (by approximately six) and the addition of the Cessna 441, 737-500, and the KC-135 aircraft operations.

Table 4.1-9. Alternative 2 – AAD Noise Contour Acreage at Tinian International Airport

Noise Contours	Alternative 2 (in acres)		
	Off-Airport Property	Airport Property	Total Acres
65–70 dBA DNL	0	18	18
70–75 dBA DNL	0	0	0
75–80 dBA DNL	0	0	0
80+ dBA DNL	0	0	0
Total	**0**	**18**	**18**

Source: HDR

Figure 4.1-3 shows the Alternative 2 – AAD noise contour at Tinian International Airport. Given the low number of operations and relatively quiet aircraft, only the 65 dBA DNL noise contour is large enough to plot. The contour is present at Runway 07 because 85 percent of the operations arrive and depart from that runway end.

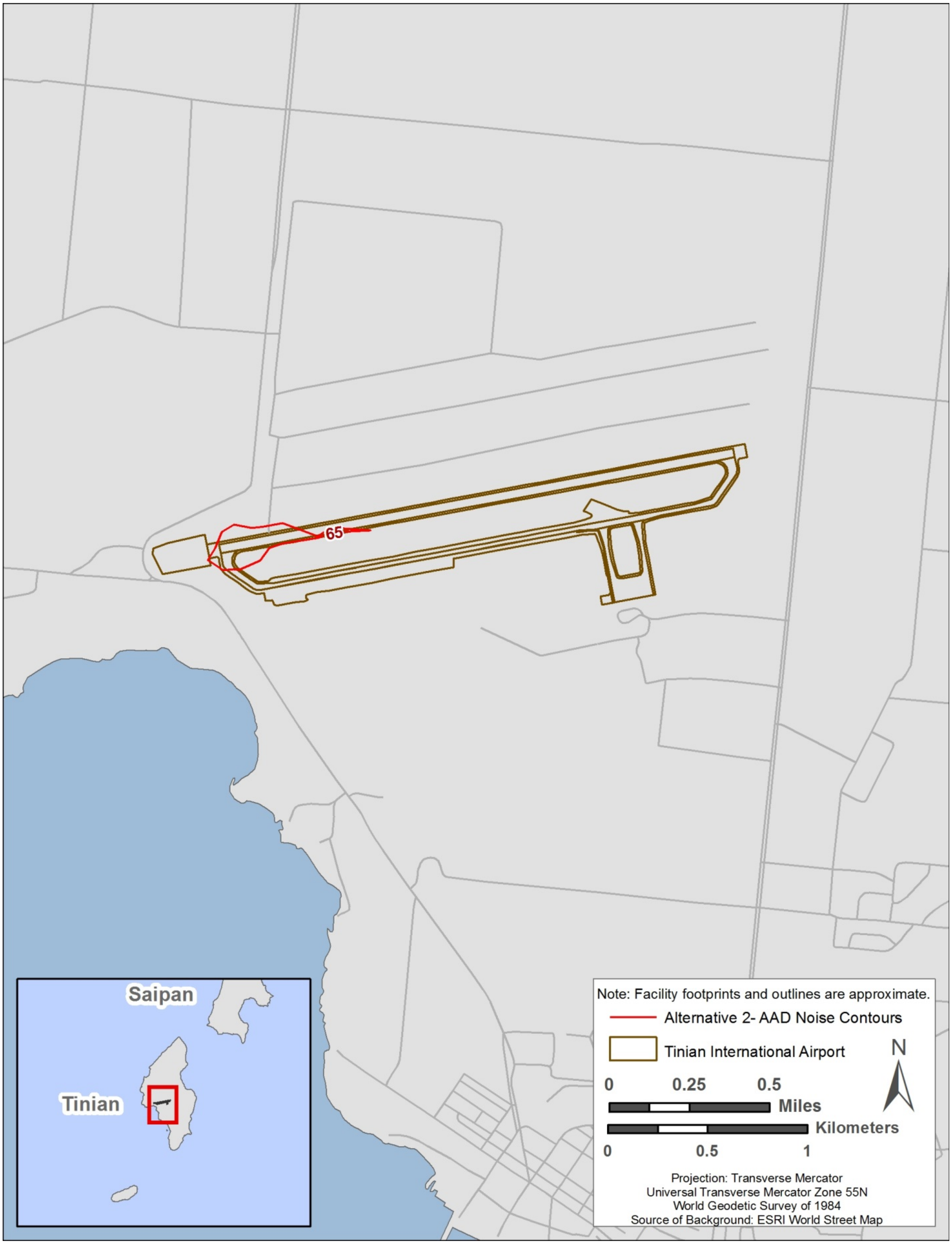


Figure 4.1-3. Alternative 2–AAD Noise Contours at Tinian International Airport

The increase in acreage under the Alternative 2 – AAD, as compared to the baseline scenario, would result in a temporary increase in noise levels around Tinian International Airport. However, the military exercises would only occur for a total of 8 weeks per year, approximately 40 flying days per year.

Average Busy Day. The ABD scenario was modeled to depict the increased noise exposure that would occur during an exercise activity. To model an ABD, it was estimated that each KC-135 aircraft would complete four operations per day, two arrivals and two departures, during a military exercise. As stated above, the noise analysis was completed for the operation of 12 KC-135 aircraft from Tinian International Airport. Since the analysis was completed for 12 KC-135s, and each aircraft would complete four operations per day, the number of KC-135 daily operations was modeled at 48. Except for the KC-135 aircraft, the daily operations that are shown in **Table 4.1-8** would remain the same under the ABD scenario since those aircraft typically operate from Tinian International Airport 365 days per year. The assumptions discussed for the AAD would also remain the same.

Figure 4.1-4 shows the Alternative 2 – ABD noise contours at Tinian International Airport. As expected, the noise contours are larger than under the AAD. The 65 dBA DNL contour extends out from the runway off airfield property to the east and west. The 70 and 75 dBA DNL contours remain close to the runway.

A summary of the noise contour acreage at Tinian International Airport under the Baseline Scenario and AAD is shown in **Table 4.1-10**. The acreage calculations only include the land areas that the noise contours encompass; acreage over water was not calculated.

Table 4.1-10. Summary of Tinian International Airport Noise Contour Acreage for the Baseline Scenario and AAD

DNL Noise Contours	Baseline Scenario (in acres)	Alternative 2 – (in acres)
65–70 dBA	0	18
70–75 dBA	0	0
75–80 dBA	0	0
80–85 dBA	0	0
85+ dBA	0	0
Total	**0**	**18**

Vehicle Use and Lodging

Under Alternative 2, increases in vehicle traffic are anticipated due to fuel truck delivery from the port to the proposed airfield fuel storage facility during the 8 weeks of anticipated operations each year. However, the increase in noise levels from fuel truck deliveries would not be significant because it would be short-term and intermittent. Therefore, periodic, direct, minor to moderate, adverse impacts from truck traffic noise would be expected.

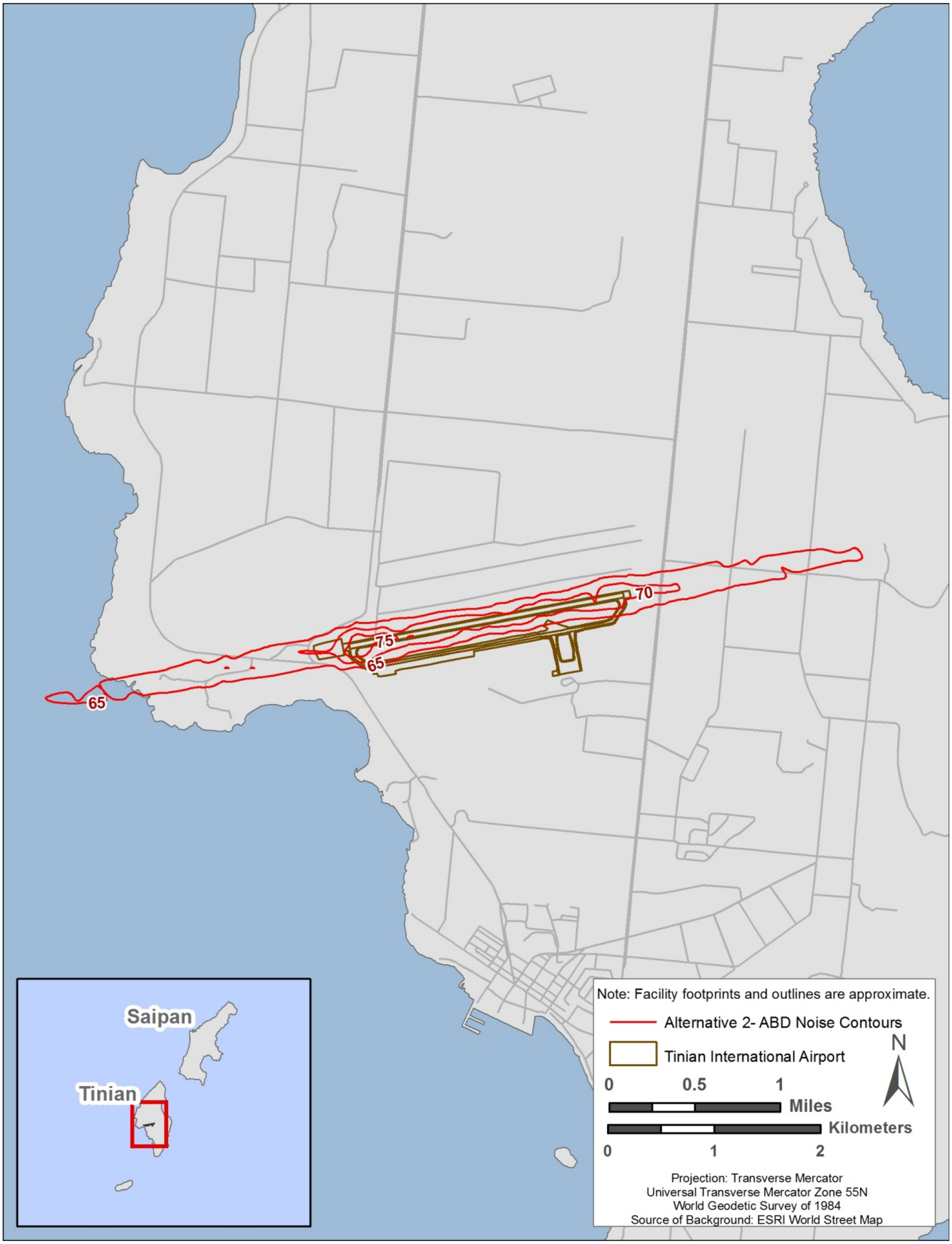


Figure 4.1-4. Alternative 2–ABD Noise Contours at Tinian International Airport

Under Alternative 2, vehicle traffic would increase due to fuel truck delivery from the fuel storage at the port to the proposed airfield fuel storage facility. These short-term impacts would be realized during a 30-day period to fill the 100,000-bbl bulk storage tank at the airport and throughout the 8 weeks of anticipated operations each year. The short-term periodic increase in fuel truck deliveries would use existing roadways commonly used by similar delivery trucks on Tinian. For initial fuel supply to fill the proposed new bulk storage facility at the airport, it is anticipated that 84 daily one-way trips of the fuel truck would be required over the 30-day period. Noise levels from trucks generally range between 83 to 94 dBA, 50 feet from the source. During this time period, short-term, moderate impacts would occur on receptors adjacent to the roadways.

4.1.3 Alternative 3 Hybrid Modified Alternative

4.1.3.1 Construction Phase

Under Alternative 3, construction would occur on both Saipan and Tinian. Therefore, noise impacts are expected on both islands. However, noise impacts would not be cumulative, or amplified, because the noise contours of each island would not overlap.

4.1.3.1.1 Saipan

Under Alternative 3 on Saipan, the construction footprint would be much smaller than that described under Alternative 1 in **Section 4.1.1.1**. Therefore, the use of construction footprint and construction vehicles would be less frequent. While the noise level from construction equipment and vehicles would remain the same, the noise would also be less frequent. Therefore, direct, negligible, adverse impacts on the noise environment would be expected from Alternative 3 on Saipan under the Construction Phase.

4.1.3.1.2 Tinian

4.1.3.1.2.1 NORTH OPTION

Under the Alternative 3 North Option on Tinian, noise impacts during the Construction Phase would be similar to those described under Alternative 2 North Option. Although the Alternative 3 construction footprint is slightly smaller due to a reduced fuel tank and parking apron size, the difference in construction equipment and vehicle use would be negligible. Therefore, short-term, direct, minor to moderate, adverse impacts on the noise environment would be expected from construction associated with Alternative 3 North Option.

4.1.3.1.2.2 SOUTH OPTION

Under the Alternative 3 South Option on Tinian, noise impacts during the Construction Phase would be similar to those described under the Alternative 2 South Option. Although the Alternative 3 construction footprint is slightly smaller due to a reduced fuel tank and parking apron size, the difference in construction equipment and vehicle use would be negligible. Therefore, short-term, direct, minor, adverse impacts on the noise environment would be expected from construction associated with the Alternative 3 South Option.

4.1.3.2 Implementation Phase

Under Alternative 3, the Implementation Phase would occur on both Saipan and Tinian. Therefore, noise impacts are expected on both islands. However, noise impacts would not be cumulative, or amplified, because the noise contours of each island would not overlap. Additionally, the noise analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.1.3.2.1 Saipan

AIRCRAFT OPERATIONS

Under Alternative 3 on Saipan, noise impacts from aircraft operations would be the same as those analyzed under Alternative 1. Although the USAF would plan to distribute military exercises between both Saipan and Tinian each year, this noise analysis assumes that all exercises could occur at one location in the event that one of the airports is unavailable. Therefore, direct, minor, adverse impacts on the noise environment from aircraft operations would be expected on Saipan under Alternative 3.

VEHICLE USE AND LODGING

Under Alternative 3 on Saipan, noise impacts from vehicles would be the same as those analyzed under Alternative 1 because the fuel tanks at the airport would be the same size and would take the same number of trips to fill. Additionally, although the USAF would plan to distribute military exercises between both Saipan and Tinian each year, this noise analysis assumes that all exercises could occur at one location in the event that one of the airports is unavailable. Therefore, direct, minor to moderate, adverse impacts on the noise environment from vehicles would be expected on Saipan under Alternative 3.

4.1.3.2.2 Tinian- North and South Options

AIRCRAFT OPERATIONS

Under Alternative 3 on Tinian, noise impacts from aircraft operations would be the same as those analyzed under Alternative 2. Although the USAF would plan to distribute military exercises between both Saipan and Tinian each year, this noise analysis assumes that all exercises could occur at one location in the event that one of the airports is unavailable. Therefore, direct, minor, adverse impacts on the noise environment from aircraft operations would be expected on Tinian under Alternative 3.

VEHICLE USE AND LODGING

Under Alternative 3 on Tinian, noise impacts from vehicles would be less than those presented under Alternative 2 because the fuel tanks at the airport would be smaller. Therefore, under Alternative 3 the fuel tanks would take only 17 days to fill, rather than 30 days under Alternative 2. While the noise level from fuel vehicles would remain the same, the noise would be less frequent. Additionally, although the USAF would plan to distribute military exercises between both Saipan and Tinian each year, this noise analysis assumes all exercises could occur at one location or the other in the event that one of the airports is unavailable. Therefore, direct, minor to moderate, adverse impacts on the noise environment from vehicles would be expected on Tinian under Alternative 3.

4.1.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian, and the existing conditions discussed in **Section 3.1.3** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at existing airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with *36th Wing Instruction 13-204, Airfield Operations Instructions.* Planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on the ambient noise environment would be expected as a result of the No Action Alternative. Ambient noise levels on Saipan and Tinian would not increase due to construction traffic, planned military exercises, and support personnel traffic. The No Action Alternative would result in a continuation of existing conditions.

4.2 Air Quality

The environmental consequences to local and regional air quality conditions near a proposed Federal action are determined based upon the increases in regulated pollutant emissions relative to existing conditions and ambient air quality. Specifically, the impact in NAAQS attainment areas is assessed to determine if the net increases in pollutant emissions from the Federal action would result in any one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Expose sensitive receptors to substantially increased pollutant concentrations
- Exceed any Evaluation Criteria established by an SIP or permit limitations/requirements
- Emissions representing an increase of 100 tpy for any attainment criteria pollutant or their precursors (O_3 [NO_x and VOCs are precursors to O_3], CO, PM_{10}, $PM_{2.5}$, and SO_2), unless the proposed activity qualifies for an exemption under the Federal General Conformity Rule.

Although the area is considered unclassifiable/attainment, the 100 tpy threshold was applied as a measure of significance. No baseline data are available for Alternative 1, Alternative 2, or Alternative 3. Per communication with CNMI DEQ on February 19, 2013, no air quality data is available for CNMI, and there are no stationary source permits for Saipan International Airport or Tinian International Airport from which to estimate baseline emissions (Fuller 2013). The rationale for this threshold is that it is consistent with the highest General Conformity *de minimis* levels for nonattainment areas and maintenance areas. In addition, it is consistent with Federal stationary major source thresholds for Title V permitting which formed the basis for the nonattainment *de minimis* levels.

Saipan and Tinian are located in attainment areas for all criteria pollutants; therefore, the General Conformity rule does not apply to any Alternative and is not discussed further. Additionally, only stationary source emissions are evaluated for PSD and Title V permitting impacts as construction activity emissions are typically not subject to PSD and Title V permitting. The three alternatives would not entail significant modification to stationary source emissions; therefore, PSD and Title V permitting significance criteria are not discussed further. HAPs emissions were also considered. However, due to the expected negligible emissions based on the emission source types and the trade winds that carry emissions out to sea, HAPs were omitted in the quantitative analysis.

Each alternative discussion is divided into a Construction Phase and Implementation Phase. Implementation Phases would occur after the Construction Phases, so their associated emissions do not overlap and are not additive.

4.2.1 Alternative 1– Modified Saipan Alternative

4.2.1.1 Construction Phase

Short-term, direct, minor, adverse impacts would be expected from construction emissions and land disturbance under this Alternative. Alternative 1 would result in minor impacts on regional air quality during construction activities primarily from site-disturbing activities, operation of construction equipment, evaporative emissions from architectural coatings, transport of concrete materials from the port to the commercial concrete supply company, transport of concrete from the commercial concrete supply company to the project site, concrete and asphalt paving operations, and transport of excavation and construction materials to and from the site. Fugitive dust emissions were not calculated for the activities conducted at the commercial concrete supply company because it is assumed that the commercial concrete supply company operates under an approved air permit issued by the CNMI DEQ. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction operations would be temporary in nature. Any lighting or utilities would be installed on the same surfaces already accounted for in the Construction Phase. The overall square footage of these items is also very small and would not be a significant source of temporary air pollution from their construction and there is no long term air pollution component associated with them. The Construction Phase of Alternative 1 would occur over a 2- to 3-year time period; therefore, construction emissions were equally divided over a 3-year time period. It is not expected that emissions from construction of the projects associated with Alternative 1 would contribute to or affect local or regional attainment status or violate any NAAQS standards. Emissions from construction associated with Alternative 1 are summarized in **Table 4.2-1**. Emissions estimation spreadsheets and a summary of the method used are included in **Appendix E.**

Table 4.2-1. Estimated Emissions Resulting from Alternative 1 Construction Activities

Construction Emissions by Calendar Year	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tonnes)
Year 1	8.03	2.32	18.04	0.18	16.69	1.72	3,670.13
Year 2	8.03	2.32	18.04	0.18	16.69	1.72	3,670.13
Year 3	8.03	2.32	18.04	0.18	16.69	1.72	3,670.13
Significance Criteria Threshold (tpy)	100	100	100	100	100	100	N/A

Source: **Appendix E**
Key: tpy = tons per year

The construction projects associated with Alternative 1 would generate air pollutant emissions as a result of grading, filling, compacting, trenching, and construction operations, but these emissions would be temporary and would not be expected to generate any offsite impacts.

Construction and infrastructure projects would generate particulate matter emissions as fugitive dust from ground-disturbing activities. Fugitive dust emissions would be greatest during initial site-preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions.

Emissions from Alternative 1 Construction Phase are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-1.** Additionally, average daily wind speeds on Saipan of 8 mph to 13 mph would result in negligible impacts to air quality due to construction. No significant impacts on local and regional air quality are anticipated from implementation of construction activities associated with Alternative 1. In addition, the Title V permit criteria do not apply to the Construction Phase as all sources are mobile sources which are not regulated under the Title V permit program.

Additionally, CO_2 emissions under the Alternative 1 Construction Phase would not reach the annual threshold of 25,000 metric tonnes described in guidance issued by the EPA as a threshold for discussion and disclosure of GHG emissions.

The CNMI DEQ requires all stationary sources to submit an air quality construction permit prior to commencement of their construction activities. Construction permits in the CNMI require air dispersion modeling; however, less rigorous screening modeling might be adequate. The CNMI DEQ and associated regulations should be consulted to confirm such permit requirements at the time of permit application. PACAF will coordinate with CNMI DEQ to obtain the necessary stationary source permits prior to commencing construction of any potential stationary source, to include the bulk fuel storage areas.

4.2.1.2 Implementation Phase

AIRCRAFT OPERATIONS

Periodic, direct, minor, adverse impacts on local and regional air quality would be expected from aircraft operations due to the implementation of Alternative 1. The USAF anticipates that two to four cargo or tanker type aircraft would operate up to 8 weeks annually (typically not on weekends) for a maximum of 720 annual operations under Alternative 1. For planning purposes, air emissions from aircraft operations were developed using the following assumptions and methods:

- The USEPA has established formal procedures for calculating exhaust emissions associated with aircraft operations based on a landing and takeoff (LTO) cycle (USEPA 1992). Under these procedures, an emissions inventory for aircraft operations focuses on the emissions in the vertical column of air where pollutant chemical reactions occur. This portion of the atmosphere, which begins at the Earth's surface and can range from several hundred to several thousand feet in altitude, is commonly referred to as the "mixing zone" or "inversion layer." Exhaust emissions occurring within this area are calculated for one complete LTO cycle for each aircraft type by applying aircraft engine-specific emissions factors derived from fuel flow rates; the period of time (or time-in-mode [TIM]) that each engine operates at a particular power setting during an LTO; and activity-based operational data such as the number of aircraft, the number of engines per aircraft, and the annual number of sorties or LTOs. Regardless of fuel type, emissions of concern from aircraft operations include the pollutants NO_x, VOCs, CO, PM_{10} and $PM_{2.5}$, and SO_2. Emissions occurring above the mixing zone are typically not considered during the emissions inventory process (AFCEE 2009a).
- An aircraft operation is defined as either one takeoff to a destination or one landing from a destination. Therefore, one LTO cycle is equivalent to two aircraft operations.
- Each LTO cycle is composed of five operating modes: approach, taxi/idle in, taxi/idle out, take off, and climb out. The TIM for each mode is measured as follows:
  - *Approach* – The period of time from the moment the aircraft enters the mixing zone until the aircraft lands.
  - *Taxi/Idle In* – The period of time spent after landing until the aircraft is parked and the engines are turned off.
  - *Taxi/Idle Out* – The period of time from engine startup to takeoff.
  - *Takeoff* – Characterized by full engine thrust, the period of time it takes the aircraft to reach between 500 and 1,000 feet AGL. This transition height is fairly standard and does not vary much from location to location or among aircraft categories.
  - *Climb Out* – The period of time following takeoff that concludes when an aircraft exits the mixing zone and continues on to cruise altitude.
- Military aircraft engines are exempt from the Federal aircraft engine NO_x emissions standards in 40 CFR Part 87. Further, military aircraft engines are not subject to

permitting requirements or to any other Federal stationary or mobile source emissions standards or regulations.

- Changes in the aircraft mission at Saipan International Airport must be evaluated to confirm that associated emissions changes conform to the regional Clean Air Plan component of the SIP, in accordance with the General Conformity Rule in 40 CFR Parts 51 and 93.
- Emissions from aircraft were calculated using emissions factors provided by AFCEC Air Quality.

Emissions from aircraft operations for Alternative 1 were analyzed for 4 KC-135R aircraft operating for 8 weeks and a maximum of 720 total operations per year.

Criteria emissions from Airfield Operations associated with Alternative 1 are summarized in **Table 4.2-2**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-2. Alternative 1- Estimated Annual Aircraft Operations Emissions

Aircraft	LTOs	Total Fuel (gal/yr)	PM_{10} (tons/yr)	$PM_{2.5}$ (tons/yr)	CO (tons/yr)	NO_x (tons/yr)	SO_x (tons/yr)	VOC (tons/yr)
KC-135R	360	277,671*	0.05	0.05	18.67	6.77	0.98	1.25
Significance Criteria Threshold (tpy)			100	100	100	100	100	100

Source: **Appendix E**

Note: *This is the total fuel used for LTOs up to the mixing zone height and does not include fuel used above the mixing zone height, per the USAF emissions factors. Criteria pollutant emissions generated above this height are not counted towards air quality impact analyses.

Emissions from Alternative 1 proposed aircraft operations are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-2**. No significant impacts on local and regional air quality are anticipated from aircraft operations associated with Alternative 1. In addition, the Title V permit criterion does not apply to aircraft operations as these sources are mobile sources which are not regulated under the Title V permit program.

GHG emissions from aircraft under Alternative 1 at Saipan International Airport are presented in **Table 4.2-3**. GHG emissions were estimated under the assumption that aircraft operations would occur 7 days a week, 8 weeks per year, for a total of 56 days. As a conservative estimate, operations are assumed to require up to 300,000 gallons of fuel per day if fueling trucks were to operate each day of the exercises. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-3. Alternative 1- Estimated Annual Aircraft Operations Greenhouse Gas Emissions

Fuel Use (gal/yr)	Fuel	CO_2-equivalent (metric tonnes/yr)
16,800,000	JP-8	166,305

Source: **Appendix E**

Fuel Truck and Commuter Vehicle Emissions

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from the fuel truck and commuter vehicle operations due to the implementation of Alternative 1. Under this Alternative, two activities would contribute to commuter emissions. These activities include jet fuel receiving, storage, and distribution; and personnel lodging. Under Alternative 1, standard fuel transfer trucks would transfer fuel from fuel tanks at the Port of Saipan to fuel tanks at Saipan International Airport. It is assumed six 10,000-gallon fuel trucks, operating 10 hours per day, would take approximately 14 days to fill the bulk storage tanks at the airport initially. In order to maintain the airport tank fuel supply for operations exceeding 14 days, fuel trucks would need to transport fuel over surface roads. It is assumed that up to six trucks operating 10 hours per day for the duration of the operation would be required.

Under Alternative 1, commercial buses would be required to transport a maximum of 256 personnel to and from commercial lodging and the airfield. It is assumed all buses would transport approximately 50 personnel per busload, or approximately 24 round trips per day. For emissions analysis, it is assumed 6 buses would be used to transport personnel, requiring 4 trips each to and from the airfield each operation day.

Because the exact types and mixes of commuter vehicles is not known at this time, this EIS uses the following vehicle class types to analyze potential emissions related to Alternative 1:

- HDDV8A (Bus) - Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 pounds gross vehicle weight [GVW]); assumed average model year of 2005
- HDDV8B (Refueler truck) - Class 8b Heavy-Duty Diesel Vehicles (> 60,000 pounds GVW); assumed average model year of 2005.

Emissions from the operation of on-road vehicles can be classified as exhaust, evaporative, or fugitive in nature. Exhaust emissions result from the combustion (sometimes incomplete) of the motor fuel, typically while evaporative emissions result from the volatilization of the fuel at engine components during the different stages of a vehicle's operating cycle. In addition to exhaust and evaporative emissions, a small amount of fugitive particulate emissions (in the form of road dust, brake wear dust, and tire wear dust) can be attributed to the operation of on-road vehicles. The emissions of concern from the operation of on-road vehicles include NO_x, VOCs, CO, SO_2, $PM_{2.5}$, and PM_{10}. Some of these direct pollutant emissions also participate in atmospheric reactions that contribute to the formation of ground-level ozone and fine particulate matter pollution.

Emissions from fuel truck and commuter vehicles were calculated using USEPA MOBILE 6 (MOVES) vehicle categories, applicable source classification codes and emissions factors provided in AFCEE's Air Emissions Factor Guide to Air Force Mobile Sources dated December 2009.

Criteria emissions from fuel transfer trucks and commuter vehicles associated with Alternative 1 are summarized in **Table 4.2-4**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Emissions from Alternative 1 fuel truck and commuter vehicles are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-4.** No significant impacts on local and regional air quality are anticipated from fuel truck and commuter vehicle operations associated with Alternative 1. In addition, the Title V permit criteria does not apply to fuel truck and commuter vehicle emissions as these sources are mobile sources which are not regulated under the Title V permit program.

Table 4.2-4. Alternative 1 Estimated Fuel Truck and Commuter Vehicle Emissions

Vehicle Class	Model Year	Annual Miles	Emissions (tpy)					
			PM_{10} (tons)	$PM_{2.5}$ (tons)	CO (tons)	NO_x (tons)	SO_x (tons)	VOC (tons)
HDDV8A (Bus) - Class 8a Heavy-Duty Diesel Vehicles (33,001–60,000 pounds GVW)	2005	53,760	0.015	0.012	0.166	0.324	0.001	0.028
HDDV8B (Refueler) - Class 8b Heavy-Duty Diesel Vehicles (> 60,000 pounds GVW)	2005	30,800	0.008	0.007	0.113	0.212	0.001	0.020
Total Emissions (tpy)			**0.023**	**0.019**	**0.279**	**0.536**	**0.001**	**0.048**

Source: **Appendix E**

GHG emissions from commuting under Alternative 1 at Saipan International Airport are presented in **Table 4.2-5**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-5. Alternative 1 Estimated Fuel Truck and Commuter Vehicle Greenhouse Gas Emissions

Vehicle Class	Annual Miles	GHG Pollutant Emissions (metric tonnes/year)
		CO_2
HDDV8A(Bus) - Class 8a Heavy-Duty Diesel Vehicles (33,001–60,000 pounds GVW)	53,760	83.09
HDDV8B (Refueler) - Class 8b Heavy-Duty Diesel Vehicles (> 60,000 pounds GVW)	30,800	49.80
Total GHG Emissions (tpy)		**132.89**

Fuel Transfer Emissions

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from fuel transfer operations due to the implementation of Alternative 1. Two types of fuel operations would be required under Alternative 1, which include loading fuel onto aircraft from nearby hydrants and loading fuel onto refueler trucks at the seaport.

The emissions of concern from fuel transfer operations are VOCs. As liquid fuel is loaded into a source (e.g., into a fuel truck, an aircraft tank, a vehicle/equipment tank, or a bowser), vapors are displaced and emitted into the atmosphere. The amount of emissions released is dependent on several factors, such as the type of fuel being transferred, temperature, and the loading method. The amount of emissions caused during fuel transfer is also influenced by the recent history of the tank/bowser being loaded. If the tank/bowser has just been cleaned and vented, it will contain vapor-free air. However, if the fuel truck has just carried fuel and has not been vented, it will contain vapors which are expelled during the loading operation along with newly generated vapors (AFCEE 2009b).

Emissions from fuel transfer operations were calculated using AP 42 Section 5.2, Transportation and Marketing of Petroleum Liquids (USEPA 2008).

VOC emissions from fuel transfer associated with Alternative 1 are summarized in **Table 4.2-6**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-6. Alternative 1 Estimated Annual Fuel Loading Emissions

Location	Description	Fuel Type	Fuel Transferred (gal)	Displaced Vapor (Total VOC) (tons)
Flightline	Loading Aircraft from Hydrants	JP-8	16,800,000	0.17
Seaport, Loading Racks (assume 50,000-bbl tank 1)	Loading Refueler Trucks	JP-8	8,400,000	0.08
Seaport, Loading Racks (assume 50,000-bbl tank 2)	Loading Refueler Trucks	JP-8	8,400,000	0.08
		Total	**33,600,000**	**0.34**

Source: **Appendix E**

Emissions from Alternative 1 fuel transfer operations are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-6**. No significant impacts on local and regional air quality are anticipated from fuel transfer operations associated with Alternative 1. In addition, emissions are below Title V permit threshold of 100 tons per year for VOCs.

Fuel Storage Tank Emissions

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from Fuel Storage Tanks due to the implementation of Alternative 1. Under this Alternative, all fuel storage tanks are assumed to be fixed roof, aboveground storage tanks with no pressure/vacuum vents installed. All fuel storage tanks are assumed to contain JP-8 fuel. Note that the emissions factors are the same for JP-8 and diesel fuel.

Emissions from fixed roof tanks are caused by changes in temperature, pressure, and liquid level. The amount of emissions varies as a function of vessel capacity, vapor pressure of the stored liquid, utilization rate of the tank, and atmospheric conditions at the tank location. In general, there are two types of emissions from fixed roof tanks, “storage losses” and “working losses.” Storage loss from a fixed roof tank is in the form of “breathing loss,” which is the expulsion of vapor from a tank as a result of vapor expansion and contraction caused by changes in temperature and barometric pressure. This occurs without any liquid level change in the tank. Working loss is the combined loss from filling and emptying the tank. Evaporation during filling operations is a result of an increase in the liquid level in the tank. As the liquid level increases, the pressure inside the tank exceeds the relief pressure and vapors are expelled from the tank. Evaporative loss occurs as the fuel is emptied when air drawn into the tank during liquid removal becomes saturated with organic vapor and expands; therefore, exceeding the capacity of the vapor space (AFCEE 2009b).

Emissions from fuel storage tanks were calculated using USEPA's TANKS Emissions Estimation Software, Version 4.09.

Emissions from Fuel Storage Tanks associated with Alternative 1 are summarized in **Table 4.2-7**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-7. Estimated Annual Fuel Storage Tank Emissions

Tank Type	Total VOC*(tons)
Tank 1 (Port of Saipan)- assume 50,000 bbls, cut and cover or AST	0.33
Tank 2 (Port of Saipan)- assume 50,000 bbls, cut and cover or AST	0.33
Tank 3 (Saipan International Airport) - assume 50,000 bbls, cut and cover or AST	0.33
Tank 4 (Saipan International Airport) - assume 50,000 bbls, cut and cover or AST	0.33
Total	**1.33**

Source: **Appendix E**

Note: Total VOCs calculated using TANKS (TANKS 4.0.9d 2012a and 2012b).

Emissions from Alternative 1 Fuel Storage Tanks are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-7.** No significant impacts on local and regional air quality are anticipated from tank fuel storage associated with Alternative 1. In addition, emissions are below Title V permit threshold of 100 tons per year for VOCs.

Summary of Alternative 1 Implementation Phase Emissions

Periodic, minor, adverse impacts would be expected from all activities associated with the Implementation Phase of Alternative 1. A summary of emissions from the Implementation Phase associated with Alternative 1 are summarized in **Table 4.2-8**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-8. Estimated Annual Emissions Resulting from Alternative 1 Implementation Phase

Source Category	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tonnes)
Airfield Operations	6.77	1.25	18.67	0.98	0.05	0.05	166,305
Fuel Truck and Commuter Vehicle Emissions	0.54	0.05	0.28	0.001	0.02	0.02	133
Fuel Transfer Emissions	N/A	0.34	N/A	N/A	N/A	N/A	0
Fuel Storage Tank Emissions	N/A	1.33	N/A	N/A	N/A	N/A	0
Total Pollutant Emissions	7.31	2.96	18.95	0.98	0.08	0.07	166,438
Significance Criteria Threshold (tpy)	100	100	100	100	100	100	N/A

Source: **Appendix E**

Emissions from all activities associated with the Implementation Phase of Alternative 1 are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-8.** Additionally, average daily wind speeds on Saipan of 8 mph to 13 mph would result in negligible impacts to air quality due to implementation. CO_2 equivalent emissions under Alternative 1

Implementation Phase would reach the threshold of 25,000 metric tonnes described in guidance issued by the EPA as a threshold for discussion and disclosure of GHG emissions, and are presented as such in this document. However EPA guidance does not propose this as an indicator of a threshold of significant effects. No significant impacts on local and regional air quality are anticipated from the Implementation Phase associated with Alternative 1. In addition, stationary source emissions are below Title V permit thresholds of 100 tons per year for each criteria pollutant

SUMMARY OF ALTERNATIVE 1 EMISSIONS

The Construction Phase is expected to occur over a three-year time frame and would then be followed by the activities proposed under the Implementation Phase. The significance criteria thresholds are not expected to be reached for either phase. No significant impacts on local and regional air quality are anticipated from the Construction and Implementation Phases associated with Alternative 1.

4.2.2 Alternative 2- Modified Tinian Alternative

4.2.2.1 Construction Phase

4.2.2.1.1 North Option

Short-term, minor, direct, adverse impacts would be expected from construction emissions and land disturbance. The Alternative 2 North Option would result in minor impacts on regional air quality during construction activities primarily from site-disturbing activities, operation of construction equipment, evaporative emissions from architectural coatings, transport of concrete materials to from the port to the commercial concrete supply company, transport of concrete from the commercial concrete supply company to the project site, concrete and asphalt paving operations, and transport of excavation and construction materials to and from the site. Fugitive dust emissions were not calculated for the activities conducted at the commercial concrete supply company because it is assumed that the commercial concrete supply company operates under an approved air permit issued by the CNMI DEQ. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction operations would be temporary in nature. It was assumed that all lighting and utilities would be installed on the same surfaces already accounted for in the Construction Phase. The overall square footage of these items is also very small and would not be a significant source of temporary air pollution from their construction and there is no long term air pollution component associated with them. The Construction Phase of the Alternative 2 North Option would occur over a 2- to 3-year time period; therefore, construction emissions were equally divided over a 3-year time period. It is not expected that emissions from construction of the projects associated with the Alternative 2 North Option would contribute to or affect local or regional attainment status or violate any NAAQS standards. Emissions from the construction activities associated with the Alternative 2 North Option are summarized in

Table 4.2-9. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-9. Estimated Emissions Resulting from the Alternative 2, North Option Construction Activities

Construction Emissions by Calendar Year	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tonnes)
Year 1	11.75	3.13	24.17	0.36	77.80	8.02	4,672.72
Year 2	11.75	3.13	24.17	0.36	77.80	8.02	4,672.72
Year 3	11.75	3.13	24.17	0.36	77.80	8.02	4,672.72
Significance Criteria Threshold (tpy)	100	100	100	100	100	100	Not Applicable

Sources: **Appendix E**

The construction projects associated with the Alternative 2 North Option would generate air pollutant emissions as a result of grading, filling, compacting, trenching, and construction operations, but these emissions would be temporary and would not be expected to generate any offsite impacts.

Construction and infrastructure projects would generate particulate matter emissions as fugitive dust from ground-disturbing activities. Fugitive dust emissions would be greatest during initial site-preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions.

Emissions from the Alternative 2 North Option are below the air quality significance criteria of 100 tpy as shown in **Table 4.2-9.** Additionally, average daily wind speeds on Tinian of 7 mph to 15 mph would result in negligible impacts to air quality due to construction. No significant impacts on local and regional air quality are anticipated from implementation of construction activities associated with the Alternative 2 North Option. In addition, the Title V permit criteria do not apply to the Construction Phase as all sources are mobile sources which are not regulated under the Title V permit program. Additionally, CO_2 emissions under the Alternative 2, North Option Construction Phase would not reach the threshold of 25,000 metric tonnes described in guidance issued by the EPA as a threshold for discussion and disclosure of GHG emissions.

The CNMI DEQ requires all stationary sources to submit an air quality construction permit prior to commencement of their construction activities. Construction permits in the CNMI require air dispersion modeling; however, less rigorous screening modeling might be adequate. The CNMI DEQ and associated regulations should be consulted to confirm such permit requirements at the time of permit application. PACAF will coordinate with CNMI DEQ to obtain the necessary stationary source permits prior to commencing construction of any potential stationary source, to include the bulk fuel storage areas.

4.2.2.1.2 South Option

Impacts on air quality described in **Section 4.2.2.1.1** regarding the Construction Phase under the Alternative 2 North Option would be similar under the Alternative 2 South Option. The difference between the two Options is that the Construction Phase emissions from the South Option are less because the South Option doesn't include construction of a taxiway or road reroute, has a smaller size parking apron and cargo pad, and has less cement and concrete that is transported to the commercial concrete supply company and to the construction site. The air emissions and air quality impacts for the South Option are described below.

Short-term, minor, direct, adverse air quality impacts would be expected from construction emissions and land disturbance. The Alternative 2 South Option would result in minor impacts on regional air quality during construction activities primarily from site-disturbing activities, operation of construction equipment, evaporative emissions from architectural coatings, transport of concrete materials to from the port to the commercial concrete supply company, transport of concrete from the commercial concrete supply company to the project site, concrete and asphalt paving operations , and transport of excavation and construction materials to and from the site.

Emissions from the construction activities associated with the Alternative 2 South Option are summarized in **Table 4.2-10**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-10. Estimated Emissions Resulting from the Alternative 2 South Option Construction Activities

Construction Emissions by Calendar Year	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tonnes)
Year 1	9.65	3.02	23.32	0.32	32.61	3.38	4,441.60
Year 2	9.65	3.02	23.32	0.32	32.61	3.38	4,441.60
Year 3	9.65	3.02	23.32	0.32	32.61	3.38	4,441.60
Significance Criteria Threshold (tpy)	100	100	100	100	100	100	Not Applicable

Sources: **Appendix E**

Emissions from the Alternative 2 South Option are below the air quality significance criteria of 100 tpy as shown in **Table 4.2-10.** Additionally, average daily wind speeds on Tinian of 7 mph to 15 mph would result in negligible impacts to air quality due to construction. No significant impacts on local and regional air quality are anticipated from implementation of construction activities associated with the Alternative 2 South Option. In addition, the Title V permit criteria do not apply to the Construction Phase as all sources are mobile sources which are not regulated under the Title V permit program. Additionally, CO_2 emissions under the Alternative 2 South Option Construction Phase would not reach the threshold of 25,000 metric tonnes described in guidance issued by the EPA as a threshold for discussion and disclosure of GHG emissions.

4.2.2.2 Implementation Phase – North and South Options

AIRCRAFT OPERATIONS

Periodic, direct, minor, adverse impacts on local and regional air quality would be expected from aircraft operations due to the implementation of the Alternative 2 North and South Options. Under this Alternative, military exercises would occur at Tinian International Airport. The USAF anticipates that two to four cargo, tanker, or similar aircraft would operate up to eight weeks annually (typically not on weekends) for a maximum of 720 annual operations under Alternative 2.

The same air quality assumptions and methodologies described in **Section 4.2.1.2** under the Implementation Phase for Alternative 1 apply to the Implementation Phase for the Alternative 2, North and South Options.

Criteria emissions from airfield operations associated with the Alternative 2, North and South Options are summarized in **Table 4.2-11**. The emissions from the North Option are the same as the South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-11. Estimated Annual Aircraft Operations Emissions from the Alternative 2, North and South Options

Aircraft	LTOs	Total Fuel (gal/yr)	PM_{10} (tons/yr)	$PM_{2.5}$ (tons/yr)	CO (tons/yr)	NO_x (tons/yr)	SO_x (tons/yr)	VOC (tons/yr)
KC-135R	360	277,671*	0.05	0.05	18.67	6.77	0.98	1.25
Significance Criteria Threshold (tpy)			100	100	100	100	100	100

Source: **Appendix E**

Note: *This is the total fuel used for LTOs up to the mixing zone height and does not include fuel used above the mixing zone height, per the USAF emissions factors. Criteria pollutant emissions generated above this height are not counted towards air quality impact analyses.

Emissions from the Alternative 2 aircraft operations are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-11**. No significant impacts on local and regional air quality are anticipated from aircraft operations associated with Alternative 2. In addition, the Title V permit criterion does not apply to aircraft operations as these sources are mobile sources which are not regulated under the Title V permit program.

GHG emissions from aircraft under Alternative 2 are presented in **Table 4.2-12**. The emissions from the North Option are the same as the South Option so only one emissions summary table is provided below which applies to both Options. GHG emissions were estimated under the assumption that aircraft operations would occur 7 days a week, 8 weeks per year, for a total of 56 days. As a conservative estimate, operations are assumed to require up to 300,000 gallons of fuel per day if fueling trucks were to operate each day of the exercises. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-12. Estimated Annual Aircraft Operations Greenhouse Gas Emissions from the Alternative 2, North and South Options

Fuel Use (gal/yr)	Fuel	CO_2-equivalent (metric tonnes/yr)
16,800,000	JP-8	166,305

Source: **Appendix E**

FUEL TRUCK AND COMMUTER VEHICLE EMISSIONS

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from the fuel truck and commuter vehicle operations due to the implementation of the Alternative 2, North and South Options. Under this Alternative, two activities would require commuter emissions. These activities include jet fuel receiving, storage, and distribution; and transfer of personnel staying in commercial lodging. Under Alternative 2, standard fuel transfer trucks would transfer fuel from fuel tanks at the Port of Tinian to the fuel tanks at Tinian international Airport. Under both Options, it is assumed six 10,000-gallon fuel trucks, operating 10 hours per day, would take approximately 30 days to fill the tanks at the airport initially. In order to maintain the airport tank fuel supply for operations exceeding 30 days, fuel trucks would need to transport fuel over surface roads. It is assumed that up to six trucks operating 10 hours per day for the duration of the operation would be required.

Under the Alternative 2, North and South Options, the same number of personnel would need to be transported from commercial lodging to the airfield as described under Alternative 1 in **Section 4.2.1.2.** Therefore, 256 personnel would be transported on 6 commercial buses for a total of 24 roundtrips per day. In addition, the same types and mixes of commuter vehicles are assumed to be used as under Alternative 1 in **Section 4.2.1.2**; HDDV8A (Bus) and HDDV8B (Refueler), both with average model years at 2005. Emissions from these vehicles were calculated using the same methodology as described under Alternative 1 in **Section 4.2.1.2**.

Criteria emissions from fuel transfer trucks and commuter vehicles associated with the Alternative 2, North and South Options are summarized in **Table 4.2-13**. The emissions from the North Option would be the same as the South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-13. Estimated Fuel Truck and Commuter Vehicle Emissions from the Alternative 2, North and South Options

Vehicle Class	Model Year	Annual Miles	Emissions (tpy)					
			PM_{10} (tons)	$PM_{2.5}$ (tons)	CO (tons)	NO_x (tons)	SO_x (tons)	VOC (tons)
HDDV8A (Bus) - Class 8a Heavy-Duty Diesel Vehicles (33,001–60,000 pounds GVW)	2005	53,760	0.015	0.012	0.166	0.324	0.001	0.028
HDDV8B (Refueler) - Class 8b Heavy-Duty Diesel Vehicles (> 60,000 pounds GVW)	2005	30,800	0.008	0.007	0.113	0.212	0.001	0.020
Total Emissions* (tpy)			0.023	0.019	0.279	0.536	0.001	0.048
Significance Criteria Threshold (tpy)			100	100	100	100	100	100

Source: **Appendix E**

Emissions from Alternative 2 fuel truck and commuter vehicles are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-13.** No significant impacts on local and regional air quality are anticipated from fuel truck and commuter vehicle operations associated with Alternative 2. In addition, the Title V permit criteria does not apply to Fuel Truck and Commuter Vehicle emissions as these sources are mobile sources which are not regulated under the Title V permit program.

GHG emissions from commuting under Alternative 2, North and South Options are presented in **Table 4.2-14**. The emissions from the North Option would be the same as the South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-14. Estimated Fuel Truck and Commuter Vehicle Greenhouse Gas Emissions from the Alternative 2, North and South Options

Vehicle Class	Annual Miles	GHG Pollutant Emissions (metric tonnes/year)
		CO_2
HDDV8A(Bus) - Class 8a Heavy-Duty Diesel Vehicles (33,001–60,000 pounds GVW)	53,760	83.09
HDDV8B (Refueler) - Class 8b Heavy-Duty Diesel Vehicles (> 60,000 pounds GVW)	30,800	49.80
Total GHG Emissions (tpy)		**132.89**

Fuel Transfer Emissions

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from fuel transfer operations due to the implementation of Alternative 2, North and South Options. Two types of fuel operations would be required under Alternative 2, which include loading fuel onto aircraft from nearby fill stands and loading fuel onto refueler trucks at the seaport. The emissions of concern from fuel transfer operations are VOCs and the emissions calculation methodology is the same as described under Alternative 1 in **Section 4.2.1.2**.

VOC emissions from fuel transfer associated with Alternative 2, North and South Options are summarized in **Table 4.2-15**. The emissions from the North Option would be the same as the South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Emissions from Alternative 2 fuel transfer operations are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-15**. No significant impacts on local and regional air quality are anticipated from fuel transfer operations associated with Alternative 2. In addition, emissions are below Title V permit threshold of 100 tons per year for VOCs.

Table 4.2-15. Estimated Annual Fuel Transfer Emissions from the Alternative 2, North and South Options

Location	Description	Fuel Type	Fuel Transferred (gal)	Displaced Vapor (Total VOC) (tons)
Flightline	Loading Aircraft from Fill Stands	JP-8	16,800,000	0.17
Port of Tinian, Loading Racks (assume 50,000-bbl tank 1)	Loading Refueler Trucks	JP-8	8,400,000	0.08
Port of Tinian, Loading Racks (assume 50,000-bbl tank 2)	Loading Refueler Trucks	JP-8	8,400,000	0.08
		Totals	**33,600,000**	**0.34**

Source: **Appendix E**

Fuel Storage Tank Emissions

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from fuel storage tanks due to the implementation of the Alternative 2, North and South Options. Under this Alternative, all fuel storage tanks are assumed to be fixed roof, aboveground storage tanks with no pressure/vacuum vents installed. All fuel storage tanks are assumed to contain JP-8 fuel. Note that the emissions factors are the same for JP-8 and diesel fuel. The description of how emissions are generated and the methodology for calculating emissions from fuel storage tanks, i.e. EPA TANKS model, are the same as described under Alternative 1 in **Section 4.2.1.2**.

Emissions from fuel storage associated with the Alternative 2, North and South Options are summarized in **Table 4.2-16**. The emissions from the North Option would be the same as the South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-16. Estimated Annual Fuel Storage Tank Emissions from the Alternative 2, North and South Options

Tank Type	Total VOC*(tons)
Tank 1 (Port of Tinian)- assume 50,000 bbls, cut and cover or AST	0.33
Tank 2 (Port of Tinian)- assume 50,000 bbls, cut and cover or AST	0.33
Tank 3 (Tinian International Airport) - assume 60,000 bbls, cut and cover or AST	0.46
Tank 4 (Tinian International Airport) - assume 60,000 bbls, cut and cover or AST	0.46
Tank 5 (Tinian International Airport) - assume 100,000 bbls, cut and cover or AST	0.76
Total	**2.35**

Source: **Appendix E**

Note: Total VOCs calculated using TANKS (TANKS 4.0.9d 2012a and 2012b).

Emissions from the Alternative 2, North and South Options, fuel storage tanks are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-16.** No significant impacts on local and regional air quality are anticipated from tank fuel storage associated with Alternative 2. In addition, emissions are below Title V permit threshold of 100 tons per year for VOCs.

Summary of Alternative 2, North and South Options, Implementation Phase Emissions

Periodic, minor, adverse impacts would be expected from all activities associated with the Implementation Phase of Alternative 2. A summary of emissions from the Implementation Phase associated with Alternative 2, are summarized in **Table 4.2-17**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-17. Estimated Annual Emissions Resulting from the Alternative 2, North and South Options, Implementation Phase

Source Category	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tonnes)
Airfield Operations	6.77	1.25	18.67	0.98	0.05	0.05	166,305
Fuel Truck and Commuter Vehicle Emissions	0.54	0.05	0.28	0.001	0.02	0.02	133
Fuel Transfer Emissions	N/A	0.34	N/A	N/A	N/A	N/A	0
Fuel Storage Tank Emissions	N/A	2.35	N/A	N/A	N/A	N/A	0
Total Pollutant Emissions	7.31	3.98	18.95	0.98	0.08	0.07	166,438
Significance Criteria Threshold (tpy)	100	100	100	100	100	100	N/A

Source: **Appendix E**

Emissions from all activities associated with the Implementation Phase of Alternative 2 are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-17.** Additionally, average daily wind speeds on Tinian of 7 mph to 15 mph would result in negligible impacts to air quality due to implementation. CO_2 equivalent emissions under the Alternative 2 Implementation Phase would reach the threshold of 25,000 metric tonnes described in guidance issued by the EPA as a threshold for discussion and disclosure of GHG emissions, and are presented as such in this document. However EPA guidance does not propose this as an indicator of a threshold of significant effects. No significant impacts on local and regional air quality are anticipated from the Implementation Phase associated with Alternative 2.

Summary of Alternative 2 Emissions

The Construction Phase is expected to occur over a three-year time frame and would then be followed by the activities proposed under the Implementation Phase. The air quality significance criteria thresholds are not expected to be reached for either phase. No significant impacts on local and regional air quality are anticipated from the Construction and Implementation phases associated with Alternative 2.

4.2.3 Alternative 3- Hybrid Modified Alternative

4.2.3.1 Construction Phase

Under Alternative 3, construction would occur at both Saipan and Tinian and be phased over three years. Therefore, Construction Phase air quality impacts are expected at both islands. For purposes of the Alternative 3 Construction Phase analyses, emissions at Saipan and Tinian were conservatively combined before comparison to significance thresholds. The islands are relatively close to each other and are considered to be within the same AQCR.

4.2.3.1.1 Saipan and Tinian North Option

Short-term, minor, direct, adverse impacts would be expected from construction emissions and land disturbance. Alternative 3 Saipan and Tinian North Option would result in minor impacts on regional air quality during construction activities primarily from site-disturbing activities, operation of construction equipment, evaporative emissions from architectural coatings, transport of concrete materials to from the port to the commercial concrete supply company, transport of concrete from the commercial concrete supply company to the project site, concrete and asphalt paving operations, and transport of excavation and construction materials to and from the site. Fugitive dust emissions were not calculated for the activities conducted at the commercial concrete supply company because it is assumed that the commercial concrete supply company operates under an approved air permit issued by the CNMI DEQ. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction operations would be temporary in nature. It was assumed that lighting and utilities would be installed on the same surfaces already accounted for in the Construction Phase. The overall square footage of these items is also very small and would not be a significant source of temporary air pollution from their construction and there is no long term air pollution component associated with them. The Construction Phase of the Alternative 3, Saipan and Tinian North Option would occur over a 2- to 3-year time period; therefore, construction emissions were equally divided over a 3-year time period. It is not expected that emissions from construction of the projects associated with the Alternative 3, Saipan and Tinian North Option would contribute to or affect local or regional attainment status or violate any NAAQS standards. Emissions from the construction activities associated with the Alternative 3, Saipan and Tinian North Option are summarized in **Table 4.2-18**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-18. Estimated Emissions Resulting from Alternative 3, Saipan and Tinian North Option Construction Activities

Construction Emissions by Calendar Year	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tonnes)
Year 1	11.08	3.08	23.86	0.35	68.40	7.08	4,564.59
Year 2	11.08	3.08	23.86	0.35	68.40	7.08	4,564.59
Year 3	11.08	3.08	23.86	0.35	68.40	7.08	4,564.59
Significance Criteria Threshold (tpy)	100	100	100	100	100	100	Not Applicable

Sources: **Appendix E**

The construction projects associated with Alternative 3 Saipan and Tinian North Option would generate air pollutant emissions as a result of grading, filling, compacting, trenching, and construction operations, but these emissions would be temporary and would not be expected to generate any offsite impacts.

Construction and infrastructure projects would generate particulate matter emissions as fugitive dust from ground-disturbing activities. Fugitive dust emissions would be greatest during initial site-preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions.

Emissions from the Alternative 3, Saipan and Tinian North Option are below the air quality significance criteria of 100 tpy as shown in **Table 4.2-18.** Additionally, average daily wind speeds on Saipan and Tinian of 8 to 13 mph and 7 mph to 15 mph, respectively, would result in negligible impacts to air quality due to construction. No significant impacts on local and regional air quality are anticipated from implementation of construction activities associated with the Alternative 3, Saipan and Tinian North Option. In addition, the Title V permit criteria do not apply to the Construction Phase as all sources are mobile sources which are not regulated under the Title V permit program. Additionally, CO_2 emissions under the Alternative 3, Saipan and Tinian North Option Construction Phase would not reach the threshold of 25,000 metric tonnes described in guidance issued by the EPA as a threshold for discussion and disclosure of GHG emissions.

The CNMI DEQ requires all stationary sources to submit an air quality construction permit prior to commencement of their construction activities. Construction permits in the CNMI require air dispersion modeling; however, less rigorous screening modeling might be adequate. The CNMI DEQ and associated regulations should be consulted to confirm such permit requirements at the time of permit application. PACAF will coordinate with CNMI DEQ to obtain the necessary stationary source permits prior to commencing construction of any potential stationary source, to include the bulk fuel storage areas.

4.2.3.1.2 Saipan and Tinian South Option

Impacts on air quality described in **Section 4.2.3.1.1** regarding the Construction Phase under the Alternative 3, Saipan and Tinian North Option would be similar to the impacts expected under the Alternative 3, Saipan and Tinian South Option. The main difference between the two Options is that the Construction Phase emissions from the Tinian South Option are less because the South Option has over 900,000 square feet less in total disturbed area and pavement construction. The South Option would not include construction of a taxiway or road reroute, has a smaller size cargo pad and parking apron, and has less cement and concrete that is transported to the commercial concrete supply company and to the construction site. The air emissions and air quality impacts for the South Option are described below.

Short-term, minor, direct, adverse air quality impacts would be expected from construction emissions and land disturbance. The Alternative 3 Saipan and Tinian South Option would result in minor impacts on regional air quality during construction activities primarily from site-disturbing activities, operation of construction equipment, evaporative emissions from architectural coatings, transport of concrete materials to from the port to the commercial concrete supply company, transport of concrete from the commercial concrete supply company to the project site, concrete and asphalt paving operations , and transport of excavation and construction materials to and from the site.

Emissions from the construction activities associated with the Alternative 3 Saipan and Tinian South Option are summarized in **Table 4.2-19**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-19. Estimated Emissions Resulting from the Alternative 3, Saipan/Tinian South Option Construction Activities

Construction Emissions by Calendar Year	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tonnes)
Year 1	10.19	3.03	23.50	0.34	49.80	5.17	4,465.35
Year 2	10.19	3.03	23.50	0.34	49.80	5.17	4,465.35
Year 3	10.19	3.03	23.50	0.34	49.80	5.17	4,465.35
Significance Criteria Threshold (tpy)	100	100	100	100	100	100	Not Applicable

Sources: **Appendix E**

Emissions from Alternative 3 Saipan and Tinian South Option are below the air quality significance criteria of 100 tpy as shown in **Table 4.2-19.** Additionally, average daily wind speeds on Saipan and Tinian of 8 to 13 mph and 7 mph to 15 mph would result in negligible impacts to air quality due to construction. No significant impacts on local and regional air quality are anticipated from implementation of construction activities associated with the Alternative 3 Saipan and Tinian South Option. In addition, the Title V permit criteria do not apply to the Construction Phase as all sources are mobile sources which are not regulated under the Title V permit program. Additionally, CO_2 emissions under the Alternative 3 Saipan and Tinian South Option would not reach the threshold of 25,000 metric tonnes described in guidance issued by the EPA as a threshold for discussion and disclosure of GHG emissions.

4.2.3.2 Implementation Phase – Saipan and Tinian North and South Options

AIRCRAFT OPERATIONS

Periodic, direct, minor, adverse impacts on local and regional air quality would be expected from aircraft operations due to the implementation of Alternative 3. Under this Alternative, military exercises as described under Alternative 3 would occur at either Saipan, Tinian, or both. The USAF anticipates that two to four cargo, tanker, or similar type aircraft would operate up to eight weeks annually (typically not on weekends) for a maximum of 720 annual operations under Alternative 3. The USAF would typically divide the 720 operations (i.e., 360 take-offs and 360 landings) between Saipan and Tinian but a maximum of 720 operations are being analyzed at each location in the event that one of the airports is unavailable for exercises.

The same air quality assumptions and methodologies described for Alternative 1 and Alternative 2 apply to the Implementation Phase for Alternative 3.

Criteria emissions from airfield operations associated with Alternative 3 are summarized in **Table 4.2-20**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-20. Estimated Annual Aircraft Operations Emissions from Alternative 3

Aircraft	LTOs	Total Fuel (gal/yr)	PM_{10} (tons/yr)	$PM_{2.5}$ (tons/yr)	CO (tons/yr)	NO_x (tons/yr)	SO_x (tons/yr)	VOC (tons/yr)
KC-135R	360	277,671*	0.05	0.05	18.67	6.77	0.98	1.25
Significance Criteria Threshold (tpy)			100	100	100	100	100	100

Source: **Appendix E**

Note: *This is the total fuel used for LTOs up to the mixing zone height and does not include fuel used above the mixing zone height, per the USAF emissions factors. Criteria pollutant emissions generated above this height are not counted towards air quality impact analyses.

Emissions from Alternative 3 aircraft operations are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-11**. No significant impacts on local and regional air quality are anticipated from aircraft operations associated with Alternative 3. In addition, the Title V permit criterion does not apply to aircraft operations as these sources are mobile sources which are not regulated under the Title V permit program.

GHG emissions from aircraft under Alternative 3 are presented in **Table 4.2-21**. The emissions from the North Option are the same as the South Option so only one emissions summary table is provided below which applies to both Options. GHG emissions were estimated under the assumption that aircraft operations would occur 7 days a week, 8 weeks per year, for a total of 56 days. As a conservative estimate, operations are assumed to require up to 300,000 gallons of fuel per day if fueling trucks were to operate each day of the exercises. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-21. Estimated Annual Aircraft Operations Greenhouse Gas Emissions from Alternative 3

Fuel Use (gal/yr)	Fuel	CO_2-equivalent (metric tonnes/yr)
16,800,000	JP-8	166,305

Source: **Appendix E**

Fuel Truck and Commuter Vehicle Emissions

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from the fuel truck and commuter vehicle operations due to the implementation of Alternative 3. Under this Alternative, two activities would require commuter emissions. These activities include jet fuel receiving, storage, and distribution; and personnel transport associated with commercial lodging. Under Alternative 3 at Saipan, it is assumed standard fuel transfer trucks would transfer fuel from existing tanks at the seaport. This truck transfer would occur from the seaport to the proposed tanks at Saipan International Airport. Under Alternative 3, for both the

Tinian North and South Options, standard fuel transfer trucks would transfer fuel the proposed fuel tanks at the seaport to Tinian International Airport

On Saipan, it is assumed six 10,000-gallon fuel trucks, operating 10 hours per day, would take approximately 14 days to fill the fuel tanks at the airport initially. Under the Tinian North and South Options, it is assumed six 10,000-gallon fuel trucks, operating 10 hours per day, would take approximately 17 days to fill the fuel tanks at the airport initially. In order to maintain the airport tank fuel supply for operations exceeding the initial 14 days at Saipan and initial 17 days at Tinian, fuel trucks would need to continue to transport fuel over surface roads. It is assumed that up to six trucks operating 10 hours per day for the duration of the operation at either Saipan or Tinian would be required.

Under Alternative 3 on both Saipan and Tinian, the same number of personnel would need to be transported from commercial lodging to the airfield as described under Alternative 1 in **Section 4.2.1.2.** Therefore, 256 personnel would be transported on 6 commercial buses for a total of 24 roundtrips per day. In addition, the same types and mixes of commuter vehicles are assumed to be used; HDDV8A (Bus) and HDDV8B (Refueler), both with average model years at 2005. Emissions from these vehicles were calculated using the same methodology as described for Alternative 1 in **Section 4.2.1.2**.

Criteria emissions from fuel transfer trucks and commuter vehicles associated with Alternative 3, are summarized in **Table 4.2-22**. The emissions from the North Option are the same as the South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-22. Estimated Fuel Truck and Commuter Vehicle Emissions from Alternative 3

Vehicle Class	Model Year	Annual Miles	Emissions (tpy)					
			PM_{10} (tons)	$PM_{2.5}$ (tons)	CO (tons)	NO_x (tons)	SO_x (tons)	VOC (tons)
HDDV8A (Bus) - Class 8a Heavy-Duty Diesel Vehicles (33,001–60,000 pounds GVW)	2005	53,760	0.015	0.012	0.166	0.324	0.001	0.028
HDDV8B (Refueler) - Class 8b Heavy-Duty Diesel Vehicles (> 60,000 pounds GVW)	2005	30,800	0.008	0.007	0.113	0.212	0.001	0.020
Total Emissions* (tpy)			0.023	0.019	0.279	0.536	0.001	0.048
Significance Criteria Threshold (tpy)			100	100	100	100	100	100

Source: **Appendix E**

Emissions from Alternative 3 fuel truck and commuter vehicles are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-22.** No significant impacts on local and regional air quality are anticipated from fuel truck and commuter vehicle operations associated with Alternative 3. In addition, the Title V permit criteria does not apply to Fuel Truck and Commuter Vehicle emissions as these sources are mobile sources which are not regulated under the Title V permit program.

GHG emissions from commuting under Alternative 3 are presented in **Table 4.2-23**. The emissions from the North Option are the same as the South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-23. Estimated Fuel Truck and Commuter Vehicle Greenhouse Gas Emissions from Alternative 3

Vehicle Class	Annual Miles	GHG Pollutant Emissions (metric tonnes/year)
		CO_2
HDDV8A(Bus) - Class 8a Heavy-Duty Diesel Vehicles (33,001–60,000 pounds GVW)	53,760	83.09
HDDV8B (Refueler) - Class 8b Heavy-Duty Diesel Vehicles (> 60,000 pounds GVW)	30,800	49.80
	Total GHG Emissions (tpy)	**132.89**

Fuel Transfer Emissions

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from fuel transfer operations due to the implementation of Alternative 3. Two types of fuel operations would be required under Alternative 3 on both Saipan and Tinian, which include loading fuel onto aircraft and loading fuel onto refueler trucks at the seaport. The emissions of concern from fuel transfer operations are VOCs as described in Alternative 1 in **Section 4.2.1.2**. The emissions from fuel transfer operations under Alternative 3 are based on the maximum of potential emissions at Tinian because of the fuel tanks proposed at the Port of Tinian.

VOC emissions from fuel transfer associated with Alternative 3 are summarized in **Table 4.2-24**. The emissions from the North Option are the same as the South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-24. Estimated Annual Fuel Transfer Emissions from Alternative 3

Location	Description	Fuel Type	Fuel Transferred (gal)	Displaced Vapor (Total VOC) (tons)
Flightline	Loading Aircraft from Fill Stands	JP-8	16,800,000	0.17
Port of Tinian ,(assume 50,000-bbl tank 1)	Loading Refueler Trucks	JP-8	8,400,000	0.08
Port of Tinian, Loading Racks (assume50,000-bbl tank 2)	Loading Refueler Trucks	JP-8	8,400,000	0.08
		Totals	**33,600,000**	**0.34**

Source: **Appendix E**

Emissions from Alternative 3 fuel transfer operations are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-24**. No significant impacts on local and regional air quality are anticipated from fuel transfer operations associated with Alternative 3. In addition, emissions are below Title V permit threshold of 100 tons per year for VOCs.

Fuel Storage Tank Emissions

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from fuel storage tanks due to the implementation of Alternative 3. Under this Alternative, all fuel storage tanks are assumed to be fixed roof, aboveground storage tanks with no pressure/vacuum vents installed. All fuel storage tanks are assumed to contain JP-8 fuel.

Note that the emissions factors are the same for JP-8 and diesel fuel. The description of how emissions are generated and the methodology for calculating emissions from fuel storage tanks, i.e., EPA TANKS model, are the same as described in Alternative 1 in **Section 4.2.1.2**. The emissions from fuel storage tank operations under Alternative 3 are based on the maximum of emissions at Tinian due to slightly proposed fuel capacity.

Emissions from fuel storage tanks associated with Alternative 3 are summarized in **Table 4.2-25**. The emissions from the North Option are the same as the South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-25. Estimated Annual Fuel Storage Tank Emissions from Alternative 3

Tank Type	Total VOC*(tons)
Tank 1 (Port of Tinian)- assume 50,000 bbls, cut and cover or AST	0.33
Tank 2 (Port of Tinian)- assume 50,000 bbls, cut and cover or AST	0.33
Tank 3 (Tinian International Airport) – assume 60,000 bbls, cut and cover or AST	0.55
Tank 4 (Tinian International Airport) – assume 60,000 bbls, cut and cover or AST	0.55
Total	**1.77**

Source: **Appendix E**
Note: Total VOCs calculated using TANKS (TANKS 4.0.9d 2012a and 2012b).

Emissions from Alternative 3 fuel storage tanks are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-25.** No significant impacts on local and regional air quality are anticipated from tank fuel storage associated with Alternative 3. In addition, emissions are below Title V permit threshold of 100 tons per year for VOCs.

Summary of Alternative 3, Implementation Phase Emissions

Periodic, minor, adverse impacts would be expected from all activities associated with the Implementation Phase of Alternative 3. A summary of emissions from the Implementation Phase associated with Alternative 3 are summarized in **Table 4.2-26**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-26. Estimated Annual Emissions Resulting from the Alternative 3 Implementation Phase

Source Category	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tonnes)
Airfield Operations	6.77	1.25	18.67	0.98	0.05	0.05	166,305
Fuel Truck and Commuter Vehicle Emissions	0.54	0.05	0.28	0.001	0.02	0.02	133
Fuel Transfer Emissions	N/A	0.34	N/A	N/A	N/A	N/A	0
Fuel Storage Tank Emissions	N/A	1.77	N/A	N/A	N/A	N/A	0
Total Pollutant Emissions	7.31	3.40	18.95	0.98	0.08	0.07	166,438
Significance Criteria Threshold (tpy)	100	100	100	100	100	100	N/A

Source: **Appendix E**

Emissions from all activities associated with the Implementation Phase of Alternative 3 on both Saipan and Tinian are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-26.** Additionally, average daily wind speeds on Saipan and Tinian of 8 mph to 13 mph and 7 mph to 15 mph, respectively, would result in negligible impacts to air quality due to implementation. CO_2 equivalent emissions under the Alternative 3, Implementation Phase would reach the threshold of 25,000 metric tonnes described in guidance issued by the EPA as a threshold for discussion and disclosure of GHG emissions, and are presented as such in this document. However EPA guidance does not propose this as an indicator of a threshold of significant effects. No significant impacts on local and regional air quality are anticipated from the Implementation Phase associated with Alternative 3.

Summary of Alternative 3, Saipan/Tinian North and South Options

The Construction Phase is expected to occur over a three-year time frame and would then be followed by the activities proposed under the Implementation Phase. The significance criteria thresholds are not expected to be reached for either phase. No significant impacts on local and regional air quality are anticipated from the Construction and Implementation Phases associated with the Alternative 3 Saipan and Tinian North and South Options.

4.2.4 Climate Change

Alternatives 1, 2, and 3 would emit GHGs during both the construction and implementation phases. As shown in **Table 4.2-27**, the net annual change in CO^2 emissions due to the construction and implementation of any of the three modified alternatives would be a small fraction of the total annual world CO^2 emissions. The direct annual CO^2 emissions increase associated with the construction and implementation of any of the three alternatives would contribute approximately 0.0005 percent to the global CO^2 emissions, assuming no increases in total world GHG emissions from 2012 until the start of construction or implementation.

Table 4.2-27. Estimated Annual Greenhouse Gas Emissions from all Alternatives

Category	CO_2-equivalent Emissions (million metric tonnes/yr)
World Total (2012)	32,310.287
U.S. Total (2012)	5,270.422
Alternative 1 Total	0.170
Alternative 2 Total	0.171
Alternative 3 Total	0.171

Source: **HDR, Appendix E, U.S. EIA 2012**

4.2.5 No Action Alternative

Under the No Action Alternative, neither Alternative 1, Alternative 2, nor Alternative 3 would occur and the existing conditions discussed in **Sections 3.2.2.1** and **3.2.2.2** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, or similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at existing airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with *36th Wing Instruction 13-204, Airfield Operations Instructions*. Planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on air quality would be expected as a result of the No Action Alternative. Emissions levels on Saipan and Tinian would not increase due to construction, planned military exercises, fuel transfer and storage, and support personnel traffic. The No Action Alternative would result in a continuation of existing conditions.

4.3 Airspace and Airfield Environment

This section reviews the impacts of proposed construction and implementation to the airfield and surrounding airspace at the Saipan International Airport, Saipan; and Tinian International Airport, Tinian. Airspace/airfield impacts were assessed based on the following criteria:

- Disruption of airfield operations
- Disruption of the existing flow of commercial air traffic to or from the selected airport
- Obstructions which would be considered hazardous to air traffic.

If the analysis shows that these conditions might occur, then the impacts were further evaluated in terms of duration (short- or long-term) and intensity (minor, moderate, or major).

4.3.1 Alternative 1 – Modified Saipan Alternative

4.3.1.1 Construction Phase

USAF operational and safety requirements drive the need for the Proposed Action and construction at Saipan International Airport under Alternative 1. The following paragraphs relate specific construction elements that are required, and provide a summary of potential impacts on airspace and airfield operations. Potential impacts due to construction activities are anticipated in the form of airspace and airfield management and operations constraints, with possible associated socioeconomic and safety concerns.

Parking Apron. Construction of the parking apron on the north side of the runway under Alternative 1 at Saipan International Airport would lead to minor, short-term, direct, adverse impacts on airfield operations. Impacts on airfield operations would occur from additional congestion on the roads leading to the parking apron and the possible generation of foreign object debris (FOD). Ballfield-type lighting is proposed on the apron boundary to provide adequate security and lights for night operations. The ballfield-type lighting structure height at the apex is 40 feet AGL with an overall height of 251 feet AMSL. The proposed parking apron would conform to UFC 3-260-1 and all DOD, USAF, and FAA criteria, as applicable, including FAA Advisory Circular 150/5300-13A. Additionally, aircraft located on the parking apron could impede ARFF's line-of-sight to the approach end of RWY 25. If ARFF's line-of-sight is impeded, the USAF could implement measures to restore line-of-sight, which could include installing a tower on the ARFF facility to increase visibility; adding surveillance cameras on the airfield; or requesting a waiver for surveillance of movement area criteria.

Cargo Pad. Construction of the cargo pad under Alternative 1 at Saipan International Airport would result in minor, short-term, adverse, direct impacts on airfield operations. The proposed pad is outside approach/departure clearance surface areas, but would likely cause minor, adverse impacts on airfield operations due to construction equipment or vehicles immediately adjacent to the active parallel taxiway. Procedures could be implemented to avoid the area during construction to accommodate aircraft taxiing to and from the runway or a portion of the parallel taxiway could be closed during construction. Confirmation of possible impacts will be based on the results of the Safety Management System Plan and Construction Safety Phasing Plan.

Maintenance Facility. Construction of the maintenance facility under Alternative 1 at Saipan International Airport should not present impacts on airfield "ground" operations, or airfield "air" operations. FAR Part 77 establishes the requirements to provide notice to the FAA of certain proposed construction or the alteration of existing structures and determination of obstructions impact on air navigation. This project would need to be submitted to FAA in accordance with the FAR requirements; however it does not exceed any of the Part 77 criteria.

Jet Fuel Receiving, Storage, and Distribution. Short-term, minor, direct, adverse impacts would be expected on airfield access roads from the construction of fuel receiving, storage and distribution systems. Construction of Hydrant Refueling System and associated pipeline would cause minimum disruption to airfield ground operations because of FOD during installation of the underground fuel system.

To help ensure that construction can be completed in a safe manner, and recognizing the operational needs of other airport users, the USAF could prepare an airport Construction Safety Phasing Plan in accordance with Advisory Circular 150/5370-2F. This safety plan would then be subjected to a Safety Management System (SMS) evaluation.

4.3.1.2 Implementation Phase

Analyses of the implementation stage on airspace and airport operations have been based on assumptions and an Aeronautical Study, to be provided in **Appendix F**. Results of this analysis will either be confirmed or re-analysis will occur based on the results of the SMS analysis and recommendations.

***Military Exercises*.** Short-term, periodic, moderate, direct, adverse impacts would be expected on the immediate airspace and airfield operations due to implementation of joint military exercises under Alternative 1. Air operations of the proposed joint military exercises under Alternative 1 at Saipan International Airport have previously been analyzed in the MIRC EIS and the MITT EIS (DON 2010a, DON 2010b). Military exercises would have moderate, direct, adverse, short-term, periodic impacts on airspace and airfield operations as indicated in the MIRC EIS. It is assumed up to 8 weeks of exercises would occur at Saipan International Airport. These military exercises are well within levels of training previously analyzed in MIRC and MITT EIS. DOD, local stakeholders, and Federal regulators collect and review military training data annually to implement required adaptive management techniques and adaptive mitigation techniques if required. In addition to this annual review, military training in the MIRC ROD is also reviewed on a 5-year cycle. This adaptive management approach ensures that any increase or changes in quality or quantity of exercises is fully analyzed on a continuing basis. In addition to the exercise requirements, individual units would periodically land and take off to become familiar with the airfield while in the AOR. This type of training is also included within the analysis contained in the MIRC and MITT EIS.

Jet Fuel Receiving, Storage, and Distribution. Implementation of the jet fuel receiving, storage, and distributing system would have long-term, direct, moderate, beneficial impacts on the airspace and airfield because the fueling system would provide a more efficient fueling operation at the airfield. Currently aircraft are fueled via refueling vehicles which is labor-intensive and creates additional airfield vehicular traffic. As with any similar system, fueling operations could result in incidental spills of fuel on CPA property, but implementing appropriate spill containment and management plans would control the potential for any significant adverse impacts. Additionally, all fueling and defueling of aircraft must be conducted from fuel systems and fuel trucks approved by the CPA. Due to 14 CFR 139 requirements, only airlines, the fuel system operator, and fixed based operators are authorized to perform into-plane fueling services. The refueling system provides increased operational efficiency by allowing commercial and DOD aircraft the capability of being refueled rapidly.

4.3.2 Alternative 2 – Modified Tinian Alternative

4.3.2.1 Construction Phase

USAF operational and safety requirements drive the need for the Proposed Action and construction at Tinian International Airport under Alternative 2. The following paragraphs relate specific construction elements that are required, and provide a summary of potential impacts on airspace and airfield operations. Potential impacts due to construction activities are anticipated in the form of airspace and airfield management and operations constraints, with possible associated socioeconomic and safety concerns.

During the Construction Phase under Alternative 2, the USAF would construct infrastructure on either the north or south side of the runway. For the North Option, all construction would be on the north side of the runway. For the South Option, all construction would be on the South side of the runway.

4.3.2.1.1 North Option

Parking Apron. No impacts on airspace or airfield operations would be expected due to construction of the parking under Alternative 2 North Option, because the parking apron would be built adjacent to the proposed taxiway and would provide segregation between the runway and the construction area.

Cargo Pad. No impacts on airspace or airfield operations would be expected due to construction of the cargo pad under Alternative 2 North Option, provided segregation between usable runway and the construction area can be maintained. The proposed pad is outside approach/departure clearance surface areas. Confirmation of impact will be based on the Construction Safety Phasing Plan and results of the SMS review.

Maintenance Facility. Construction of the maintenance facility under the Alternative 2 North Option should not present impacts on airfield "ground" operations or airfield "air" operations. In addition, construction at the proposed location would not present impacts on airfield "ground" operations

Access Road. No impacts on airspace or airfield operations would be expected due to construction of the access road under Alternative 2 North Option, provided segregation between usable runway and the construction area can be maintained. The proposed access road is outside approach/departure clearance surface areas. Confirmation of impact will be based on the Construction Safety Phasing Plan and results of the SMS review.

Fire Suppression System. No impacts on airspace or airfield operations would be expected due to construction of the fire suppression system under Alternative 2 North Option, provided segregation between usable runway and the construction area can be maintained. The proposed fire suppression system is outside approach/departure clearance surface areas. Confirmation of impact will be based on the Construction Safety Phasing Plan and results of the SMS review.

Jet Fuel Receiving, Storage, and Distribution. Short-term, minor, direct, impacts on airfield access roads may be experienced due to construction of the proposed jet fuel receiving, storage, and distribution system under Alternative 2 North Option. Construction of fuel storage tanks at Tinian International Airport would be consistent with the intent of the DOD and CNMI in the reservation of leasehold rights to develop petroleum, oil, and lubricant (POL) capabilities within the CPA areas in exchange for the release of the military leasehold, dated 1999. The fuel storage facility could be developed with limited disruption of CPA activities. The development of a DOD-designed 2,400-gpm Type III Hydrant Refueling System could cause minor disruption to airfield “ground” operations because of need to develop POL lines and hydrants in the proposed parking areas. Trenching and possible FOD and vehicles during installation of the underground fuel system could be problematic. Confirmation of impacts will be based on the results of the SMS Plan. Modifications to current aircraft movement procedures would be implemented to avoid construction areas to the extent practicable to accommodate aircraft taxiing to and from the runway.

Taxiway. Short-term, minor to moderate, direct, adverse impacts on airfield operations due to construction of the parking apron might occur. Possible FOD and construction vehicles during construction of the parallel taxiway could be problematic. Modifications to current aircraft movement procedures would be implemented to avoid construction areas to the extent practicable to accommodate aircraft taxiing to and from the runway.

Reroute 8th Avenue. Short-term, minor, direct, impacts on airfield access roads may be experienced due to the reroute of 8th Avenue. However, segregation between the usable runway and the construction area can be maintained. The proposed road reroute is outside approach/departure clearance surface areas. To help ensure that construction can be completed in a safe manner, and recognizing the operational needs of other airport users, the USAF could prepare an airport construction safety plan in accordance with Advisory Circular 150/5370-2F.Confirmation of impact will be based on this safety plan and results of the SMS review.

4.3.2.1.2 South Option

Parking Apron. Short-term, minor, direct, adverse impacts on airfield operations due to construction of the parking apron could occur due to the construction of the parking apron adjacent to the existing runway. Modifications to current aircraft movement procedures would be implemented to avoid construction areas to the extent practicable to accommodate aircraft taxiing to and from the runway. Additionally, aircraft located on the parking apron under the South Option could impede ARFF’s line-of-sight to the approach end of RWY 8.

Cargo Pad. No impacts on airspace or airfield operations would be expected due to construction of the cargo pad under Alternative 2 South Option, provided segregation between usable runway and the construction area can be maintained. The proposed pad is outside approach/departure clearance surface areas. Confirmation of impact will be based on the Construction Safety Phasing Plan and results of the SMS review.

Maintenance Facility. Construction at the proposed location should not present impacts on airfield “ground” operations or airfield “air” operations. In addition, construction at the proposed location would not present impacts on airfield “ground” operations.

Access Road. No impacts on airspace or airfield operations would be expected due to construction of the access road under Alternative 2 South Option, provided segregation between usable runway and the construction area can be maintained. The proposed access road is outside approach/departure clearance surface areas. Confirmation of impact will be based on the Construction Safety Phasing Plan and results of the SMS review.

Fire Suppression System. No impacts on airspace or airfield operations would be expected due to construction of the fire suppression system under Alternative 2 South Option, provided segregation between usable runway and the construction area can be maintained. The proposed fire suppression system is outside approach/departure clearance surface areas. Confirmation of impact will be based on the Construction Safety Phasing Plan and results of the SMS review.

Jet Fuel Receiving, Storage, and Distribution. Short-term, minor, direct, impacts on airfield access roads may be experienced due to construction of the proposed jet fuel receiving, storage, and distribution system under Alternative 2. Construction of fuel storage tanks at Tinian International Airport would be consistent with the intent of the DOD and CNMI in the reservation of leasehold rights to develop POL capabilities within the CPA areas in exchange for the release of the military leasehold, dated 1999. The fuel storage facility could be developed with limited disruption of CPA activities. The development of a Hydrant Refueling System could cause minor disruption to airfield "ground" operations because of need to develop POL lines and hydrants in the proposed parking areas. Trenching and possible FOD and vehicles during installation of the underground fuel system could be problematic. Confirmation of impacts will be based on the results of the SMS Plan. Modifications to current aircraft movement procedures would be implemented to avoid construction areas to the extent practicable to accommodate aircraft taxiing to and from the runway.

To help ensure that construction can be completed in a safe manner, and recognizing the operational needs of other airport users, the USAF could prepare an airport construction safety plan in accordance with Advisory Circular 150/5370-2F. This safety plan would then be subjected to an SMS evaluation.

4.3.2.2 Implementation Phase- North and South Options

Analyses of the implementation stage on airspace and airport operations have been based on assumptions and an Aeronautical Study, to be provided in **Appendix F**. Results of this analysis will either be confirmed or re-analysis will occur based on the Construction Safety Phasing Plan and results of the SMS review.

Military Exercises. Short-term, periodic, moderate, direct, adverse impacts on airspace and airfield operations would be expected due to implementation of joint military exercises under Alternative 2. It is assumed that up to 8 weeks of exercises would occur at Tinian International Airport. This level of military training is well within levels of training previously analyzed in the MIRC Final EIS and the MITT EIS (DON 2010a, DON 2010b). DOD, local stakeholders, and Federal regulators collect military training data annually. DOD and stakeholders review that data yearly to implement required adaptive management techniques and adaptive mitigation techniques if required. Additionally, military training in the MIRC is reviewed on a 5-year cycle. This adaptive management approach ensures that any increase of types or changes in quality or quantity of training is fully analyzed on a continuing basis. In addition to the exercise requirements, individual units would periodically land and take off to become familiar with the airfield while in the AOR. This type of training is also included within the analysis contained in the MIRC and MITT EIS. Implementation of military exercises could lead to moderate short-term, periodic impacts on the airspace.

Additionally, no impacts would be expected from the use of the proposed taxiway under the North Option of Alternative 2. The proposed taxiway would be used by military aircraft during exercises and would prevent interference with charter aircraft using the existing taxiway.

Implementation of the proposed joint military exercises at Tinian International Airport could lead to periodic moderate, short-term, direct, adverse impacts on the immediate approach and departure airspace as there is no air traffic control tower to provide positive control instructions to aircraft and vehicles operating on the airfield. There is no surveillance (radar) service available below 3,500 feet AMSL. Therefore, FAA non-radar separation standards would apply, causing delays in the non-radar environment during joint military exercises. In addition, there are no NAVAIDS located on airfield. Because there are only non-precision instrument approach procedures to the airfield, capability would be further limited during poor weather conditions.

Jet Fuel Receiving, Storage, and Distribution. No adverse impacts on airspace or airfield operations would be expected due to operation of the jet fuel receiving, storage, and distribution system under Alternative 2. Long-term, moderate, indirect, beneficial impacts on the airfield operations could be expected due to the diversification of fuel supply at Tinian International Airport. As with any similar system, fueling operations could result in incidental spills of fuel on CPA property, but implementing appropriate spill containment and management plans would control the potential for significant adverse impacts. Additionally, all fueling and defueling of aircraft must be conducted from fuel systems and fuel trucks approved by the CPA. Due to 14 CFR 139 requirements, only airlines, the fuel system operator, and fixed base operators are authorized to perform into-plane fueling services. Jet fuel availability at Tinian International Airport would provide beneficial impacts on airfield operations. Currently there is no jet refueling capability on the airfield and the refueling system would provide the airfield the capability to help stimulate more air carriers to use the airfield. It would provide DOD the capability to refuel their aircraft rapidly.

Air Traffic Control Tower (Mobile). No adverse impacts on airspace or airfield operations would be expected due to operation of an air traffic control tower on Tinian International Airport. Major, direct, beneficial impacts on the airspace and airfield operations could be expected due to the positive control and safety factors an air traffic control facility brings to an airfield.

4.3.3 Alternative 3 – Hybrid Modified Alternative

4.3.3.1 Construction Phase

USAF operational and safety requirements drive the need for the Proposed Action and construction at Saipan International Airport and Tinian International Airport under Alternative 3. The following paragraphs relate specific construction elements that are required, and provide a summary of potential impacts on airspace and airfield operations. Potential impacts due to construction activities are anticipated in the form of airspace and airfield management and operations constraints, with possible associated socioeconomic and safety concerns.

4.3.3.1.1 Saipan

Impacts on airport operations during the Construction Phase at Saipan International Airport would be similar but less than those described under Alternative 1. Alternative 3 does not include the construction of a parking apron and therefore would cause fewer disturbances to aircraft operations and taxiing during construction. Therefore, short-term negligible adverse impacts on airport operations would be expected.

4.3.3.1.2 Tinian

4.3.3.1.2.1 NORTH OPTION

Impacts on airport operations during the Construction Phase at Tinian International Airport would be similar to those described under Alternative 2 North Option. Construction under the Alternative 3 North Option would include the same features as those described under Alternative 2, with the exception of a smaller parking apron and a smaller fuel capacity. However, the taxiway would still be constructed adjacent to the existing runway and could cause some minor disturbances to aircraft taxiing and operations during construction. Therefore, short-term minor to moderate adverse impacts on airport operations would be expected.

4.3.3.1.2.2 SOUTH OPTION

Impacts on airport operations during the Construction Phase at Tinian International Airport would be similar to those described under Alternative 2 South Option. Construction under the Alternative 3 South Option would include the same features as those described under Alternative 2, with the except of a smaller parking apron and a smaller fuel capacity. However, the parking apron would still be constructed adjacent to the existing runway and could cause some minor disturbances to aircraft taxiing and operations during construction. Therefore, short-term minor to moderate adverse impacts on airport operations would be expected.

4.3.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.3.3.2.1 Saipan

Military Exercises. Impacts on the immediate airspace and airport operations during the Implementation Phase at Saipan International Airport from military exercises would be the same as those described under Alternative 1. The same number of personnel and take-offs or landings could be expected at Saipan International Airport under Alternative 3. Short-term, periodic, moderate, direct, adverse impacts would be expected on the immediate airspace and airfield operations.

Jet Fuel Receiving, Storage, and Distribution. Under the Implementation Phase of Alternative 3, the USAF would use a FORCE system for aircraft refueling. Short-term, periodic, minor to moderate adverse impacts would be expected on commercial operations from the use of this system. Because the FORCE system is expeditionary and is not a built-in component, the installation and use of the system could interrupt commercial aviation, depending on location. Alternately, the USAF would use existing commercial parking apron spots and fuel trucks for refueling under Alternative 3 on Saipan. This option would also result in moderate impacts on commercial operations during exercises.

4.3.3.2.2 Tinian North and South Options

Military Exercises. Impacts on the immediate airspace and airport operations during the Implementation Phase at Tinian International Airport from military exercises would be the same as those described under Alternative 2. The same number of personnel and take-offs or landings could be expected at Tinian International Airport under Alternative 3. Long-term, periodic, moderate, direct, adverse impacts would be expected on the immediate airspace and airfield operations. Additionally, no impacts would be expected from the use of the proposed taxiway under the North Option of Alternative 3. The proposed taxiway would be used by military aircraft during exercises and would prevent interference with charter aircraft using the existing taxiway.

Jet Fuel Receiving, Storage, and Distribution. No adverse impacts on the immediate airspace airport operations during the Implementation Phase at Tinian International Airport would be expected from jet fuel receipt, storage, and distribution. The same number of personnel and take-offs or landings could be expected at Tinian International Airport under Alternative 3 as Alternative 2.

Air Traffic Control Tower (Mobile). No adverse impacts on airspace or airfield operations would be expected due to operation of an air traffic control tower on Tinian International Airport. Major, direct, beneficial impacts on the airspace and airfield operations could be expected due to the positive control and safety factors an air traffic control facility brings to an airfield.

4.3.4 No Action Alternative

Under the No Action Alternative, Alternative 1, Alternative 2, and Alternative 3 would not occur and the existing conditions discussed in **Sections 3.3.2.1** and **3.3.2.2** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at existing airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with *36th Wing Instruction 13-204, Airfield Operations Instructions.* Planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area; and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

The No Action Alternative would have short-term, direct, moderate, adverse, impacts on airspace and airport operations. Under the No Action Alternative, divert landings would continue to occur at Saipan International Airport on an emergency basis; and the airport would not be improved to accommodate the landing of larger aircraft. A divert operation could interrupt and impact commercial operations.

4.4 Geological Resources and Soils

Protection of unique geological features, minimization of soil/sediment erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating potential impacts of a proposed action on geological resources. Generally, adverse impacts can be avoided or minimized if proper construction techniques, erosion-control measures, and structural engineering design are incorporated into project development.

Impacts on geological resources were assessed by evaluating the following:

- Potential to destroy unique geological features
- Potential for soil erosion
- Proximity to or impact on geologic hazards (such as locating a proposed action in a seismic zone)
- Potential to affect soil or geological structures that control groundwater quality or groundwater availability
- Alteration of soil structure or function.

4.4.1 Alternative 1- Modified Saipan Alternative

4.4.1.1 Construction Phase

Short-term, direct, minor, adverse impacts on soils would be expected as a result of site preparation and construction activities. Construction activities at the airport and seaport disturb soils, which has the potential to result in excessive erosion as soils on Saipan could be highly erosive. BMPs would be implemented and an ESCP established to avoid or minimize impacts from erosion and sedimentation. Therefore, no major, adverse impacts on the soils would be anticipated.

Long-term, direct, minor, adverse impacts would be expected from compaction of soils under the weight of vehicles and other construction equipment, buildings, and other structures. Compaction of soils would result in disturbance and modification of soil structure. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas and be eliminated in those areas within the footprint of roadways or structures. Loss of soil structure due to compaction from foot and vehicle traffic could result in changes in drainage patterns.

Because development would occur in Seismic Zone 3, all buildings and other structures would be designed and constructed to meet the engineering requirements in the 2012 International Building Code. This would minimize potential for adverse impacts on human life associated with earthquakes. In addition, structures must be able to withstand maximum winds of at least 155 miles per hour and withstand the minimum horizontal and uplift pressures set forth in the regulations adopted by the Building Safety Official in accordance with the Building Safety Code (CNMI 1988). Landslides would not be anticipated the Construction Phase as no steep slopes and unconsolidated materials exist at the proposed construction sites for Alternative 1.

Although BMPs would be implemented to minimize soil erosion and sedimentation during construction activities, due to the disturbance and construction of an additional 1,245,382 ft^2 of new impervious surfaces, minor to moderate, adverse impacts on geology and soil would be anticipated. BMPs could include installing silt fencing and sediment traps, applying water to disturbed soil, and revegetating disturbed areas as soon as possible after the disturbance, as appropriate. All construction BMPs would follow the guidelines provided in Federal and CNMI permitting processes and regulations; a USEPA Construction General Permit and a CNMI DEQ Noncommercial Earthmoving permit might need to be submitted prior to the start of any construction activities under Alternative 1.

In the event of a spill, a Spill Prevention, Control, and Countermeasures (SPCC) Plan would be followed to contain and clean up a spill quickly (see **Section 3.12**, hazardous materials and wastes, and **Section 3.5**, water resources). There remains the possibility that a spill or leak could occur, but implementation of BMPs identified in the SPCC plan would minimize the potential for and extent of associated contamination. An SPCC plan would be followed to contain any leaks or spills generated from construction vehicles, the fuel hydrant system, or any other operational spills quickly.

4.4.1.2 Implementation Phase

Impacts on geology and topography would be long-term, direct, minor, and adverse from the compaction of soil, degradation in soil productivity, alteration of storm water drainage and the percolation of rainwater.

4.4.2 Alternative 2- Modified Tinian Alternative

4.4.2.1 Construction Phase

4.4.2.1.1 North Option

Impacts on soils from implementing Alternative 2 North Option on Tinian would be anticipated to be similar to, but greater than, those described for Alternative 1 as 4,483,194 ft^2 of new impervious surface would be required. Therefore, short- and long-term, direct, minor to moderate, adverse impacts would be anticipated due to soil disturbance, compaction, erosion and sedimentation during construction. The North Option would require construction of taxiways from the cargo and parking aprons to the runway and a reroute of 8th Avenue on the western side of the runway.

Site-specific soil and geotechnical surveys should be conducted during design development and prior to the initiation of construction activities to ascertain if any engineering limitations exist. An ESCP would be developed and BMPs would be implemented to minimize any impacts on geology and soils. All construction BMPs would follow the guidelines provided in Federal and CNMI permitting processes and regulations; a USEPA Construction General Permit and a CNMI DEQ Noncommercial Earthmoving permit might need to be submitted prior to the start of any construction activities under Alternative 2 North Option.

In the event of a spill, an SPCC Plan would be followed to contain and clean up a spill quickly (see **Section 3.12**, hazardous materials and wastes, and **Section 3.5**, water resources). There remains the possibility that a spill or leak could occur, but implementation of BMPs identified in the SPCC plan would minimize the potential for and extent of associated contamination. An SPCC plan would be followed to contain any leaks or spills generated from construction vehicles, the fuel hydrant system, or any other operational spills quickly.

Because development would occur in Seismic Zone 3, all buildings and other structures would be designed and constructed to meet the engineering requirements in the 2012 International Building Code. This would minimize potential for adverse impacts on human life associated with earthquakes. In addition, structures must be able to withstand maximum winds of at least 155 miles per hour and withstand the minimum horizontal and uplift pressures set forth in the regulations adopted by the Building Safety Official in accordance with the Building Safety Code (CNMI 1988).

4.4.2.1.2 South Option

Under the Alternative 2 South Option, the construction footprint would be 1,650,579 ft^2 less than that described under the North Option. The South Option does not require any additional taxiways or road reroutes. Therefore, minor impacts on soils due to soil disturbance, compaction, erosion and sedimentation during construction would be expected.

4.4.2.2 Implementation Phase- North and South Options

Implementation of Alternative 2 on Tinian would result in impacts similar to those described for Alternative 1. Therefore, long-term, direct, minor, adverse impacts on geology and soil would be anticipated under the Implementation Phase for Alternative 2.

4.4.3 Alternative 3 – Hybrid Modified Alternative

4.4.3.1 Construction Phase

4.4.3.1.1 Saipan

The construction footprint under Alternative 3 on Saipan would be less than that described under Alternative 1. The maximum increase in impervious surfaces is estimated to be 388,557 ft^2 (8.9 acres), which is approximately 856,825 ft^2 (19.7 acres) less than Alternative 1. Less impervious surfaces would result in less compaction of soil, degradation in soil productivity, alteration of storm water drainage and infiltration.

Therefore, short-term, direct, negligible to minor adverse impacts on geology and soil resources would be expected under the Construction Phase of Alternative 3 on Saipan.

4.4.3.1.2 Tinian

4.4.3.1.2.1 NORTH OPTION

Under the Construction Phase of Alternative 3 on Tinian North Option, the construction footprint would be less than that described under the Alternative 2 North Option. The maximum increase in impervious surfaces is estimated to be 3,569,972 ft^2 (82.0 acres), which is approximately 913,222 ft^2 (21.0 acres) less than Alternative 2 North Option. Less impervious surfaces would result in less compaction of soil, degradation in soil productivity, alteration of storm water drainage and infiltration.

Therefore, short-term, direct, minor adverse impacts on geology and soil resources would be expected under the Construction Phase of Alternative 3 on Tinian North Option.

4.4.3.1.2.2 SOUTH OPTION

Under the Construction Phase of Alternative 3 on Tinian South Option, the construction footprint would be less than that described under the Alternative 2 South Option. The maximum increase in impervious surfaces is estimated to be 1,935,772 ft^2 (44.4 acres), which is approximately 896,843 ft^2 (20.6 acres) less than the Alternative 2 South Option on Tinian and 1,634,200 ft^2 (37.5 acres) less than the Alternative 3 North Option on Tinian. Less impervious surfaces would result in less compaction of soil, degradation in soil productivity, alteration of storm water drainage and infiltration.

Therefore, short-term, direct, minor adverse impacts on geology and soil resources would be expected under the Construction Phase of the Alternative 3 South Option on Tinian

4.4.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.4.3.2.1 Saipan

Under Alternative 3 on Saipan, impacts on geology and soils would be the same as those described under Alternative 1. The same number of aircraft operations would occur and number of personnel requiring lodging would be the same. Therefore, long-term, direct, minor, adverse impacts on geology and soils would be expected under Alternative 3 on Saipan.

4.4.3.2.2 Tinian – North and South Options

Under Alternative 3 on Tinian, impacts on geology and soils would be the same as those described under Alternative 2. The same number of aircraft operations would occur and number of personnel requiring lodging would be the same. Therefore, long-term, direct, minor, adverse impacts on geology and soils would be expected under Alternative 3 on Tinian.

4.4.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Sections 3.4.2.1** and **3.4.2.2** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at existing airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with *36th Wing Instruction 13-204, Airfield Operations Instructions.* Planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on geological resources and soils would be expected as a result of the No Action Alternative. Geological resources on Saipan and Tinian would not be disturbed as a result of the Construction or Implementation Phase of the Proposed Action. The No Action Alternative would result in a continuation of existing conditions.

4.5 Water Resources

Evaluation criteria for impacts on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. Impacts on water resources were assessed by determining if the proposed action would do one or more of the following:

- Substantially reduce water availability or supply to existing users.
- Create or contribute to overdraft of groundwater basins.
- Exceed safe annual yield of water supply sources.
- Cause a violation of water quality standards or increase the magnitude or frequency of an existing water quality violation.
- Endanger public health by creating or worsening health hazard conditions.
- Threaten or damage unique hydrologic characteristics.
- Violate established laws or regulations adopted to protect water resources.

The potential effect of flood hazards on a proposed action is important if such an action occurs in an area with a high probability of flooding.

4.5.1 Alternative 1 – Modified Saipan Alternative

4.5.1.1 Construction Phase

Surface Water. Short-term, direct, minor adverse impacts on surface water resources could occur under Alternative 1. Impacts on surface water could result from a reduction in water quality, increased storm water runoff, and altered hydrologic conditions. However, these impacts could be avoided or minimized through use of BMPs and minimization measures identified in the applicable permits and regulations.

Under Alternative 1, adverse impacts on water quality in downgradient surface water bodies and nearshore waters could occur. Construction activities such as clearing, grading, trenching, and excavating would displace soils and sediment. If not managed properly, disturbed soils and sediments could be washed into nearby surface water bodies or nearshore waters during storm events and reduce water quality. The construction contractors would obtain all necessary construction permits and comply with the requirements and guidelines set forth in those permits to minimize potential for these adverse impacts. All construction BMPs would follow DOD policy for implementing guidelines provided in Federal and CNMI permitting processes and regulations (e.g., USEPA Construction General Permit, CNMI DEQ Earthmoving and Erosion Control Regulations and permit), EISA Section 438, the CNMI DEQ/GEPA Stormwater Management Manual, and the site-specific SWPPP and ESCP (see **Section 3.5.1**), as applicable.

Under Alternative 1, adverse impacts on water resources would be expected as a result of land development activities altering the local hydrologic cycle in the project area. Initial land clearing would remove vegetation that evapotranspirates a large proportion of rainfall that falls in the project area. Grading activities would remove natural depressions that might serve to pond storm water temporarily and naturally infiltrate precipitation into the groundwater. Removal of vegetation and the soil's humus layer would further decrease storm water interception and increase runoff and soil erosion in the area.

Storm Water. As described in **Section 4.13.1**, a temporary increase in storm water runoff, erosion, and sedimentation would be expected during the proposed construction activities. The discharge of storm water runoff from construction activities at Saipan International Airport and the seaport must be authorized by a construction water permit issued by the USEPA in accordance with the *General Permit for Storm Water Discharges from Construction Activities*. The permit requires the development and implementation of a construction-specific SWPPP. In addition, the permit requires that discharges from storm water controls be directed to vegetated areas off the site to increase sediment removal and maximize storm water infiltration wherever feasible (USEPA 2012b). The construction activities would need to implement BMPs and meet their location-specific storm water quality and quantity requirements. Due to the development of an SWPPP, the vegetated surrounding area of Saipan International Airport and the Seaport, and the high infiltration rates of the island, the impacts would not be significant.

Under Alternative 1, the maximum increase in impervious surfaces is estimated to be 1,245,382 ft^2 (28.6 acres). The volume of storm water runoff increases sharply with impervious cover. For example, a one-acre parking lot can produce 16 times more storm water runoff than a one-acre grassland each year (Schueler 1994). Storm water management controls would be designed and implemented consistent with construction storm water permit requirements and the USAF Engineering Technical Letter (ETL) 03-1: *Storm Water Construction Standards* to minimize potential adverse impacts on surface waters associated with the construction of the impervious surfaces. Additionally, Alternative 1 would also involve the use of low-impact development strategies to comply with EISA Section 438. Low-impact development strategies include storm water retention ponds, shallow infiltration basins, and infiltration trenches, to collect storm water from the new impervious surfaces and allow runoff to infiltrate back into the ground to help restore or enhance natural (i.e., predevelopment) recharge rates. Some storm water management efforts are already used on Saipan International Airport and at the seaport; however, due to the proposed large increase in impervious surfaces, these storm water management features could be re-sized or supplemented to accommodate the increase in storm water runoff from the improved areas. Storm water management and infiltration features should be designed in accordance with the CNMI DEQ/GEPA Stormwater Management Manual (CNMI DEQ and GEPA 2006).

Groundwater. Short- and long-term, minor to moderate adverse impacts on groundwater resources could occur under Alternative 1. Impacts on groundwater resources could result from a reduction in groundwater recharge and possible contamination to the groundwater lens. However, these impacts could be avoided or minimized through use of BMPs and minimization measures identified in the applicable permits and regulations.

Under Alternative 1, replacement of pervious surfaces with impervious surfaces could result in depletion of groundwater resources and increased salt water intrusion to drinking water wells. Clearing and grading activities would reduce infiltration by removing vegetation and natural depressions that might serve to pond storm water temporarily and naturally infiltrate precipitation into the groundwater. Additionally, impervious surfaces preclude the natural infiltration of rainwater, thereby reducing the groundwater recharge rate. It is also assumed that the USAF would use commercially available water for dust suppression during construction, which could be sourced from groundwater. This could result in a lowering of the water table and a reduction of the thickness of the groundwater lens.

For the site preparation and construction activities, potential environmental consequences can include groundwater contamination from storm water runoff that may contain elevated sediment concentrations, and from spills and leaks of chemicals such as lubricants, fuels, or other construction materials. Additionally, indirect impacts may result from an increase in impervious areas, which may increase the potential for contaminated storm water runoff to infiltrate the groundwater.

Due to the high permeability of the limestone on Saipan, the Mariana Limestone Aquifer could be very susceptible to contamination. Therefore, storm water directed from the new impervious areas could require substantial pre-treatment and filtering prior to infiltration to protect the quality of groundwater resources. Storm water management and infiltration features should not be located in close proximity to the wellhead protection area at Saipan International Airport (Isley Field) to ensure protection of a safe drinking water supply. The potential for contaminated storm water runoff from the construction site would be minimized through the development and implementation of a site-specific ESCP, which describes the BMPs to be implemented on site to eliminate or minimize nonpoint source pollution.

Potential groundwater contamination from spills and leaks from fuel storage and equipment maintenance also are minimized through the development and implementation of a SPCC Plan. All construction equipment would be maintained according to the manufacturer's specifications and all fuels and other potentially hazardous materials would be contained and stored appropriately. One of the key BMPs required under the SPCC is the use of secondary containment systems to contain spills and leaks. Therefore, adverse impacts on groundwater quality as a result of accidental spills of petroleum or other contaminants during construction activities are anticipated to be negligible to minor.

Flood Zones. No flood zones occur within the proposed Saipan International Airport or Port of Saipan fuel site project areas; therefore, no impacts on flood zones would be expected under Alternative 1.

4.5.1.2 Implementation Phase

Long-term, direct and indirect, minor, adverse impacts on groundwater would be expected under Alternative 1 Implementation Phase. Impacts on groundwater quality would be expected as a result of sheet runoff or petroleum spills from fuel storage and aircraft-refueling activities at Saipan International Airport and the proposed fuel tank site at the Port of Saipan. However, these impacts could be avoided or minimized through proper secondary containment and maintenance of fuel storage and delivery equipment; through implementation of the SPCC plan; and through planned implementation of the various applicable Federal and CNMI storm water management, pre-treatment, and filtering requirements, so that petroleum and other contaminants are prevented from reaching the underlying aquifer. Therefore, adverse impacts on groundwater quality as a result of accidental spills of petroleum or other contaminants during fuel storage or aircraft-refueling activities are anticipated to be negligible to minor.

Based on up to 265 personnel using an average of 98 gallons of water per day per person (USGS 2009b), implementation of Alternative 1 would result in the consumption of up to 25,970 gallons per day, which is approximately 0.5 percent of the daily water production capacity, and approximately 2 percent of the daily drinkable water capacity in Saipan. As described in **Section 4.13.1**, the existing water supply system on Saipan produces approximately 10 million gallons per day (gpd); however, the Commonwealth Utilities Corporation (CUC) estimates that approximately 50 percent of the potable water supply in the CNMI is lost due to leaks in the piping system (CNMI 2011). Additionally, due to high chloride concentrations, only about 1.5 million gpd meet USEPA drinking standards (CNMI Department of Commerce 2009).

The USAF would coordinate with the CUC to ensure that adequate water supply is available. Because it is assumed that exercises would not occur for 8 weeks straight per year, significant localized impacts on water supply are not expected. Coordination with local regulatory authorities and CUC should avoid any localized impacts during this time. If local regulatory authorities determine the potential for adverse effects on the aquifer to occur, the USAF would use other methods (e.g., bottled water, potable desalinization/water purification units) to obtain drinking water. Thus, the projected increase in potable water demand is not expected to result in substantial additional groundwater withdrawals with minimal increase in salinity intrusions into the groundwater aquifer.

4.5.2 Alternative 2 – Modified Tinian Alternative

4.5.2.1 Construction Phase

4.5.2.1.1 North Option

Surface Water. Under the Alternative 2 North Option, impacts on surface water resources would be similar to, but greater than, Alternative 1 due to the larger construction footprint of Alternative 2. Therefore, short-term to long-term, direct, minor, adverse impacts on surface waters would be expected from the construction activities proposed under the Alternative 2 North Option.

The maximum increase in impervious surfaces is estimated to be 4,483,194 ft^2 (103.0 acres) for the North Option. With proper sediment and erosion controls and storm water management BMPs in place, it is assumed that storm water runoff during construction activities would result in short-term, indirect, minor, adverse impacts on water quality in downgradient surface water bodies and nearshore waters. Additionally, as required by Section 438 of the EISA, predevelopment site hydrology at Tinian International Airport and at the Port of Tinian would be maintained or restored to the maximum extent technically feasible. This would likely require the existing storm water management features at Tinian International Airport to be resized or supplemented to accommodate the increase in storm water runoff from the improved areas.

As with Alternative 1, the construction contractors would obtain all necessary construction permits and comply with the requirements and guidelines set forth in those permits to minimize potential for these adverse impacts on downgradient surface water bodies and nearshore waters from the increase in soil erosion and sedimentation. All construction BMPs would follow the guidelines provided in Federal and CNMI permitting processes and regulations (e.g., USEPA Construction General Permit, CNMI DEQ Earthmoving and Erosion Control Regulations and permit), EISA Section 438, the CNMI DEQ/GEPA Stormwater Management Manual, and the site-specific SWPPP and ESCP (see **Section 3.5.1**).

Groundwater. Under the Alternative 2 North Option, impacts on groundwater resources would be similar to, but greater than, Alternative 1 due to the larger construction footprint of Alternative 2. Therefore, short- and long-term, minor to moderate adverse impacts on groundwater resources could occur under the Alternative 2 North Option. However, these impacts could be avoided or minimized through use of BMPs and minimization measures identified in the applicable permits and regulations.

Because the storm water from the proposed construction could be degraded with a broad range of pollutants, the underlying aquifer could be very susceptible to contamination. Therefore, storm water directed from these areas could require substantial pre-treatment and filtering prior to infiltration to protect the quality of groundwater resources.

All construction equipment would be maintained according to the manufacturer's specifications and all fuels and other potentially hazardous materials would be contained and stored appropriately. In the event of a spill, procedures outlined in the SPCC Plan would be followed to contain and clean up the spill quickly. Therefore, impacts on groundwater quality as a result of accidental spills of petroleum or other contaminants during construction activities are anticipated to be negligible to minor.

Flood Zones. No impacts on floodplains would be expected from the construction activities proposed under the Alternative 2 North Option. Although the area designated as Flood Zone A within the proposed taxiway would need to be filled, no impacts on flood hazard would be expected. Because these flood zone areas are only designated as such due to their potential to hold water during heavy rain events and because these are not associated with floodplains of surface water bodies, these areas would not be protected under EO 11988, *Floodplain Management*.

4.5.2.1.2 South Option

Surface Water. Under the Alternative 2 South Option, impacts on surface water resources would be similar to, but greater than, Alternative 1 due to the larger construction footprint of Alternative 2. Therefore, short-term to long-term, direct, minor, adverse impacts surface waters would be expected from the construction activities proposed under Alternative 2 South Option.

Under the Alternative 2 South Option, the maximum increase in impervious surfaces is estimated to be 2,832,615 ft^2 (65.0 acres), which is approximately 1,650,597 ft^2 (38.0 acres) less than the North Option. With proper sediment and erosion controls and storm water management BMPs in place, it is assumed that storm water runoff during construction activities would result in short-term, indirect, minor, adverse impacts on water quality in downgradient surface water bodies and nearshore waters.

Groundwater. Under Alternative 2 South Option, impacts on groundwater resources would be similar to, but greater than, Alternative 1 due to the larger construction footprint of Alternative 2. Therefore, short- and long-term, minor to moderate adverse impacts on groundwater resources could occur under Alternative 2 South Option. However, these impacts could be avoided or minimized through use of BMPs and minimization measures identified in the applicable permits and regulations.

Because the storm water from the proposed construction could be degraded with a broad range of pollutants, the underlying aquifer could be very susceptible to contamination. Therefore, storm water directed from these areas could require substantial pre-treatment and filtering prior to infiltration to protect the quality of groundwater resources.

All construction equipment would be maintained according to the manufacturer's specifications and all fuels and other potentially hazardous materials would be contained and stored appropriately. In the event of a spill, procedures outlined in the SPCC Plan would be followed to contain and clean up the spill quickly. Therefore, impacts on groundwater quality as a result of accidental spills of petroleum or other contaminants during construction activities are anticipated to be negligible to minor.

Flood Zones. No impacts on floodplains would be expected from the construction activities proposed under Alternative 2 South Option. Although an area designated as Flood Zone A within the proposed fuel tank site at Tinian International Airport would need to be filled, this flood zone area is not associated with surface water bodies and would not be protected under EO 11988, *Floodplain Management*.

4.5.2.2 Implementation Phase- North and South Options

Long-term, indirect and direct, minor, adverse impacts on groundwater quality would be expected under Alternative 2 as a result of sheet runoff or petroleum spills from fuel storage and aircraft-refueling activities at Tinian International Airport and the proposed Port of Tinian fuel tank site. However, these impacts could be avoided or minimized through proper secondary containment and maintenance of fuel storage and delivery equipment; through implementation of the SPCC plan; and through planned implementation of the various applicable Federal and CNMI storm water management, pre-treatment, and filtering requirements, so that petroleum and other contaminants are prevented from reaching the underlying aquifer. Therefore, impacts on groundwater quality as a result of accidental spills of petroleum or other contaminants during fuel storage or aircraft-refueling activities are anticipated to be negligible to minor.

Based on the available withdrawal data, Tinian is capable of producing approximately 1,260,000 gallons of water per day. Implementation of Alternative 2 would result in the consumption of up to 25,970 gallons per day, based on up to 265 personnel using an average of 98 gallons per day per person (USGS 2009b). Additionally, the proposed fire suppression system on Tinian would require groundwater withdrawal to initially fill the associated water tanks. The calculated water storage to meet the requirement for fire suppression is 240,000 gallons; therefore, two 120,000 gallon tanks would need to be filled. The size of the wells and the pumps are based on the requirement to replenish the water storage tanks within 24 hours. The total consumption of water for support personnel and the fire suppression water tanks in one day would be approximately 20 percent of the daily water production capacity in Tinian. However, after the initial fill of the fire suppression tanks they would only need to be refilled after a fire emergency. Thus, the projected increase in potable water demand is not expected to result in substantial additional groundwater withdrawals with minimal increase in salinity intrusions into the groundwater aquifer.

4.5.3 Alternative 3- Hybrid Modified Alternative

4.5.3.1 Construction Phase

4.5.3.1.1 Saipan

Under Alternative 3 on Saipan, the construction footprint would be considerably less than that described under Alternative 1. The maximum increase in impervious surfaces is estimated to be 388,557 ft^2 (8.9 acres), which is approximately 856,825 ft^2 (19.7 acres) less than Alternative 1. Less impervious surfaces would reduce impacts related to storm water runoff, infiltration, and potential surface water and groundwater contamination. Therefore, short-term, direct, negligible adverse impacts on surface water and groundwater resources would be expected under the Construction Phase of Alternative 3 on Saipan.

4.5.3.1.2 Tinian

4.5.3.1.2.1 NORTH OPTION

Under the Construction Phase of Alternative3 North Option on Tinian, the construction footprint would be less than that described under Alternative 2 North Option. The maximum increase in impervious surfaces is estimated to be 3,569,972 ft^2 (82.0 acres), which is approximately 913,222 ft^2 (21.0 acres) less than Alternative 2. Less impervious surfaces would reduce impacts related to storm water runoff, reduced infiltration, and potential surface water and groundwater contamination. Therefore, short-term, direct, minor adverse impacts on surface water and groundwater resources would be expected under the Construction Phase of Alternative 3 North Option on Tinian.

4.5.3.1.2.2 SOUTH OPTION

Under the Construction Phase of Alternative 3 South Option on Tinian, the construction footprint would be less than that described under Alternative 2 South Option. The maximum increase in impervious surfaces is estimated to be 1,935,772 ft^2 (44.4 acres), which is approximately 896,843 ft^2 (20.6 acres) less than the Alternative 2 South Option and 1,634,200 ft^2 (37.5 acres) less than the Alternative 3 North Option. Less impervious surfaces would reduce impacts related to storm water runoff, reduced infiltration, and potential surface water and groundwater contamination. Therefore, short-term, direct, minor adverse impacts on surface water and groundwater resources would be expected under the Construction Phase of Alternative 3 South Option.

4.5.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.5.3.2.1 Saipan

Under Alternative 3 on Saipan*,* impacts on water resources during the Implementation Phase would be the same as those described under Alternative 1. The same number of personnel and associated water requirements would be required. Therefore, long-term, indirect and direct, minor, adverse impacts on groundwater supply and quality would be expected under Alternative 3 on Saipan*.*

4.5.3.2.2 Tinian- North and South Options

Under Alternative 3 on Tinian, impacts on water resources during the Implementation Phase would be the same as those described under Alternative 2. The same number of personnel and associated water requirements would be required. The same size fire suppression water tanks would also be required. Therefore, long-term, indirect and direct, minor, adverse impacts on groundwater supply and quality would be expected under Alternative 3 on Tinian*.*

4.5.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Sections 3.5.2.1** and **3.5.2.2** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at existing airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with *36th Wing Instruction 13-204, Airfield Operations Instructions.* Planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on water resources would be expected as a result of the No Action Alternative. Hydrologic conditions within the project areas would remain unchanged. The No Action Alternative would result in a continuation of existing conditions.

4.6 Terrestrial Biological Resources

Issues and concerns addressed in this section include the potential direct, indirect, and cumulative impacts of construction and implementation of the alternatives on terrestrial biological resources. Impacts can be either temporary (reversible) or permanent (irreversible). Direct and indirect impacts are distinguished as follows.

Direct impacts are associated with proposed construction activities (e.g., ground-disturbing activities) and implementation (e.g., aircraft overflights). Potential types of direct impacts include the following:

- Loss of habitat due to vegetation removal during construction
- Temporary loss of habitat during construction from noise, lighting, and human activity
- Potential loss of habitat due to increased noise, including proposed aircraft activities
- Injury or mortality to plants and animals, including special-status species, caused by the action.

Indirect impacts are caused by or result from project-related activities, are usually later in time, and are reasonably foreseeable (e.g., increased likelihood of nonnative, invasive species moving into the area after disturbance). Potential indirect impacts include the following:

- Disturbances from human activity, noise, and lighting that could impact unoccupied suitable habitat for special-status species
- Introduction of new nonnative, invasive species or increased dispersal of existing nonnative, invasive species
- Adverse impacts from pollutants that are released during construction or military operations.

Determination of the significance of wetland impacts is based on (1) the function and value of the wetland, (2) the proportion of the wetland that would be affected relative to the occurrence of similar wetlands in the region, (3) the sensitivity of the wetland to proposed activities, and (4) the duration of ecological ramifications. Impacts on wetland resources are considered significant if high-value wetlands would be adversely affected.

The level of impact on biological resources is based on (1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource, (2) the proportion of the resource that would be affected relative to its occurrence in the region, (3) the sensitivity of the resource to the proposed activities, and (4) the duration of ecological ramifications. Impacts on biological resources are considered significant if species or habitats of high concern are adversely affected over relatively large areas, or disturbances cause reductions in population size or distribution of a species of special concern. A habitat perspective is used to provide a framework for analysis of general classes of impacts (i.e., removal of critical habitat, noise, human disturbance).

Ground disturbance and noise might directly or indirectly cause potential impacts on terrestrial biological resources. Direct impacts from ground disturbance were evaluated by identifying the types and locations of planned ground-disturbing activities and determining the types of biological resources that use those areas. Mortality of individuals, habitat removal, and damage or degradation of habitats might be impacts associated with ground-disturbing activities.

Noise associated with a proposed action might be of sufficient magnitude to result in the direct loss of individuals and reduce reproductive output within certain ecological settings. Ultimately, extreme cases of such stresses could lead to population declines or local or regional extinction. To evaluate impacts, considerations were given to the number of individuals or critical species involved, amount of habitat affected, relationship of the area affected to total available habitat within the region, type of stressors involved, and magnitude of the impacts.

As a requirement under the ESA, Federal agencies must ensure that their actions do not jeopardize the existence of any threatened or endangered species or adversely modify critical habitat. In addition, the ESA prohibits the “taking” of threatened or endangered animals. Section 7 of the ESA establishes a consultation process with the USFWS that ends with USFWS concurrence or a determination of the risk of jeopardy from a Federal agency project.

4.6.1 Alternative 1- Modified Saipan Alternative

4.6.1.1 Construction Phase

Vegetation. Long-term, minor, direct, adverse impacts on vegetation would be expected from construction activities associated with this alternative. A total of 30.84 acres would be occupied by new facilities at Saipan International Airport and 4.43 acres would be used at the Port of Saipan (**Table 4.6-1**). At the airport, 19.03 acres of that land is currently maintained as mowed fields or parks and 1.07 acres is paved and located along the edge of the existing taxiway, cargo areas, and aircraft parking areas. About 6.7 acres is currently vegetated with tangantangan forest, and an additional 4.17 acres where the airport fuel tanks and hydrant system would be located was cleared in the past and is partially revegetated. The proposed 4.43-acre area at the Port of Saipan where the fuel tanks are to be located has a deteriorating asphalt surface with scattered invasive vegetation. Because most areas to be disturbed are bare, have maintained or mowed vegetation, or are dominated by tangantangan and other non-native species, impacts to native vegetation and vegetation communities would be minor. No limestone forest would be disturbed.

Table 4.6-1. Area (acres) of Vegetation Communities To Be Cleared – Alternative 1

Proposed Additions/ New Facilities	Tangan-tangan Forest	Mowed Field	Park	Disturbed/ Unmowed	Existing Paved Areas
Parking apron	–	12.49	–		0.33
Cargo pad	1.31	2.51	–		0.60
Maintenance facility	0.83	0.02	–	–	
Hydrant system	–	0.06	3.20	0.44	
Pipeline	0.10	0.20			0.13
Airport fuel storage	4.31	0.01	0.54	3.74	
Seaport fuel site	–	–	–	4.43	
Total (acres)	**6.57**	**15.29**	**3.74**	**8.60**	**1.07**

Source: HDR

Wildlife. Short-term, minor, direct and indirect, adverse impacts on wildlife would be expected from construction activities associated with the Project. All the terrestrial species listed in **Table**

3.6-5 have the potential to be present in the Project Area. Activities that increase traffic and human activity would likely temporarily flush birds and other mobile wildlife using the grassy edges and other habitat along the taxiways, runways, and other facilities. For example, black noddy and other birds in the area of the rookery observed during field surveys (**Section 3.6.3.1**) might temporarily avoid areas surrounding construction sites. Smaller, less-mobile species and those seeking refuge in burrows could inadvertently be killed during construction activities. Long-term, permanent impacts on native species of wildlife would be less than significant because very little habitat used by those species would be disturbed and because the species observed in the Project Area are abundant in surrounding areas.

Noise created during construction activities could result in temporary adverse impacts on nearby wildlife. Clearing, grading, paving, and building construction can cause an increase in sound that is well above the ambient level. These impacts would include subtle, widespread impacts from the overall elevation of ambient noise levels. This would result in reduced communication ranges, interference with predator/prey detection, or habitat avoidance. More intense impacts would include behavioral change, disorientation, or hearing loss. Predictors of wildlife response to noise include noise type (i.e., continuous or intermittent), prior experience with noise, proximity to a noise source, stage in the breeding cycle, activity, age, and sex composition. Prior experience with noise is the most important factor in the response of wildlife to noise, because wildlife can become accustomed (or habituate) to the noise. The rate of habituation to short-term construction is not known. Wildlife could be permanently displaced from the areas where the habitat is cleared and temporarily dispersed from areas adjacent to the Project Area during construction. Wildlife inhabiting these sites might be displaced, but would be expected to move temporarily to adjacent less-utilized habitat and then potentially return to the area. Increased mortality of less-mobile species would be expected as the result of unavoidable direct impacts associated with construction activities. Impacts on wildlife would be minor.

Nonnative, invasive plant species could expand their distribution on Saipan and additional species could be introduced into the area due to the construction activities. Of particular concern is the potential for the establishment of the brown treesnake. The brown treesnake has decimated bird populations on Guam (Wiles et al. 2003). Because the ecosystem on Saipan is biologically similar to that of Guam, establishment of a brown treesnake population on Saipan would be likely to have consequences similar to those experienced on Guam. Equipment and materials (e.g., for construction) have the potential to carry and therefore spread brown treesnakes to Saipan, increasing the ability of the snake to establish itself islandwide. There have been 71 credible sightings of brown treesnakes on Saipan since 1982 resulting in 11 captures of live snakes, 8 in the vicinity of the port or airport and 3 in the interior of the island (USFWS 2006a). An expert panel was convened by the Department of the Interior, Office of Insular Affairs in 2004 to assess research and control programs relating to the brown treesnake. The report states that repeated sightings of the brown treesnake on Saipan indicate that an incipient (breeding) population is now present there; at the time of the Department of the Interior visit to Saipan in June 2004, about 85 to 90 percent of cargo was being checked (USDOI-OIA 2005). EO 13112 directs agencies to prevent the spread of invasive species in their work. To prevent the introduction of brown treesnakes, and the spread of other invasive species, control and interdiction methods specified in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* (**Appendix B)** will be implemented.

Threatened and Endangered Species. There are five threatened and endangered species with the potential to occur in on Saipan within or near the project area. They are the Mariana fruit bat, Micronesian megapode, Mariana swiftlet, Mariana common moorhen, and nightingale reed-warbler (see **Table 3.6-3**).

Mariana fruit bat and Micronesian megapode. The Mariana fruit bat and Micronesian megapode are restricted to limestone forests and surrounding areas, primarily on the northern part of the island (USFWS 1998b, USFWS 2009b). Land at and surrounding Saipan International Airport where facilities would be developed and divert activities and exercises would occur has been cleared of native vegetation or is vegetated with second-growth forests dominated by tangantangan. During surveys of the area surrounding Saipan International Airport conducted in 2012 for other rare species and to characterize avian populations (MES 2012), observers were vigilant for megapodes and flying and roosting fruit bats. Even though observation times of those surveys were favorable for detection of these species, no fruit bats or megapodes were observed or heard during any of the surveys. In addition, no habitat was found in the areas surveyed of sufficient quality or quantity to support these species. Because these species are rare or do not occur on the southern part of Saipan and there is no habitat for them within the Project Area, construction of facilities at Saipan International Airport and the Port of Saipan would have no impacts on the Mariana fruit bat and Micronesian megapode as indicated in the USAF *Biological Assessment for Headquarters Pacific Air Forces Divert Activities and Exercises in Saipan* provided in **Appendix B.**

Mariana swiftlets. Mariana swiftlets nest in caves located in central Saipan (Cruz et al. 2008) and favor ridge crests and open, grassy areas for foraging (USFWS 1991). No swiftlets were detected during bird surveys conducted at Saipan International Airport during 2012, and the nearest cave used by these birds for roosting and nesting is more than 2 miles north of Saipan International Airport (MES 2012). The clearing of up to 6.6 acres of second-growth forest to construct facilities at Saipan International Airport would have a negligible effect on the availability of foraging habitat for this species because tangantangan forest is common in the area and is not preferred foraging habitat. Therefore, construction on Saipan under Alternative 1 is not likely to adversely affect the Mariana swiftlets and the USAF has received concurrence of this conclusion from the USFWS as required by Section 7 of the Endangered Species Act as indicated in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* provided in **Appendix B.**

Mariana common moorhen. There are no wetlands in or surrounding the Project Area, and the man-made impoundments there would not be disturbed during construction. Thus, there would be no adverse effects on this species during construction on Saipan, as indicated in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* provided in **Appendix B.**

Nightingale reed-warbler. Long-term, moderate, direct, adverse impacts on the nightingale reed-warbler would occur as a result of construction of facilities and infrastructure on Saipan. Eight nightingale reed-warbler territories were detected during surveys conducted from January to March 2012 in tangantangan forests north and northwest of the airfield (MES 2012).

Two of the territories detected in 2012 are partially within or adjacent to the proposed location of the fuel tanks. About 3.7 acres of the 8.6-acre site where the fuel tanks would be installed has been cleared and was used as a materials storage area during past construction at Saipan International Airport. Because a portion of that site has been cleared, and the remaining vegetated area does not appear to be used, or is used infrequently, by nightingale reed-warblers, there would be no or minimal direct effects on those territories. However, as suggested by the USFWS (USFWS 2006a), noise, human activities, lights, and other disturbances associated with the construction and operation of the fuel storage system could temporarily adversely affect nightingale reed-warblers in those territories by disrupting or modifying their behavior, further degrading nearby nesting or foraging habitat, causing an increase in predation, or otherwise causing a decrease in reproductive output. The other five nightingale reed-warbler territories would be separated from facilities by a buffer of tangantangan forest of more than 150 feet, and thus would not be directly or indirectly affected, or would be minimally affected, by construction as indicated in the USAF *Biological Assessment for Headquarters Pacific Air Forces Divert Activities and Exercises in Saipan* provided in **Appendix B.**

Surveys on Saipan indicate that the nightingale reed-warbler population is declining and has declined since surveys were first conducted in 1982 (USFWS 1998a). The most serious threat is the potential for the establishment of the brown treesnake. Sightings of the brown treesnake on Saipan suggest that it might be in the process of becoming established there (Rodda and Savidge 2007). The spread of the brown treesnake to Saipan would likely cause the nightingale reed-warbler's extirpation there, leaving only a single, small population on Alamagan (USFWS 2005). Construction associated with Alternative 1 could open pathways that could spread invasive species, including the brown treesnake, to habitats of sensitive species.

Because construction of facilities at Saipan International Airport could directly and indirectly affect some nightingale reed-warbler territories, and because aircraft noise during exercises could disrupt the behavior of nightingale reed-warblers in areas surrounding Saipan International Airport (see **Section 4.6.1.2**), the USAF has concluded that this alternative is likely to adversely affect nightingale reed-warblers as indicated in the USAF *Biological Assessment for Headquarters Pacific Air Forces Divert Activities and Exercises in Saipan* provided in **Appendix B.** Thus, the USAF has completed formal consultation with the USFWS, as required under Section 7 of the ESA and as indicated in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* provided in **Appendix B**. To avoid or minimize impacts on nightingale reed-warblers from construction of facilities at Saipan International Airport, the USAF will implement all applicable impact-minimization measures identified by the USFWS (USFWS 2008b) for construction activities within nightingale reed-warbler habitat on Saipan. The USAF also will implement the measures described previously to reduce or eliminate the spread of brown treesnakes and other nonnative species, and will implement all other mitigation measures required as a result of the ESA consultation process as indicated in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* provided in **Appendix B**. Compliance with CNMI brown treesnake control requirements is considered voluntary and would be fulfilled through compliance with the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI*.

Proposed Species. Six species that were proposed for listing as endangered in October 2014 currently occur on Saipan or have been documented there in the past (**Table 3.6-1**). None of those species would occur in the mowed field, tangantangan forest, park, disturbed or paved areas, or agricultural vegetation communities found at and surrounding Saipan International Airport (**Section 3.6.3.1**). Thus, there would be no adverse effects to these proposed species from construction or other planned activities on Saipan.

Wetlands. Wetlands are attractive to wildlife as water sources and areas of forage. The presence of ephemeral or permanent water sources provides microhabitats that are unique in comparison to the surrounding landscape. Based on the site investigations there are no wetlands in the project area; therefore, no impacts on wetlands are expected from construction.

4.6.1.2 Implementation Phase

Vegetation. Short-term, periodic, direct, minor, adverse impacts on vegetation would be expected from implementation of the Alternative 1. Nonnative, invasive plant could expand their distribution in some areas due to the increase in activities necessary to support Divert activities. This is unlikely to impact primary limestone forest because all activities are well away from these forest areas. Therefore, minor, adverse impacts would be expected. EO 13112 directs agencies to prevent the spread of invasive species in their work. To implement this directive, an HACCP plan would be developed and implemented to reduce or eliminate the spread of unwanted species during specific processes or practices or in materials or products (USFWS 2012).

Wildlife. Short-term, periodic, direct, minor, adverse impacts on wildlife would be expected from implementation of Alternative 1. Aircraft operations could result in some migratory bird airstrikes. Conducting all divert activities and exercises from Saipan would add approximately 720 aircraft operations per year, which would be a 1.6 percent increase above the existing number of air operations at Saipan International Airport, and an approximately 20 percent increase in the number of flights by large aircraft (i.e., air carriers, tankers, and similar aircraft). Based on the FAA Strike Database records, there were about five reported strikes per year at Saipan International Airport over the past five years (**Section 3.6.3.1**). Assuming a 1.6 percent increase in strikes caused by an increase in air operations, the increase in strikes would be approximately 0.1 per year or approximately one additional reported strike every 10 years. A WHA was conducted at Saipan International Airport, which identifies areas of the airfield and the surrounding region that are attractive to wildlife and provides recommendations to remove or modify the attractive features. Implementation of these measures would decrease the likelihood of strikes. These measures would be discussed with and approved by the CPA and FAA as required. Per 50 CFR 21.15 an incidental take permit under the MBTA would not be required because significant impacts on migratory birds are not expected.

Long-term, direct, minor, adverse impacts would be expected from an increase in the frequency of aircraft operations at Saipan International Airport. The impacts of noise are considered minor because the wildlife in this area is already subjected to similar noise levels from aircraft operating from Saipan International Airport. Behavioral responses reflect a variety of states, from indifference to extreme panic. To some extent, responses are species-specific. However, even within a species, responses by individual animals vary. Minor responses that are typical of both birds and mammals include head-raising, body-shifting, and turning and orienting towards the aircraft. Animals that are moderately disturbed usually show nervous behaviors such as trotting short distances (mammals), standing up with necks fully extended and sunning the area (mammals), or walking around and flapping wings (birds). When animals are more severely disturbed, escape is the most common response. Perching or nesting birds might flush (fly up from a perch or nest) and circle the area before landing again. Some birds, particularly waterfowl and seabirds, might leave the area if sufficiently disturbed. There are dozens of reports, mostly from national wildlife refuges, of waterbirds flying, diving, or swimming away from aircraft. This is a widespread and common response. Bird flight responses are usually abrupt, and whole colonies of birds often flush together (NPS 1994). Wildlife present would likely move away from these areas, but there are other large areas of similar habitat nearby where they could move to when disturbed.

Threatened and Endangered Species. Long-term and periodic, negligible, adverse impacts on terrestrial threatened and endangered species would be expected under the Implementation Phase of Alternative 1.

Mariana fruit bat and Micronesian megapode. As indicated in **Section 4.6.1.1,** because these species are rare or do not occur on the southern part of Saipan and there is no habitat for them within the project area, implementation of all aircraft operations from Saipan International Airport would have no impacts, and therefore also no effects under Section 7 of the ESA, on the Mariana fruit bat and Micronesian megapode as indicated in the USAF *Biological Assessment for Headquarters Pacific Air Forces Divert Activities and Exercises in Saipan* provided in **Appendix B.**

Mariana swiftlet. The possibility of a swiftlet being harmed by aircraft during divert activities and exercises under the Implementation Phase is discountable because the area is distant from nesting caves, the second-growth forests at the end of the runways are not preferred foraging habitat, and swiftlets likely avoid the busy airspace around Saipan International Airport. Therefore, implementing this alternative at Saipan International Airport is not likely to adversely affect the Mariana swiftlets and the USAF has received concurrence of this conclusion from the USFWS as required by Section 7 of the ESA as indicated in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* provided in **Appendix B**.

Mariana common moorhen. Mariana common moorhens using artificial impoundments near Saipan International Airport would be exposed to more frequent elevated noise levels from large aircraft during divert activities and exercises. A single moorhen was seen at one golf course pond located about 0.6 miles from Saipan International Airport during four of nine surveys of those impoundments. The golf course pond other impoundments in the area are marginal habitat for moorhens because they have impervious liners that prevent establishment of shoreline emergent vegetation. Because moorhens using those ponds are habituated to frequent noise from current operations at Saipan International Airport, and because the increase in noise from divert activities and exercises would be infrequent, moorhens likely would not alter their behavior, or would only temporarily avoid using those ponds during exercises in response to a temporary increase in noise levels during those activities. Therefore, implementing all divert activities and exercises at Saipan International Airport is not likely to adversely affect the

Mariana common moorhen and the USAF has received concurrence with this conclusion from the USFWS as required by Section 7 of the ESA, as indicated in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* provided in **Appendix B**.

Nightingale reed-warbler. Under Alternative 1, about 720 additional operations by KC-135 tankers or similar aircraft would occur at Saipan International Airport per year. KC-135 aircraft, and other similar military aircraft that might be operated from Saipan International Airport under this alternative, generate sound levels that are similar to large aircraft currently operated from that airport. Because noise levels would be similar to current conitions, impact to nightingale reed-warblers from operation of KC-135 and simialr aircraft at Saipan International Airport would be negligible.

Wetlands. Based on the site investigations there are no wetlands in the project area. No impacts on wetlands would be expected due to activities associated with the Implementation Phase.

4.6.2 Alternative 2- Modified Tinian Alternative

4.6.2.1 Construction Phase- North and South Options

***Vegetation*.** Long-term, minor, direct, adverse impacts on vegetation would be expected from construction activities associated with Alternative 2.

If facilities were to be constructed north of the runway, 97.61 acres would be occupied by those facilities or otherwise cleared of vegetation at Tinian International Airport (**Table 4.6-2**). Most (82.49 acres) of land to be cleared at Tinian International Airport is second-growth tangantangan/ironwood scrub or tangantangan forest, which is very common on Tinian.

Table 4.6-2. Acreages of Vegetation to be Cleared at Tinian International Airport – Alternative 2 North Option

Proposed Additions/ New Facilities	Mowed Field	Tangantangan Ironwood	Tangantangan Forest	Existing Developed
Access Road		2.96		
Cargo Pad		6.88		
Fire Pump Building, Tanks, and Wells		1.14		
Fuel Pump Buildings, Tanks, and Fill Stands		1.92		
Maintenance Facility		0.17		
Relocate 8th Ave		0.78	0.15	
Taxiway	14.26	16.65	0.02	0.85
Parking Apron		39.71		
Airport Fuel Tanks		12.11		
Seaport Fuel Storage				5.29
Total	**14.26**	**82.33**	**0.17**	**6.15**

Source: HDR

In addition, 14.26 acres of mowed fields adjacent to the taxiway would be occupied for additional taxiways.

If facilities were to be constructed south of the runway, 59.73 acres would be occupied at Tinian International Airport (**Table 4.6-3**). About 37.4 acres of second-growth tangantangan forest would be cleared. In addition, 15.55 acres of mowed field and 6.75 acres of previously developed land would be occupied at the airport. This Option would not require additional taxiways would not be needed and 8th Avenue would not need to be rerouted.

Table 4.6-3. Acreages of Vegetation to be Cleared at Tinian International Airport – Alternative 2 South Option

Proposed Additions/New Facilities	Mowed Field	Tangantangan Ironwood	Tangantangan Forest	Existing Developed
Access Road	0.27	-	3.80	0.00
Cargo Pad	1.69	-	-	3.60
Fire Pump Building, Tanks, and Wells	-	-	1.23	-
Fuel Pump Buildings, Tanks, and Fill Stands	-	-	1.89	-
Maintenance Facility	0.02	-	0.16	
Parking Apron	12.46	-	19.01	3.15
Airport Fuel Tanks	1.11	-	11.35	-
Seaport Fuel Storage	-	-	-	5.29
Total	**15.55**	**0.00**	**37.43**	**12.05**

Source: HDR

For both Options, 5.29 acres would be used at the Port of Tinian. That land has been previously cleared of vegetation. No limestone forest would be disturbed on Tinian for either Option.

Wildlife. Short-term, minor, direct, adverse impacts on wildlife would be expected from construction activities associated with Alternative 2. All of the terrestrial bird species listed in **Table 3.6-2** have the potential to be present in the Project Area. Proposed construction activities would remove suitable habitat used by these species and displace them to other areas. Construction activities could inadvertently kill small species such as skinks and geckos.

Areas adjacent to Tinian International Airport would be subject to disturbance from the construction noise and human activity. Species sensitive to noise and activity would temporarily move to other areas and could return to the area following construction. Long-term, permanent impacts on populations of wildlife would not likely result.

Tinian monarch. Tinian monarchs were observed in forested habitat to the north of the Tinian International Airport during reconnaissance surveys conducted from in 2011. Although this bird species was federally delisted in 2004 (69 FR 56367), and delisted by the CNMI government in 2009, this endemic species could be threatened by habitat loss. Construction activities would require the clearing of 37.4 (South Option) to 82.5 (North Option) acres of tangantangan forest, which is used by the Tinian monarch for nesting and foraging.

Nonnative, invasive species could affect wildlife or degrade habitat, thus creating indirect impacts. Movement of construction personnel, equipment, and supplies could result in the movement and spread of invasive plant and animal species to Tinian. The potential establishment of the brown treesnake is of great concern on Tinian. There have been 75 confirmed brown treesnake detections throughout the CNMI as of 2008. There have been eight unconfirmed brown treesnake sightings on Tinian: one reported in February 1990, four reported in 1994, and three reported in 2003. If brown treesnakes were to become established (without immediate suppression) on Tinian under Alternative 2, the impacts would likely be similar to those experienced on Guam (DON 2010b). EO 13112 directs agencies to prevent the spread of invasive species in their work. Specific details regarding brown treesnake control and interdiction and the implementation of invasive species requirements for this project, including responsibilities, have been developed in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* (**Appendix B**). Brown treesnake control and interdiction and the implementation of invasive species requirements identified in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* would also be implemented as appropriate for activities conducted at Tinian International Airport.

Threatened and Endangered Species. Threatened and endangered species would not be affected by construction activities on Tinian. All facilities would be constructed in tangantangan forests, mowed fields, or other disturbed areas (**Tables 4.6-2** and **4.6-3**). Those areas are not suitable habitat for the Mariana fruit bat, Micronesian megapode, Mariana moorhen, or any proposed species that have potential to occur on Tinian. In addition, the USAF would implement measures to reduce or eliminate the spread of brown treesnakes and other nonnative species, as described in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI,* as appropriate.

Wetlands. There are no wetlands in the Project Area; therefore, no impacts are expected.

4.6.2.2 Implementation Phase- North and South Options

Vegetation. Short-term, periodic, minor, direct, adverse impacts on vegetation would be expected from implementation of Alternative 2. Nonnative, invasive plant species could increase in abundance within the project area due to the increase in activities necessary to support divert activities This is unlikely to impact primary limestone forest because all activities are well away from these forest areas. Therefore, impacts would be less than significant. EO 13112 directs agencies to prevent the spread of invasive species in their work. To implement this directive, an HACCP plan would be developed and implemented to reduce or eliminate the spread of unwanted species during specific processes or practices or in materials or products (USFWS 2012).

Wildlife. Aircraft operations could result in some additional migratory bird airstrikes. Under Alternative 2, there would be an additional 720 aircraft operations per year, which would be a 5.8 percent increase in the number of air operations at Tinian International Airport. Less than one bird strike per year has been reported at Tinian International Airport (**Section 3.6.3.2**), and this increase in flights therefore would result in a negligible increase mortality of birds and other wildlife. Per 50 CFR 21.15 an incidental take permit under the MBTA would not be required because significant impacts on migratory birds are not expected.

Long-term, direct, minor, adverse impacts would be expected from the noise generated by operations to support the Divert Activities at Tinian International Airport. Short duration, loud noise from aircraft taking off and landing during exercises could impact wildlife; however, exposure to elevated noise levels would be brief (seconds) and would occur over a period of no more than 8 weeks of the year. The impacts of noise are considered minor because the wildlife in this area is already subjected to these impacts from Tinian International Airport. Wildlife present would be affected and would move away from these areas, but there are other large areas of similar habitat nearby where they could move to when disturbed.

Threatened and Endangered Species. Threatened and endangered species would not be affected by implementation on Tinian. Mariana fruit bats and Micronesian megapodes are rare on or extirpated from Tinian and there is no limestone forest or other suitable habitat for any listed or proposed species within or near project areas. There also are no wetlands or impoundments that would be used by Mariana common moorhens.

Wetlands. Based on the site investigations there are no wetlands in the project area. No impacts on wetlands would be expected due to activities associated with the Implementation Phase of Alternative 2.

4.6.3 Alternative 3- Hybrid Modified Alternative

4.6.3.1 Construction Phase- Saipan and Tinian

***Vegetation*.** Long-term, minor, direct, adverse impacts on vegetation would be expected on Saipan and Tinian from construction activities associated with Alternative 3.

For this alternative, 13.95 acres at Saipan International Airport would be occupied by facilities or otherwise cleared of vegetation at Saipan International Airport (**Table 4.6-4**), including 5.14 acres of second-growth tangantangan forest that would have to cleared. There would be no construction at the Port of Saipan.

Table 4.6-4. Area (acres) of Vegetation Communities to be Cleared on Saipan – Alternative 3

Proposed Additions/ New Facilities	Tangan-tangan Forest	Mowed Field	Park	Disturbed/ Unmowed
Cargo pad	–	3.95	–	0.55
Maintenance facility	0.83	0.02	–	–
Airport fuel storage	4.31	0.01	0.54	3.74
Total (acres)	**5.14**	**3.98**	**0.54**	**4.29**

Source: HDR

On Tinian, 76.64 acres at Tinian International Airport would be occupied or otherwise cleared of vegetation if facilities were constructed on the north side of the runway (**Table 4.6-5**). About 61.5 acres of second-growth tangantangan forest would be cleared. If facilities were to be constructed on the south side of the runway, 39.15 acres would be occupied, including 16.84 acres of growth tangantangan forest (**Table 4.6-6**). For both Options, 5.29 acres would be used at the Port of Tinian. That land has been cleared of vegetation. No limestone forest would be disturbed on Saipan or Tinian for this alternative.

Table 4.6-5. Acreages of Vegetation to be Cleared on Tinian – Alternative 3 North Option

Proposed Additions/ New Facilities	Mowed Field	Tangantangan Ironwood	Tangantangan Forest	Existing Developed
Access Road	–	2.96	–	–
Cargo Pad	–	6.88	–	–
Fire Pump Building, Tanks, and Wells	–	1.14	–	–
Fuel Pump Buildings, Tanks, and Fill Stands	–	1.92	–	–
Maintenance Facility	–	0.17	–	–
Relocate 8th Ave	–	0.78	0.15	–
Taxiway	14.26	16.65	0.02	0.85
Parking Apron	–	23.65	–	–
Airport Fuel Tanks	–	7.29	–	–
Seaport Fuel Storage	–	–	–	5.29
Total	**14.26**	**61.36**	**0.17**	**6.15**

Source: HDR

Table 4.6-6. Acreages of Vegetation to be Cleared on Tinian– Alternative 3 South Option

Proposed Additions/ New Facilities	Mowed Field	Tangantangan Ironwood	Tangantangan Forest	Existing Developed
Access Road	0.27	–	3.80	–
Cargo Pad	1.69	–	–	3.60
Fire Pump Building, Tanks, and Wells	–	–	1.23	–
Fuel Pump Buildings, Tanks, and Fill Stands	–	–	1.89	–
Maintenance Facility	0.02	–	0.16	–
Parking Apron	12.46	–	3.49	3.15
Airport Fuel Tanks	1.11	–	6.28	–
Seaport Fuel Storage	–	–	–	5.29
Total	**15.55**	**0.00**	**16.48**	**12.05**

Source: HDR

Wildlife. Short-term, minor, direct, adverse impacts on wildlife would be expected from construction activities associated with Alternative 3. There would be a small loss of habitat for terrestrial birds and other wildlife on both islands, and construction activities could inadvertently kill small species such as skinks and geckos. Species sensitive to noise and activity might temporarily move to other areas but likely would return following construction. Long-term, permanent impacts on populations of wildlife would not likely result.

Tinian monarch. Construction activities on Tinian would require the clearing of 16.84 (South Option) to 61.53 (North Option) acres of tangantangan forest, which is used by the Tinian monarch for nesting and foraging.

Nonnative, invasive species could affect wildlife or degrade habitat, thus creating indirect impacts. Specific details regarding brown treesnake control and interdiction and the implementation of invasive species requirements for this project, including responsibilities, have been developed in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* (**Appendix B**). Brown treesnake control and interdiction and the implementation of invasive species requirements identified in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* would also be implemented as appropriate for activities conducted on Saipan and Tinian.

Threatened and Endangered Species. Construction of facilities at Saipan International Airport would require clearing of about 5.14 acres of tangantangan forest, including 4.31 acres for the fuel tanks that is adjacent to areas used by one or more pairs of nightingale reed warblers in 2012. Because a portion of that site has been cleared, and the remaining vegetated area does not appear to be used, or is used infrequently, by nightingale reed-warblers, there would be no or minimal direct effects on those territories. However, as suggested by the USFWS (USFWS 2006a), noise, human activities, lights, and other disturbances associated with the construction and operation of the fuel storage system could temporarily adversely affect nightingale reed-warblers in those territories by disrupting or modifying their behavior, further degrading nearby nesting or foraging habitat, causing an increase in predation, or otherwise causing a decrease in reproductive output. The other five nightingale reed-warbler territories would be separated from facilities by a buffer of tangantangan forest of more than 150 feet, and thus would not be directly or indirectly affected, or would be minimally affected, by construction as indicated in the USAF *Biological Assessment for Headquarters Pacific Air Forces Divert Activities and Exercises in Saipan* provided in **Appendix B.**

As described in **Sections 4.6.1** and **4.6.2**, no other terrestrial threatened, endangered, or proposed species would be adversely affected by construction on Saipan or Tinian.

Wetlands. There are no wetlands in the project areas on Saipan or Tinian.

4.6.3.2 Implementation Phase- Saipan and Tinian

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

Vegetation. Nonnative, invasive plant species could increase in abundance within the project areas due to the increase in activities necessary to support divert activities. An HACCP plan would be developed and implemented to reduce or eliminate the spread of unwanted species during specific processes or practices or in materials or products (USFWS 2012). Short-term, periodic, direct, minor, adverse impacts on vegetation would be expected due to potential distribution of nonnative invasive plants.

Wildlife. Aircraft operations on Saipan and Tinian could result in a very small increase in bird strikes, as discussed in **Sections 3.6.1.2** and **3.6.2.2**.

Long-term, direct, minor, adverse impacts would be expected from the noise generated by operations Saipan and Tinian International Airports. Short duration, loud noise from aircraft taking off and landing during exercises could impact wildlife; however, exposure to elevated noise levels would be brief (seconds) and would occur over a period of no more than 8 weeks of the year. The impacts of noise are considered minor because the wildlife on Saipan and Tinian are already subjected to these impacts from aircraft operations there.

Threatened and Endangered Species. Threatened and endangered species would not be affected by implementation on Saipan or Tinian. As described in **Section 3.6.1.2**, nightingale reed warblers currently are exposed to noise levels similar to those that would occur during operation of KC-135 aircraft. No other terrestrial threatened, endangered, or proposed species occur in areas that would have increased noise levels or that would otherwise be affected by implementation of divert activities and exercises.

Wetlands. There are no wetlands in the project areas on Saipan or Tinian; therefore, no impacts are expected.

4.6.4 No Action Alternative

Under the No Action Alternative, the existing conditions discussed in **Sections 3.6.2.1** and **3.6.2.2** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with *36th Wing Instruction 13-204, Airfield Operations Instructions*; planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area; and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on terrestrial biological resources would be expected as a result of the No Action Alternative. Terrestrial biological resources within the project areas would remain unchanged. The No Action Alternative would result in a continuation of existing conditions.

4.7 Marine Biological Resources

Impacts on marine sea turtles or marine mammals were assessed using the potential following outcomes:

- Permanent loss of habitat
- Temporary loss of habitat that adversely affects a substantial number of a species
- Permanent loss of feeding and breeding areas of a federally listed species
- Temporary loss of feeding and breeding areas that adversely affects a substantial number of individuals of a species

- Substantial interference with movement of any resident species that results in the inability of the species to survive.

4.7.1 Alternative 1- Modified Saipan Alternative

The USAF completed informal consultation with NMFS regarding the effects on marine species of planned activities on Saipan. The USAF sent correspondence to NMFS on October 3, 2012 informing them of the USAF determination that conducting divert activities and exercises on Saipan and Tinian may affect but is not likely to adversely affect marine species. After the 2012 2012 Draft EIS was released, the USAF received concurrence from NMFS on October 30, 2012 activities are not likely to adversely affect marine species. This correspondence is presented in **Appendix B**.

4.7.1.1 Construction Phase

No construction would occur in the marine waters surrounding Saipan. As such, no impacts on marine biological resources would occur under the Construction Phase of Alternative 1. As discussed in **Section 4.5.1.1**, DOD policies, compliant with Federal and CNMI regulations, would be followed to minimize erosion and sedimentation during construction and to manage storm water runoff after construction. By implementing those policies, adverse impacts of sedimentation and runoff would be minor. Therefore, EFH, coral species, and other nearshore resources are not discussed in this section because indirect or direct impacts are not expected.

The Saipan harbor currently accepts fuel tankers and it is presumed that the same tankers that currently supply Saipan with jet fuel would continue to do so under this alternative (see **Section 2.4.1.2**). As such, no port improvements would be needed to meet the fuel shipping requirements under the Proposed Action.

4.7.1.2 Implementation Phase

Sea Turtles. Short-term, periodic, minor, direct, adverse impacts on sea turtles could occur as under the Alternative 1 Implementation Phase. For approximately eight weeks per year, sea turtles would be exposed to an increased frequency of noise from large aircraft. Sea turtles residing at or near the surface of nearshore waters, or nesting on the beaches of Saipan could be exposed to this noise. In addition, low-flying aircraft passing overhead could create a shadow effect that could induce a reaction in sea turtles (DON 2010a). However, the majority of the flights during exercises are expected to occur during the day and sea turtles typically nest at night. In the unlikely event that nesting sea turtles would be exposed to noise, exposure to elevated noise levels would be brief (seconds) and would only occur periodically for a total of up to 8 weeks per year. Little information regarding sea turtle reactions to fixed-wing aircraft overflights is available. Based on the sensory biology of sea turtles, sound from low-flying aircraft could be heard by a sea turtle at or near the surface or on land (DON 2010a). Because sea turtles might also rely on visual cues, they might not respond to aircraft overflights based on noise alone. Sea turtles exposed to aircraft overflights might exhibit no response or behavioral reactions such as quick diving. Any behavioral avoidance reaction would be short-term and periodic and would not permanently displace sea turtles or result in physical harm. Noise from take-offs and landings would not result in chronic stress because it is unlikely that individual sea turtles would be repeatedly exposed to low-altitude overflights (DON 2010a).

In addition to take-offs and landings during military exercises, military aircraft would also conduct training over the ocean within the MIRC. However, these training activities are described and analyzed in the MIRC EIS and the MITT EIS, for which a ROD was issued on July 20, 2010 and July 29, 2015 respectively (DON 2010a, DON 2010b). These training exercises are covered under the Programmatic Biological Opinion on military readiness activities the U.S. Navy proposes to conduct within the MIRC and the MITT from August 2015 to August 2015 and the NMFS Permits Division's proposal to issue regulations to authorize the U.S. Navy to "take" marine mammals incidental to those training activities (NMFS 2015).

As discussed in **Section 4.5.1.1**, DOD policies, compliant with Federal and CNMI regulations, would be followed to manage storm water runoff after construction. By implementing those policies, adverse impacts of sedimentation and runoff on sea turtles would be negligible.

No impacts from the use of lighting would be expected on nesting sea turtles. The proposed lighting at the airfield would not be considered as additional lighting because only the existing terminal lighting would be expanded. The approach lighting would be angled away from the beach and no forested vegetation would be removed from the ends of the runways, which are at least 0.5 miles from the beaches. Additionally, the airport is on a mesa above the beaches. Any lights required at the port facility would not be pointed towards the harbor. As such, the lights would not be seen on the beaches.

The Saipan harbor currently accepts fuel tankers and it is presumed that the same tankers that currently supply Saipan with jet fuel would continue to do so under this alternative (see **Section 2.4.1.2**). Ships currently supplying the Saipan harbor are not fully loaded and have extra fuel capacity available. Therefore, no new trips would be needed to accommodate the additional fuel; as such, shipping would not increase in Saipan harbor beyond historic levels under this alternative and no impacts on sea turtles would be expected.

Alternative 1 may affect, but is not likely to adversely affect, green sea turtles.

Marine Mammals. Short-term, periodic, minor, direct, adverse impacts on marine mammals could occur under the Alternative 1 Implementation Phase. Some noise associated with take-offs and landings during military exercises would be transmitted over the ocean for up to eight weeks per year. However, most of the sound from aircraft is reflected off the surface of the water and only penetrates a small area of aircraft path over the water (Urick 1972). Marine mammals could exhibit a short-term and periodic behavioral response, but not to the extent where natural behavioral patterns would be abandoned or significantly altered. Chronic stress is also not likely to result because it is extremely unlikely that individual animals would be repeatedly exposed to overflights associated with take-offs and landings (DON 2010a). As such, Alternative 1 is not expected to result in Level A or Level B harassment as defined by the MMPA.

In addition to take-offs and landings during military exercises, military aircraft would also conduct training over the ocean within the MIRC. However, these training activities are described and analyzed in the MIRC EIS and the MITT EIS, for which a ROD was issued on July 20, 2010 and July 29, 2015 respectively (DON 2010a, DON 2010b). These training exercises are covered under the Programmatic Biological Opinion on military readiness activities the U.S. Navy proposes to conduct within the MIRC and the MITT from August 2015 to August 2015 and the NMFS Permits Division's proposal to issue regulations to authorize the U.S. Navy to "take" marine mammals incidental to those training activities (NMFS 2015). The training exercises are also covered under the letter of authorization issued by NMFS in the *Federal Register* and titled, "*Taking Marine Mammals Incidental to Navy Training Exercises in the Mariana Islands Range Complex*," 77 FR 46733 (6 August 2012).

The Saipan harbor currently accepts fuel tankers and it is presumed that the same tankers that currently supply Saipan with jet fuel would continue to do so under this alternative (see **Section 2.4.1.2**). Ships currently supplying the Saipan harbor are not fully loaded and have extra fuel capacity available. Therefore, no new trips would be needed to accommodate the additional fuel; as such, shipping would not increase in Saipan harbor beyond historic levels under this alternative and no impacts on marine mammals would be expected.

Alternative 1 may affect, but is not likely to adversely affect, ESA-listed marine mammals.

4.7.2 Alternative 2- Modified Tinian Alternative

The USAF completed informal consultation with NMFS for marine species. The USAF sent correspondence to NMFS on October 3, 2012 informing them of the USAF determination that proposed activities on Tinian may affect but are not likely to adversely affect marine species. After the 2012 Draft EIS was released, the USAF received concurrence from NMFS on October 30, 2012 that proposed activities not likely to adversely affect marine species. This correspondence is presented in **Appendix B**.

4.7.2.1 Construction Phase- North and South Options

No construction would occur in the marine waters surrounding Tinian (see **Sections 2.3.1** and **2.3.2.1** and **Figures 2.3-1** and **2.3-11**). As such, no impacts on marine biological resources would occur under the Construction Phase of Alternative 2. As discussed in **Section 4.5.1.1**, DOD policies, compliant with Federal and CNMI regulations, will be followed to minimize erosion and sedimentation during construction and to manage storm water runoff after construction. By implementing those policies, adverse impacts of sedimentation and runoff would be minor. Therefore, EFH, coral species, and other nearshore resources are not discussed in this section because indirect or direct impacts are not expected from any aspect of Alternative 2.

Jet fuel would be received at the current port in Tinian from a shallow draft tanker; shallow draft tankers currently dock at the Port of Tinian. As such, it is assumed that no improvements to the harbor would need to be made.

4.7.2.2 Implementation Phase- North and South Options

Sea Turtles. Short-term, periodic, minor, direct, adverse impacts on sea turtles could under the Alternative 2 Implementation Phase. Some noise associated with take-offs and landings during military exercises would be transmitted over the ocean. Green and hawksbill sea turtles residing at or near the surface of nearshore waters, or nesting on the beaches of Tinian could be exposed to this noise. In addition, low-flying aircraft passing overhead could create a shadow effect that could induce a reaction in sea turtles (DON 2010a). However, the majority of the flights during exercises are expected to occur during the day and sea turtles typically nest at night. In the unlikely event that nesting sea turtles would be exposed to noise, exposure to elevated noise levels would be brief (seconds) and would only occur periodically for a total of up to 8 weeks per year. Additionally, takeoffs and landings would not pass directly over beaches where sea turtles nest on Tinian.

Little information regarding the reaction of sea turtles to fixed-wing aircraft overflights is available. Based on the sensory biology of sea turtles, sound from low-flying aircraft could be heard by a sea turtle at or near the surface or on land (DON 2010a). Because sea turtles might also rely on visual cues, they might not respond to aircraft overflights based on noise alone. Sea turtles exposed to aircraft overflights might exhibit no response or behavioral reactions such as quick diving. Any behavioral avoidance reaction would be short-term and periodic and would not permanently displace sea turtles or result in physical harm. Noise from take-offs and landings would not result in chronic stress because it is unlikely that individual sea turtles would be repeatedly exposed to low-altitude overflights.

In addition to take-offs and landings during military exercises, military aircraft would also conduct training over the ocean within the MIRC. However, these training activities are described and analyzed in the MIRC EIS and the MITT EIS, for which a ROD was issued on July 20, 2010 and July 29, 2015 respectively (DON 2010a, DON 2010b). These training exercises are covered under the Programmatic Biological Opinion on military readiness activities the U.S. Navy proposes to conduct within the MIRC and the MITT from August 2015 to August 2015 and the NMFS Permits Division's proposal to issue regulations to authorize the U.S. Navy to "take" marine mammals incidental to those training activities (NMFS 2015). As discussed in **Section 4.5.1.1**, DOD policies, compliant with Federal and CNMI regulations, would be followed to manage storm water runoff after construction. By implementing those policies, adverse impacts of sedimentation and runoff on sea turtles would be negligible.

No impacts from the use of lighting would be on nesting sea turtles. The proposed lighting at the airfield would not be considered as additional lighting because only the existing terminal lighting would be expanded. The approach lighting would be angled away from the beach and no forested vegetation would be removed from the ends of the runways, which are at least 0.5 miles from the beaches. Any lights required at the port facility would not be pointed towards the harbor. As such, the lights would not be seen on the beaches.

Jet fuel would be received at the current port in Tinian from a shallow draft tanker. The port currently accepts fuel shipments and shallow draft tankers currently dock at the Port of Tinian (see **Section 2.4.2.2**). Ships currently supplying the Tinian harbor are not fully loaded and have extra fuel capacity available. Therefore, no new trips would be needed to accommodate the additional fuel; as such, shipping would not increase in Tinian harbor beyond historic levels under this alternative and no impacts on sea turtles would be expected.

Alternative 2 may affect, but is not likely to adversely affect, green and hawksbill sea turtles.

Marine Mammals. Short-term, periodic, minor, direct, adverse impacts on marine biological resources could under the Alternative 2 Implementation Phase. Some noise associated with take-offs and landings during military exercises would be transmitted over the ocean. However, most of the sound from aircraft is reflected off the surface of the water and only penetrates a small area of aircraft path over the water (Urick 1972). Marine mammals could exhibit a short-term and periodic behavioral response, but not to the extent where natural behavioral patterns would be abandoned or significantly altered. Chronic stress is also not likely to result, because it is extremely unlikely that individual animals would be repeatedly exposed to overflights associated with take-offs and landings (DON 2010a). As such, this alternative is not expected to result in Level A or Level B harassment as defined by the MMPA.

In addition to take-offs and landings during military exercises, military aircraft would also conduct training over the ocean within the MIRC. However, these training activities are described and analyzed in the MIRC EIS and the MITT EIS, for which a ROD was issued on July 20, 2010 and July 29, 2015 respectively (DON 2010a, DON 2010b). These training exercises are covered under the Programmatic Biological Opinion on military readiness activities the U.S. Navy proposes to conduct within the MIRC and the MITT from August 2015 to August 2015 and the NMFS Permits Division's proposal to issue regulations to authorize the U.S. Navy to "take" marine mammals incidental to those training activities (NMFS 2015). The training exercises are also covered under the letter of authorization issued by NMFS in the *Federal Register* and titled, "*Taking Marine Mammals Incidental to Navy Training Exercises in the Mariana Islands Range Complex*," 77 FR 46733 (6 August 2012).

Jet fuel would be received at the current port in Tinian from a shallow draft tanker. The port currently accepts fuel shipments and shallow draft tankers currently dock at the Port of Tinian (see **Section 2.4.2.2**). Ships currently supplying the Tinian harbor are not fully loaded and have extra fuel capacity available. Therefore, no new trips would be needed to accommodate the additional fuel; as such, shipping would not increase in Tinian harbor beyond historic levels under this alternative and no impacts on marine mammals would be expected.

Alternative 2 may affect, but is not likely to adversely affect, ESA-listed marine mammals.

4.7.3 Alternative 3 – Hybrid Modified Alternative

The USAF completed informal consultation with NMFS for marine species. The USAF sent correspondence to NMFS on October 3, 2012 informing them of the USAF determination that proposed activities on Saipan and Tinian may affect but are not likely to adversely affect marine species. After the 2012 Draft EIS was released, the USAF received concurrence from NMFS on October 30, 2012 that proposed activities not likely to adversely affect marine species. This correspondence is presented in **Appendix B**.

4.7.3.1 Construction Phase- Saipan and Tinian

No construction would occur in the marine waters surrounding Saipan or Tinian (see **Sections 2.3.1** and **2.3.2.1** and **Figures 2.3-1** and **2.3-11**). As such, no impacts on marine biological resources would occur under the Construction Phase of Alternative 3. As discussed in **Section 4.5.1.1**, DOD policies, compliant with Federal and CNMI regulations, will be followed to minimize erosion and sedimentation during construction and to manage storm water runoff after construction. By implementing those policies, adverse impacts of sedimentation and runoff would be minor. Therefore, EFH, coral species, and other nearshore resources are not discussed in this section because indirect or direct impacts are not expected from any aspect of Alternative 3.

The same methods currently used to receive fuel on Saipan and Tinian will be continued for receipt of jet fuel for USAF activities. As such, no improvements to the harbor would need to be made.

4.7.3.2 Implementation Phase- Saipan and Tinian

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

Sea Turtles. As described in **Sections 4.7.1.2** and **4.7.2.2**, short-term, periodic, minor, direct, adverse impacts on sea turtles could occur as a result of implementing divert activities and exercises on Saipan and Tinian. A similar or lower number of flights would be conducted from each island under this alternative, and the effects therefore will be similar to or less than those described in **Sections 4.7.1.2** and **4.7.2.2**. Thus, Alternative 3 may affect, but is not likely to adversely affect, green and hawksbill sea turtles.

Marine Mammals. Short-term, periodic, minor, direct, adverse impacts on marine biological resources could occur under the Alternative 3 Implementation Phase. A similar or lower number of flights would be conducted from each island under this alternative, and the effects therefore will be similar to or less than those described in **Sections 4.7.1.2** and **4.7.2.2**. As such, this alternative is not expected to result in Level A or Level B harassment as defined by the MMPA, and Alternative 3 may affect, but is not likely to adversely affect, ESA-listed marine mammals

4.7.4 No Action Alternative

Under the No Action Alternative, none of the above alternatives would occur and the existing conditions discussed in **Sections 3.7.2.1** and **3.7.2.2** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with *36th Wing Instruction 13-204, Airfield Operations Instructions*; planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area; and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No new impacts on marine biological resources would be expected as a result of the No Action Alternative. Under the No Action Alternative in Saipan, the 65-dB contour would occur over Una Agingan but not over Una Obyan (see **Figure 3.1-1**). Under the No Action Alternative in Tinian, the 65-dB contour would not occur over the Tinian Harbor beaches. Marine biological resources within the project areas would remain unchanged. The No Action Alternative would result in a continuation of existing conditions.

4.8 Cultural Resources

Impact analysis for cultural resources in this EIS focuses on assessing whether an action alternative has the potential to affect cultural resources that are eligible for listing on the NRHP. The analysis incorporates the USAF's finding of effects pursuant to Section 106 of the NHPA and input received during Section 106 consultation, as discussed in **Section 3.8.** Under the NHPA, an adverse effect is any action that might directly or indirectly change the characteristics that make the historic property eligible for listing in the NRHP. If an adverse effect is identified, PACAF must continue consultation to develop measures to avoid, minimize, or mitigate the adverse impacts of the undertaking. The agreed-to measures are to be included in an agreement document with CNMI HPO, ACHP, and other consulting parties.

Impacts on NRHP listed or eligible properties are those that result in the loss of their eligibility, usually by compromising the integrity of the resource. To be considered eligible for the NRHP, a cultural resource must possess the majority, if not all, of seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association.

Integrity is defined as the authenticity of a property's historic identity, as evidenced by the survival of physical characteristics it possessed in the past, and its capacity to convey information about a culture or people, historic patterns, or architectural or engineering design or technology. Location refers to the place where an event occurred or a property was constructed. Design considers elements such as plan, form, and style of a property. Setting is the physical environment of the property. Materials refer to the physical elements used to construct the property. Workmanship refers to the craftsmanship of the creators of a property. Feeling is the property's ability to convey its historic time and place. Association refers to the link between the property and a historic event or person.

Impacts to cultural resources can occur by physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or alter its setting; or neglecting the resource to the extent that it deteriorates or is destroyed. All alternatives presented in this document could have potential direct impacts on cultural resources from ground disturbing activities during construction. Potential indirect impacts include changes to the setting or view-shed of a historic property through the construction of new facilities.

The extent of impacts will be determined by the actual facilities constructed and the actual operations conducted at the selected location. Since Congressional authorization and funding is required for each facility to be constructed, and since the facility and infrastructure availability, in addition to military operational and readiness concerns, determine the type and extent of military training required at the selected location, the resultant impacts could be fewer and less adverse than those discussed here.

4.8.1 Alternative 1- Modified Saipan Alternative

The majority of construction and implementation under Alternative 1 would take place within the boundaries of the Aslito/Isley Field NHLD. Small portions of the Construction and Implementation Phases of Alternative 1 would take place along roads between the Port of Saipan and Saipan International Airport, which would carry Alternative 1 related truck traffic, and at the Port of Saipan, where aboveground fuel storage tanks would be constructed. Under Alternative 1, the majority of the potential impacts would be on the Aslito/Isley Field NHLD and its contributing structures. Specifically, the Construction Phase of Alternative 1 could result in minor indirect impacts to the landmark's integrity and eligibility.

4.8.1.1 Construction Phase

4.8.1.1.1 Direct Impacts

Construction proposed under Alternative 1 would have no impact on contributing elements of the Aslito/Isley Field NHLD or other historic properties on Saipan. The proposed construction footprints for several elements, including the proposed cargo pad, parking apron, and hydrant system, are in the general vicinity of a B-29 hardstand network built by U.S. forces during World War II. However, the USAF survey conducted in support of the Section 106 process (**Appendix D**) identified no remains of the B-29 hardstand network in proposed construction areas. The report observed that World War II-era pavements could be very deeply buried or could have been destroyed by vegetation growth, post-war land clearance, or other forces.

The fuel tanks portion of the construction footprint under Alternative 1 could disturb two features recorded by the USAF that are recommended as non-contributing elements of the SNHL: Feature 3, a concrete foundation with a drain; and Feature 9, a concrete foundation. Typically, adverse effects to non-contributing elements of historic districts do not affect the eligibility of the district as a whole; therefore, construction of the fuel tanks would have no impact on the SNHL.

No direct adverse impacts would be expected on cultural resources from construction of aboveground fuel storage tanks at the Port of Saipan. Although the area of the modern port was the site of Navy Seabee activity during the war, the USAF survey did not observe evidence of this activity and the proposed fuel tank site is well inland from where these activities are thought to have taken place. Construction under Alternative 1 would have no direct impacts on the Saipan Landing Beaches portion of the NHL, because no modifications would occur to this portion of the NHL.

Because the Construction Phase of Alternative 1 would only have direct adverse impacts to features not recommended as contributing to the NHL, these impacts would not be considered significant for NEPA purposes. Inadvertent direct impacts to unrecorded cultural resources, particularly buried archaeological sites, are possible during construction but unlikely given the extent of previous cultural resources survey coverage. Construction would adhere to best practices designed to address any inadvertent impacts to previously unreported resources.

4.8.1.1.2 Indirect Impacts

Construction under Alternative 1 at Saipan International Airport could have minor, indirect impacts on contributing elements of the Aslito/Isley Field NHLD by introducing new facilities that alter the viewshed of nearby historic structures. Such visual intrusions could impact integrity of setting and feeling of those historic structures and the NHLD as a whole. Construction at the Port of Saipan would not cause indirect impacts, as no historic properties have been identified in that part of the APE.

Transportation of construction materials on existing roads under Alternative 1 would have no impact on the SNHL. A study conducted by the California Department of Transportation in 2002 found that ground vibration from transportation along existing paved roads had virtually no effect on historic buildings located more than 5 meters away and that, in fact, such vibrations dropped below the perception threshold beyond 45 meters (CALTRANS 2002). The study considered heavy trucks as the vehicular source of vibration, similar to the trucks likely to be used during Divert construction, and assumed wood-framed historic buildings and structures. Standing structures in the SNHL are of stronger concrete construction and are even more resistant to vibration effects.

4.8.1.2 Implementation Phase

The Implementation Phase of Alternative 1 would consist of truck traffic on existing roads, aircraft use of Saipan International Airport, and personnel lodging in commercial facilities. None of these activities would include modification of historic structures or disturbance of ground surfaces. Aircraft noise levels would remain unchanged from current levels and, as with the Construction Phase, congestion and vibration from Implementation Phase-related truck traffic would not impact the SNHL. The Implementation Phase of Alternative 1 is therefore expected to have no impact on cultural resources.

4.8.2 Alternative 2- Modified Tinian Alternative

Under Alternative 2, the vast majority of construction and ongoing activity would take place at Tinian International Airport with much less construction and activity at the seaport. Based on existing information about known cultural resources, as well as historical data about former structures that might remain as archaeological deposits in and around Tinian International Airport, direct and indirect impacts to cultural resources could occur under the Alternative 2 North and South Options. Specifically, construction at Tinian International Airport under the Alternative 2 North and South Options could impact one archaeological site, TN-6-0030 (also sometimes referred to as Site 3005), the American administration-period West Field.

Although Tinian is home to the Tinian Landing Beaches, Ushi Point Field, and North Field NHL, the landmark is well to the north of the APE and the resource will not experience any direct or indirect adverse effects as a result of the undertaking, nor would any of the TCPs identified by MARFORPAC (Griffin et al. 2015).

4.8.2.1 Construction Phase

4.8.2.1.1 North Option

4.8.2.1.1.1 DIRECT IMPACTS

Construction at Tinian International Airport under the Alternative 2 North Option could result in direct, major or minor adverse impacts to known cultural resources should previously unidentified buildings, structures, or objects associated with West Field (Site TN-6-0030) be identified and disturbed during construction. Construction of the taxiways; parking apron; access road, including relocation of 8th Avenue; fire pump building, tanks, and wells; fuel tanks; fuel truck offload, fill-stands, and refueler parking area; maintenance facility; and cargo pad would involve ground disturbing activities within the boundaries of West Field. Such disturbance could adversely affect the site's integrity and potentially compromise the site's eligibility for the NRHP. Construction would adhere to best practices designed to address any inadvertent impacts to previously unreported resources.

Construction of fuel storage and distribution facilities at the Port of Tinian would have no direct effects to cultural resources. The port area within the APE does not contain known NRHP-listed or NRHP-eligible properties.

4.8.2.1.1.2 INDIRECT IMPACTS

Construction under the Alternative 2 North Option would have minor, indirect impacts on cultural resources. Construction at Tinian International Airport would introduce new elements to the landscape that could diminish integrity of setting, design, and feeling, and thus NRHP eligibility, of West Field. Construction at the Port of Tinian would not cause indirect impacts to cultural resources as no historic properties have been identified in that part of the APE.

Alternative 2 would involve transportation of construction material on existing roads between the port in San Jose to Tinian International Airport. However, construction traffic would involve no ground-disturbing activity and studies have found that earthborn vibration from transportation along existing paved roads has virtually no impact on historic buildings (CALTRANS 2002); therefore, construction traffic would have no impacts on historic structures along the route such as the Nanyo Kohatsu Kabushiki Kaisha Ice Storage Building.

4.8.2.1.2 South Option

4.8.2.1.2.1 DIRECT IMPACTS

Direct impacts from construction under the South Option would be consistent with those discussed for the North Option under **Section 4.8.2.1.1.1.** Construction at Tinian International Airport under the South Option would also occur within West Field (Site TN-6-0030) and could similarly have a major or minor direct impact on that site and any other undocumented features or cultural resources should construction activities disturb unidentified buildings, structures, or objects associated with the site. Such disturbance could adversely affect the site's integrity and potentially compromise the site's eligibility for the NRHP.

4.8.2.1.2.2 INDIRECT IMPACTS

Indirect impacts from construction under South Option would also be consistent with those discussed for the North Option under **Section 4.8.2.1.1.2.** The construction of new facilities at and near West Field could affect the integrity of setting, design, and feeling, and thus NRHP eligibility, of that property, resulting in a minor impact.

4.8.2.2 Implementation Phase-North and South Options

The Implementation Phase of Alternative 2 would have no impact on cultural resources. The Implementation Phase of the Alternative 2 North and South Options would consist of truck traffic on existing roads, aircraft use of Tinian International Airport, and personnel lodging in commercial facilities. None of these activities would include modification of historic structures or disturbance of ground surfaces. Historic properties located near the airport such as those associated with the Gurguan Airfield site to the west and the Naval Air Base HQ site to the east of Tinian International Airport lie under the noise effects portion of the APE. Noise effects are normally assessed in terms of interference with appreciation of a property's historical feeling or setting. Since these sites are not widely accessible or interpreted for public visitation, noise effects to these sites would be minimal. Further, proposed Divert aircraft operations at Tinian International Airport would be consistent with historic and current use at the airport and present less activity than historic use at Gurguan and West fields.

4.8.3 Alternative 3- Hybrid Modified Alternative

4.8.3.1 Construction Phase

4.8.3.1.1 Saipan-

Construction under Alternative 3 on Saipan is similar to the types of facilities and locations considered in Alternative 1, except that fewer and smaller facilities would be built. Therefore, impacts to cultural resources resulting from construction under Alternative 3 on Saipan are similar to the impacts discussed under construction of Alternative 1 (**Section 4.8.1**).

4.8.3.1.1.1 DIRECT IMPACTS

Construction would have no direct impacts on the SNHL or other historic properties at Saipan International Airport or the Port of Saipan. Although proposed construction footprints encompass previously identified B-29 hardstands that contribute to the Aslito/Isley Field NHLD, a recent survey of proposed construction areas did not identify any remains of the hardstands, which could be very deeply buried or could have been destroyed by vegetation growth, post-war land clearance, or other forces. Construction of the fuel tanks at Saipan International Airport could disturb two non-contributing elements of the Aslito/Isley Field NHLD (Features 3 and 9); however, this disturbance would not affect the district's overall NRHP eligibility.

Inadvertent direct impacts to unrecorded cultural resources, particularly buried archaeological sites, are possible during construction but unlikely given the extent of previous cultural resources survey coverage. The Alternative 3 would have a reduced likelihood of inadvertent impacts to unrecorded cultural resources at Saipan International Airport compared to Alternative 1, due to smaller construction footprints. Construction would adhere to best practices designed to address any inadvertent impacts.

4.8.3.1.1.2 INDIRECT IMPACTS

Construction would have minor, indirect impacts on the Aslito/Isley Field NHLD. Construction at Saipan International Airport would introduce new facilities that would alter the viewshed of nearby historic structures, potentially affecting integrity of setting and feeling of those structures and the NHLD as a whole. Construction at the Port of Saipan and construction-related traffic between the port and Saipan International Airport would have no impact on cultural resources.

4.8.3.1.2 Tinian

Construction under the Alternative 3 North and South Options is similar to the types of facilities and locations considered in Alternative 2, except that fewer and smaller facilities would be built. Therefore, impacts to cultural resources resulting from construction under the Alternative 3

North and South Options are similar to the impacts discussed under construction of Alternative 2 (**Section 4.8.2**).

4.8.3.1.2.1 NORTH OPTION

4.8.3.1.2.1.1 Direct Impacts

Construction at Tinian International Airport under the Alternative 3 North Option could result in direct, major or minor adverse impacts to known cultural resources should previously unidentified buildings, structures, or objects associated with West Field (Site TN-06-0030) be identified and disturbed during construction. Construction of the taxiways; parking apron; access road, including relocation of 8th Avenue; fire pump building, tanks, and wells; fuel tanks; fuel truck offload, fill-stands, and refueler parking area; maintenance facility; and cargo pad would involve ground disturbing activities within the boundaries of West Field (Site TN-6-0030). Such disturbance could adversely affect the site's integrity and potentially compromise the site's eligibility for the NRHP. Construction of fuel storage and distribution facilities at the Port of Tinian would have no direct effects to cultural resources. The port area within the APE does not contain known NRHP-listed or NRHP-eligible properties.

Inadvertent direct impacts to unrecorded cultural resources, particularly buried archaeological sites, are possible during construction. The Alternative 3 North Option would have a reduced likelihood of inadvertent impacts to unrecorded cultural resources compared to Alternative 2, due to smaller construction footprints. Construction would adhere to best practices designed to address any inadvertent impacts.

4.8.3.1.2.1.2 Indirect Impacts

Construction under the Alternative 3 North Option would have minor, indirect impacts on cultural resources resulting from the introduction of new elements to the landscape that could diminish integrity of setting, design, and feeling, and thus NRHP eligibility, of West Field. Construction at the Port of Tinian and construction-related traffic would have no impact on cultural resources.

4.8.3.1.2.2 SOUTH OPTION

4.8.3.1.2.2.1 Direct Impacts

Direct impacts from construction under the Alternative 3 South Option would be consistent with those discussed for the North Option under **Section 4.8.3.1.2.1.1**. Construction at Tinian International Airport under the South Option would also occur within West Field (Site TN-6-0030) and could similarly have a major or minor direct impact on that site and any other undocumented features or cultural resources.

4.8.3.1.2.2.2 Indirect Impacts

Indirect impacts from construction under the Alternative 3 South Option would also be consistent with those discussed for the North Option under **Section 4.8.3.1.2.1.2**. The construction of new facilities at and near West Field could affect the integrity of setting, design, and feeling, and thus NRHP eligibility, of that property, resulting in a minor, indirect impact.

4.8.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would generally be less than those described under Alternative 3.

4.8.3.2.1 Saipan

Impacts resulting from the Implementation Phase under Alternative 3 on Saipan would be consistent with those discussed under Alternative 1 in **Section 4.8.1.2**. The Implementation Phase on Saipan would have no impact on cultural resources.

4.8.3.2.2 Tinian - North and South Options

Impacts resulting from the Implementation Phase under the Alternative 3 North and South Options would be consistent with those discussed under Alternative 2 in **Section 4.8.2.2**. Specifically, the Implementation Phase of either the North or South Options under Alternative 3 would have no direct impacts to cultural resources.

4.8.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Section 3.8.3** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo and tanker aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with *36th Wing Instruction 13-204, Airfield Operations Instructions*, planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on cultural resources would be expected as a result of the No Action Alternative. Cultural resources within the project areas would remain unchanged. The No Action Alternative would result in a continuation of existing conditions.

4.9 Recreation

The environmental impacts on recreational resources near a proposed action are assessed based on recreational availability and use. A proposed action is assessed to determine if it would substantially impede access to recreational resources, reduce recreational opportunities, cause conflicts between recreational users, or result in the physical deterioration of recreational resources.

4.9.1 Alternative 1 – Modified Saipan Alternative

4.9.1.1 Construction Phase

Short-term, indirect, negligible, adverse impacts would be expected on recreational resources on Saipan during construction under Alternative 1. Recreational resources on Saipan are scattered throughout the island. Construction activities could increase the number of vehicles on roads, increasing travel times to available resources; however, tourists and residents would still have access to recreational opportunities. Construction activities would be within 0.5 miles from the Coral Ocean Point Golf Course, various beaches, cultural attractions described in **Section 3.9.2.1**, and a few highly used dive spots; however, construction activities would be in areas currently associated with higher noise levels (e.g., Saipan International Airport, Saipan Harbor). Therefore, short-term, direct, negligible, adverse impacts from construction noise would be expected on recreational activities.

4.9.1.2 Implementation Phase

Aircraft Operations

Impacts on recreational resources from implementing Alternative 1 would be expected to be long-term, periodic, direct, minor, and adverse. The majority of the activities associated with the proposed exercises would occur near Saipan International Airport. Noise levels associated with the proposed exercises would be expected to increase, particularly for the recreational resources on the southern tip of the island. Additionally, the exercises would not exceed 8 weeks in duration, and exercises would be planned in advance with signs posted and published on a regular basis to inform the public in accordance with established JRM procedures. Military exercises would generally be conducted on land designed for that purpose, and previous military exercises throughout the region have not precluded fishing or recreational use, even during peak fishing season. The noise contours described in **Section 4.1.1** for Alternative 1 are based on flights by up to 12 KC-135 aircraft during exercise; however, typical exercises would only include two to four aircraft. The noise levels at Coral Ocean Point Golf Course and Ladder Beach would increase to 60–64 and 55–59 dBA DNL, respectively. Therefore, long-term, periodic, direct, minor adverse impacts on recreational resources would be expected from Alternative 1.

Vehicle Use and Lodging

Initial efforts to transfer 100,000-bbl of fuel would require the use of six fuel trucks working 10-hour shifts for 14 days. During exercises, fuel transfer activity would resume at a similar pace. Traffic along the fuel route could become slightly more congested, and therefore, access to recreational activities across the island could be slightly inhibited; however, access would not be denied. Therefore, long-term, periodic, minor, adverse impacts would be expected from the use of fuel trucks under Alternative 1.

Up to 265 personnel would use local facilities to conduct airfield support activities during the 8-week exercise period. Long-term, periodic, minor, adverse impacts would be expected from the use of recreational facilities by support personnel while exercises are being conducted. During planned exercises, it may become more difficult for tourists to find available lodging. However, local lodging establishments would be informed well in advance and could alert potential tourists to any temporary unavailability of lodging.

4.9.2 Alternative 2 – Modified Tinian Alternative

4.9.2.1 Construction Phase

4.9.2.1.1 North Option

Impacts on recreational resources due to construction on the north side of Tinian International Airport would be expected to be similar to those described under Alternative 1 in **Section 4.9.1.1**, but to a greater extent because of the larger construction area associated with Alternative 2 North. The majority of the recreational resources on Tinian are associated with the Ushi Field-North Field Trail, coastal areas islandwide, and in the vicinity of San Jose Village. Construction activities would increase congestion on north-south thoroughfares on the island, which could inconvenience travelers using these roadways, including tourists. Fewer recreational resources are found in the immediate vicinity of Tinian International Airport, and therefore impacts from construction noise on recreation would be expected to be negligible. As a result, short-term, direct, negligible to minor, adverse impacts on recreational resources would be expected from Alternative 2 North.

4.9.2.1.2 South Option

Recreational impacts due to construction on the south side of Tinian International Airport would be expected to be similar to those described under the North Option, but to a lesser extent because of the smaller construction area associated with the South Option. Construction activities would increase congestion on north-south thoroughfares on the island, which could inconvenience travelers using these roadways. Fewer recreational resources are found in the immediate vicinity of Tinian International Airport, and therefore impacts from construction noise on recreation would be expected to be negligible. Therefore, short-term, direct, negligible to minor, adverse impacts on recreational resources would be expected.

4.9.2.2 Implementation Phase- North and South Options

AIRCRAFT OPERATIONS

Noise generated from the airfield would increase within the military area; however, since Tinian International Airport has few recreational opportunities in the surrounding area, impacts on recreational activities due to divert operations and military or humanitarian exercises would be expected to be long-term, periodic, direct, negligible, and adverse.

VEHICLE USE AND LODGING

Fuel trucks would run for 10 hours per day for 30 days, during exercises, to transfer up to 220,000-bbl of fuel to the proposed airport storage tanks. Traffic volumes along the transfer route would increase, and travel to the northern recreational resources could become temporarily inconvenienced. However, visitors and residents would not be denied access to recreational activities. Therefore, long-term, periodic, minor, adverse impacts would be expected from the use of fuel trucks under Alternative 2 South Option.

Up to 265 personnel are associated with military exercises. A noticeable increase in use of the main lodging on the island, the Tinian Dynasty Hotel and Casino, would occur. Other potential housing options would include the Fleming Hotel. This could cause a temporary shortfall of hotel rooms available to tourists, a minor adverse impact, although bookings at the Tinian Dynasty are normally well below the 412 room capacity. Personnel might take advantage of recreational facilities or sites on the island during the 8-week exercise period. This would provide a slight increase in use of recreational resources. Therefore, long-term, periodic, minor, adverse impacts would be expected from the use of recreational facilities by support personnel while exercises are being conducted.

4.9.3 Alternative 3 – Hybrid Modified Alterative

4.9.3.1 Construction Phase

4.9.3.1.1 Saipan

Under Alternative 3 on Saipan, the construction footprint would be less than that described under Alternative 1 in **Section 4.9.1.1**. Recreational resources on Saipan are scattered throughout the island. Construction activities could increase the number of vehicles on roads, increasing travel times to available resources; however, tourists and residents would still have access to recreational opportunities. Construction activities would be within 0.5 miles from the Coral Ocean Point Golf Course, various beaches, cultural attractions described in **Section 3.9.2.1**, and a few highly used dive spots; however, construction activities would be in areas currently associated with higher noise levels (e.g., Saipan International Airport, Saipan Harbor). Therefore, short-term, direct, negligible, adverse impacts from construction traffic noise would be expected on recreational activities.

4.9.3.1.2 Tinian

4.9.3.1.2.1 NORTH OPTION

Under Alternative 3 Tinian North Option, impacts on recreational resources due to construction on the north side of Tinian International Airport would be expected to be similar to those described under Alternative 1 in **Section 4.9.1.1**, but to a greater extent because of the larger construction area associated with Alternative 3 Tinian North Option. The majority of the recreational resources on Tinian are associated with the Ushi Field-North Field Trail, coastal areas island wide, and in the vicinity of San Jose Village. Construction activities would increase congestion on north-south thoroughfares on the island, which could inconvenience travelers using these roadways. Fewer recreational resources are found in the immediate vicinity of Tinian International Airport, and therefore impacts from construction noise would be expected to be negligible. Short-term, direct, negligible to minor, adverse impacts on recreational resources would be expected from Alternative 3 Tinian North Option.

4.9.3.1.2.2 SOUTH OPTION

Under Alternative 3 Tinian South Option, impacts on recreational resources due to construction on the north side of Tinian International Airport would be expected to be similar to those described under Alternative 1 in **Section 4.9.1.1**, but to a greater extent because of the larger construction area associated with Alternative 3 Tinian South. The majority of the recreational resources on Tinian are associated with the Ushi Field-North Field Trail, coastal areas island wide, and in the vicinity of San Jose Village. Construction activities would increase congestion on north-south thoroughfares on the island, which could inconvenience travelers using these roadways. Fewer recreational resources are found in the immediate vicinity of Tinian International Airport, and therefore impacts from construction noise would be expected to be negligible. Short-term, direct, negligible to minor, adverse impacts on recreational resources would be expected from Alternative 3 Tinian South Option.

4.9.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. Impacts on recreation would be similar, but greater than, those under Alternatives 1 and 2 because personnel could occupy both islands at once.

4.9.3.2.1 Saipan

AIRCRAFT OPERATIONS

Under Alternative 3 Saipan, the same number of aircraft operations could occur as described under Alternative 1. The majority of the activities associated with the proposed exercises would occur near Saipan International Airport. Noise levels associated with the proposed exercises would be expected to increase; however, the exercises would not exceed 8 weeks in duration, and exercises would be planned in advance. The noise contours described in **Section 4.1.1** for Alternative 1 are based on flights by up to 12 KC-135 aircraft during exercise; however, typical exercises would only include two to four aircraft. The noise levels at Coral Ocean Point Golf Course and Ladder Beach would increase to 60–64 and 55–59 dBA DNL, respectively. Therefore, long-term, periodic, direct, minor adverse impacts on recreational resources would be expected from Alternative 3 Saipan.

VEHICLE USE AND LODGING

Initial efforts to transfer fuel into the 100,000-bbl bulk storage tank would require the use of six fuel trucks working 10-hour shifts for 14 days. During exercises, fuel transfer activity would resume at a similar pace. Traffic along the fuel route would become more congested, and therefore, access to recreational activities across the island would be slightly inhibited; however, access would not be denied. Therefore, long-term, periodic, minor, adverse impacts would be expected from the use of fuel trucks under Alternative 3 Saipan.

Up to 265 personnel would use local facilities to conduct airfield support activities during the 8-week exercise period. Long-term, periodic, minor, adverse impacts would be expected from the use of recreational facilities by support personnel while exercises are being conducted.

4.9.3.2.2 Tinian North and South Options

AIRCRAFT OPERATIONS

Under the Alternative 3 Implementation Phase on Tinian, impacts on recreational resources would be expected to be similar to, but less extensive, than those described in Alternative 2. Noise generated from the airfield would increase noise levels within the military area; however, since Tinian International Airport has few recreational opportunities immediately surrounding the airport area, impacts on recreational activities due to divert operations and military or humanitarian exercises would be expected to be long-term, periodic, direct, negligible, and adverse.

VEHICLE USE AND LODGING

The fuel transfer process for Alternative 3 Tinian would be similar to, but greater than, the transfer process described for Alternative 1. Fuel trucks would run for 10 hours per day for 17 days, during exercises to fill the 120,000-bbl bulk storage tank at the airport. Traffic volumes along the transfer route would increase, and travel to the northern recreational resources would be prolonged. However, visitors and residents would not be denied access to recreational activities. Therefore, long-term, periodic, minor, adverse impacts would be expected from the use of fuel trucks under Alternative 3 Tinian.

Up to 265 personnel are associated with military exercises. Personnel could use recreational facilities on the island during the 8-week exercise period. This would provide a slight increase in use of recreational resources. Therefore, long-term, periodic, negligible, adverse impacts would be expected from the use of recreational facilities by support personnel while exercises are being conducted.

4.9.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on Saipan or Tinian and the existing conditions discussed in **Sections 3.9.2.1** and **3.9.2.2** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with *36th Wing Instruction 13-204, Airfield Operations Instructions*, planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on recreation would be expected as a result of the No Action Alternative. Access to recreational resources within the project areas would remain unchanged. The No Action Alternative would result in a continuation of existing conditions.

4.10 Land Use

LAND USE AND OWNERSHIP

A comparative methodology is used to determine potential impacts on land use. Construction or modification activities and operations associated with each alternative are examined and compared to existing land use conditions. Impacts are evaluated as they relate to the following:

- Compatibility of the proposed activities with existing land use and land use designations at the proposed project sites and in the surrounding areas
- Availability of sufficient land within the appropriate land use zone for the proposed activities.

Land use compatibility is defined here as the ability of two or more land uses to coexist without conflict. Examples of conflicts include interference of proposed activities with existing activities; insufficient availability of facilities, infrastructure, or resources to safely accommodate a proposed activity; and activities resulting in human health and safety issues due to poor siting.

Frequently, compatibility between land uses exists in varying degrees based on the frequency, duration, and intensity of a proposed activity. The land use zone designations preclude proposed activities from being located within a designated zone that would be incompatible with the current or proposed uses. However, an activity could be collocated within a land use zone that it is not normally associated with based on evaluation of its compatibility with nearby activities, including consideration of the availability of facilities and infrastructure, safety of personnel, and sensitive environments. Potential impacts on land use compatibility are based on qualitative assessments. Land disturbance within a given land use zone is not considered a land use impact under these criteria unless the disturbance results from a project that is incompatible with the land use designation.

COASTAL ZONE AND SUBMERGED LANDS

Impacts on the coastal zone were evaluated by examining the consistency of the Proposed Action with the APCs on Tinian and Saipan. A CZMA consistency determination was developed by the USAF for all Tinian and Saipan proposed actions; CZMA correspondence is included in **Appendix C**. The USAF has initiated additional correspondence regarding this Revised Draft EIS with CNMI CRMO to ensure compliance with the CZMA.

4.10.1 Alternative 1 - Modified Saipan Alternative

4.10.1.1 Construction Phase

LAND USE AND OWNERSHIP

No impacts on land use or land ownership would be expected during construction under Alternative 1 at Saipan International Airport or the Port of Saipan.

Saipan International Airport. Construction of the parking apron, hydrant system, cargo pad, maintenance facility, and fuel tanks at the Saipan International Airport would occur on lands managed by the CPA and designated as Industrial by the CNMI Zoning Board. According to Article 4 of the Saipan Zoning Law of 2013, the proposed activities at the airport would be consistent with the designated Industrial land use (CNMI Zoning Board 2013). Approved industrial uses include Airport and Wholesale Gas and Fuel. The Airport designation includes "any public or privately owned or operated ground facility designed to accommodate landing and take-off operations of general aircraft." The Wholesale Gas and Fuel designation includes "the use of land for bulk storage and wholesale distribution of 2,500 or more gallons of flammable liquid…" All of the proposed construction activities would be consistent with stipulations of the Saipan Zoning Law, and no impacts on land use would be anticipated.

Alternative 1 at Saipan International Airport would also be consistent with the *2002 Saipan Airport Master Plan*. The proposed construction is consistent with the development plans outlined in the plan and would not preclude future development at the airport. No impacts would be anticipated.

Further, the USAF would obtain the necessary authority or minimum property interest necessary to construct the facilities on public lands and would maintain some of the facilities as common-use facilities for use by the CPA and other airport users. Therefore, no impacts on land use or land ownership would be expected from implementation of Alternative 1 at Saipan International Airport.

Port of Saipan. Construction of the fuel tanks at the Port of Saipan would occur on lands that have been zoned by the CNMI Zoning Board as Industrial according to the Saipan Zoning Law of 2013. The Industrial designation includes an approved use for Seaport, which includes bulk fuel storage as a designated use. The proposed fuel tank location is adjacent to existing bulk fuel storage facilities at the port. The proposed activities at the port would be consistent with the designated Industrial use. No impacts on land use or land ownership would be expected from construction or operation of the fuel tanks at the Port of Saipan.

Coastal Zone and Submerged Lands

Construction at the Port of Saipan would occur within the Port and Industrial APC; therefore, negligible, adverse impacts on APCs on Saipan would be anticipated. The USAF prepared a coastal zone consistency determination for the proposed project and it was submitted with the 2012 Draft EIS. Pursuant to 15 CFR Part 930.35(c), since the CNMI CRMO did not respond to the ND within 60 days, the CNMI CRMO concurrence with the ND was presumed. **Appendix C** contains the consistency determination correspondence. The USAF has initiated additional correspondence regarding this Revised Draft EIS with CNMI CRMO to ensure compliance with the CZMA. Analysis on the coastal zone is provided in **Section 4.10**.

4.10.1.2 Implementation Phase

Long-term, direct, negligible, adverse impacts on land use or land ownership would be expected from implementation of Alternative 1 on Saipan as a result of increased noise levels due to aircraft operations. See **Section 4.1.1** for more information on the noise analysis.

Figure 4.10-1 presents noise levels on the most current zoning map at Saipan International Airport. Under this scenario, the contours above 65 dBA DNL would occur entirely on airport property. Small portions of the 65 dBA DNL contour would extend over the rural zoning district which contains undeveloped land. There are approximately zero to three residences within the rural zoning district of the 65 dBA DNL contour. Therefore, it is assumed that a population of less than 12 would be exposed to the 65 dBA noise level on Saipan.

Noise levels were calculated for noise-sensitive locations around Saipan International Airport. Most of the population around the airport is north of Saipan International Airport. As shown in **Table 4.10-1**, there are numerous noise-sensitive land uses around Saipan International Airport including residences, schools, and recreation areas. Portions of the Coral Ocean Point Golf Course are within the 60 dBA DNL contour, which is a slight increase from 58 dBA DNL existing background levels.

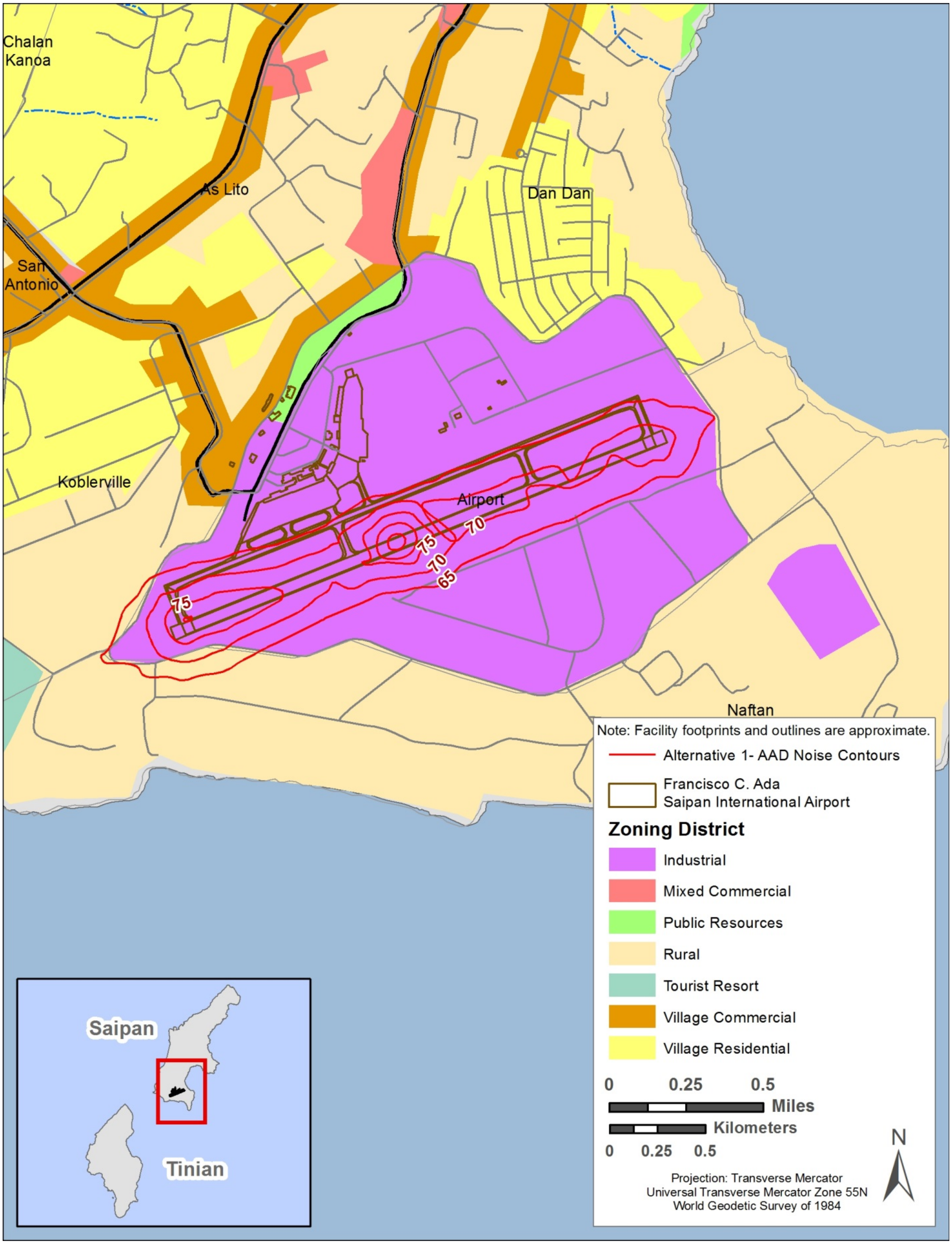


Figure 4.10-1. Alternative 1 Noise Contours on the Saipan International Airport Zoning Map

Table 4.10-1. Alternative 1 Noise Levels at Noise-Sensitive Locations around Saipan International Airport

Land Use	DNL Noise Level
Coral Ocean Point Golf Course	60 dBA
Dandan Elementary School	44 dBA
Village Residential	54 dBA
Koblerville Elementary School	48 dBA
Saipan Southern High School	48 dBA
Lao Lao Bay Golf Course	37 dBA
Ladder Beach	55 dBA
Forbidden Island	46 dBA
Babui Beach on Tinian	47 dBA

Source: HDR

According to a DOD policy memorandum published in 2009, populations exposed to noise greater than 80 dBA DNL are at the greatest risk of hearing loss (DOD 2009). To assess the effects on mental and physical health, populations that would be impacted by the noise under the Proposed Action were evaluated. There are no schools that would be exposed to noise levels at or above 65 dBA DNL and, therefore, no impacts on children's health or learning would be expected. Additionally, none of the locations surrounding Saipan International Airport (see **Table 4.10-1**) would be within or above 65 dBA DNL. Hearing loss is unlikely to occur. Since the average person spends the majority of their time indoors, they would be exposed to lower noise levels due to the noise attenuation provided by the building (i.e., house, school, etc.).

Consequently, extensive mental and physical health effects are not expected. No impacts on land use are expected under Alternative 1.

As previously discussed in **Section 3.1**, DNL represents the energy average of the noise events that occur during a prescribed time period; it is not the sound level heard at any given time. As a result, single-event noise levels are also given to show the maximum noise level that is estimated to be heard. Single sound events for aircraft noise are measured using the sound exposure level (SEL) metric. SEL is a measure of the total sound exposure of an event compressed into a 1-second time interval. Thus, it takes in the sound energy of the event and represents it as a steady noise level that lasts for 1 second. The SEL metric represents the sound of an aircraft flyover. Under the Proposed Action, the KC-135 produces 46 dBA SEL during departure when it is 200 feet off the ground. Overall, arrivals tend to be quieter than departures due to varying speeds, altitudes, and distances.

4.10.2 Alternative 2 - Modified Tinian Alternative

4.10.2.1 Construction Phase

4.10.2.1.1 North Option

LAND USE AND OWNERSHIP

Minor, direct, adverse impacts on land use or land ownership would be expected from construction of the Alternative 2, North Option at Tinian International Airport or the Port of Tinian.

Tinian International Airport. Construction of the parking apron, cargo pad, maintenance facility, access road, fire water system, fuel pumps, fill stands, hydrant system, and fuel tanks at the Tinian International Airport would occur on lands managed by the CPA and designated as urban/built-up by the CNMI DPL. All of the proposed construction activities would be consistent with this designated Industrial land use and no impacts on land use would be anticipated.

The USAF would obtain the necessary authority or minimum property interest necessary to construct the facilities on public lands and would maintain some of the facilities as common-use facilities for use by the CPA and other airport users. Therefore, no impacts on land use or land ownership would be expected from implementation of Alternative 2 at Tinian International Airport.

Port of Tinian. Construction of the fuel tanks at the Port of Tinian would occur on lands currently owned and operated by the CPA and designated as undeveloped/site in natural state and urban/built-up by the CNMI DPL. The proposed activities at the port would be consistent with the designated land use. No impacts on land use or land ownership would be expected from construction or operation of the fuel tanks at the Port of Tinian.

COASTAL ZONE AND SUBMERGED LANDS

The USAF would be required to apply for a Coastal Resources Management (CRM) permit for all actions that occur wholly or partially within an APC. Construction at Tinian International Airport would not occur within any designated APCs; therefore, a CRM permit would not be required for this portion of construction. Construction at the Port of Tinian would occur within the Port and Industrial APC and the Shoreline APC. Therefore, the USAF will prepare a CRM permit for this portion of construction. Pending completion of this permit and implementation of any potential BMPs identified in the permit, minor, adverse impacts on APCs on Tinian would be anticipated.

The USAF has prepared a coastal zone consistency determination for the proposed project and it was submitted with the 2012 Draft EIS. Pursuant to 15 CFR Part 930.35(c), since the CNMI Coastal Resources Management Office (CRMO) did not respond to the ND within 60 days, the CNMI CRMO concurrence with the ND was presumed. **Appendix C** contains the consistency determination correspondence. The USAF has initiated additional correspondence regarding this Revised Draft EIS with CNMI CRMO to ensure compliance with the CZMA.

4.10.2.1.2 South Option

LAND USE AND OWNERSHIP

Under Alternative 2 South Option, the construction footprint would be less than that described under the North Option. No impacts would be expected on Tinian International Airport. Minor, direct, adverse impacts on land use or land ownership would be expected from construction of Alternative 2 South Option at the Port of Tinian.

Tinian International Airport. Construction of the parking apron, maintenance facility, access road, fire water system, fuel pumps, fill stands, hydrant system, and fuel tanks at Tinian International Airport would occur on lands managed by the CPA and designated as urban/built-up by the CNMI DPL. All of the proposed construction activities would be consistent with this designated Industrial land use and no impacts on land use would be anticipated.

The USAF would obtain the necessary authority or minimum property interest necessary to construct the facilities on public lands and would maintain some of the facilities as common-use facilities for use by the CPA and other airport users. Therefore, no impacts on land use or land ownership would be expected from construction under Alternative 2 South.

Port of Tinian. Construction of the fuel tanks at the Port of Tinian would occur on lands currently owned and operated by the CPA and designated as undeveloped/site in natural state and urban/built-up by the CNMI DPL. The proposed activities at the port would be consistent with the designated land use. No significant impacts on land use or land ownership would be expected from construction or operation of the fuel tanks at the Port of Tinian.

Coastal Zone and Submerged Lands

The USAF would be required to apply for a CRM permit for all actions that occur wholly or partially within an APC. Construction at Tinian International Airport would not occur within any designated APCs; therefore, a CRM permit would not be required for this portion of construction. Construction at the Port of Tinian would occur within the Port and Industrial APC and the Shoreline APC. Therefore, the USAF will prepare a CRM permit for this portion of construction. Pending completion of this permit and implementation of any potential BMPs identified in the permit, minor, adverse impacts on APCs on Tinian would be anticipated.

The USAF has prepared a coastal zone consistency determination for the proposed project and it was submitted with the 2012 Draft EIS. Pursuant to 15 CFR Part 930.35(c), since the CNMI CRMO did not respond to the ND within 60 days, the CNMI CRMO concurrence with the ND was presumed. **Appendix C** contains the consistency determination correspondence. The USAF has initiated additional correspondence regarding this Revised Draft EIS with CNMI CRMO to ensure compliance with the CZMA.

4.10.2.2 Implementation Phase - North and South Options

Long-term, direct, negligible, adverse impacts on land use or land ownership would be expected from implementation of Alternative 2 on Tinian as a result of increased noise levels due to aircraft operations. See **Section 4.1.2** for more information on the noise analysis.

Figure 4.10-2 presents the Alternative 2 noise analysis at Tinian International Airport on the most current land use map. Under Alternative 2, the 65 dBA DNL contour would occur entirely on airport property. Therefore, existing residences and population on Tinian would not be exposed to these noise levels.

Noise levels were calculated for noise-sensitive locations around Tinian International Airport. Since the land north of the airport is leased for military use, the areas on Tinian that are sensitive to noise are south of Tinian International Airport. As shown in **Table 4.10-2**, the residential areas, Marpo Heights and private land, and the Old San Jose Bell Tower would be exposed to very low noise levels from aircraft operations under Alternative 2. As discussed in **Section 3.1.1**, noise levels below 45 dBA DNL are well below the typical ambient levels in a quiet suburban area. Therefore, no significant impacts on land use are expected under Alternative 2.

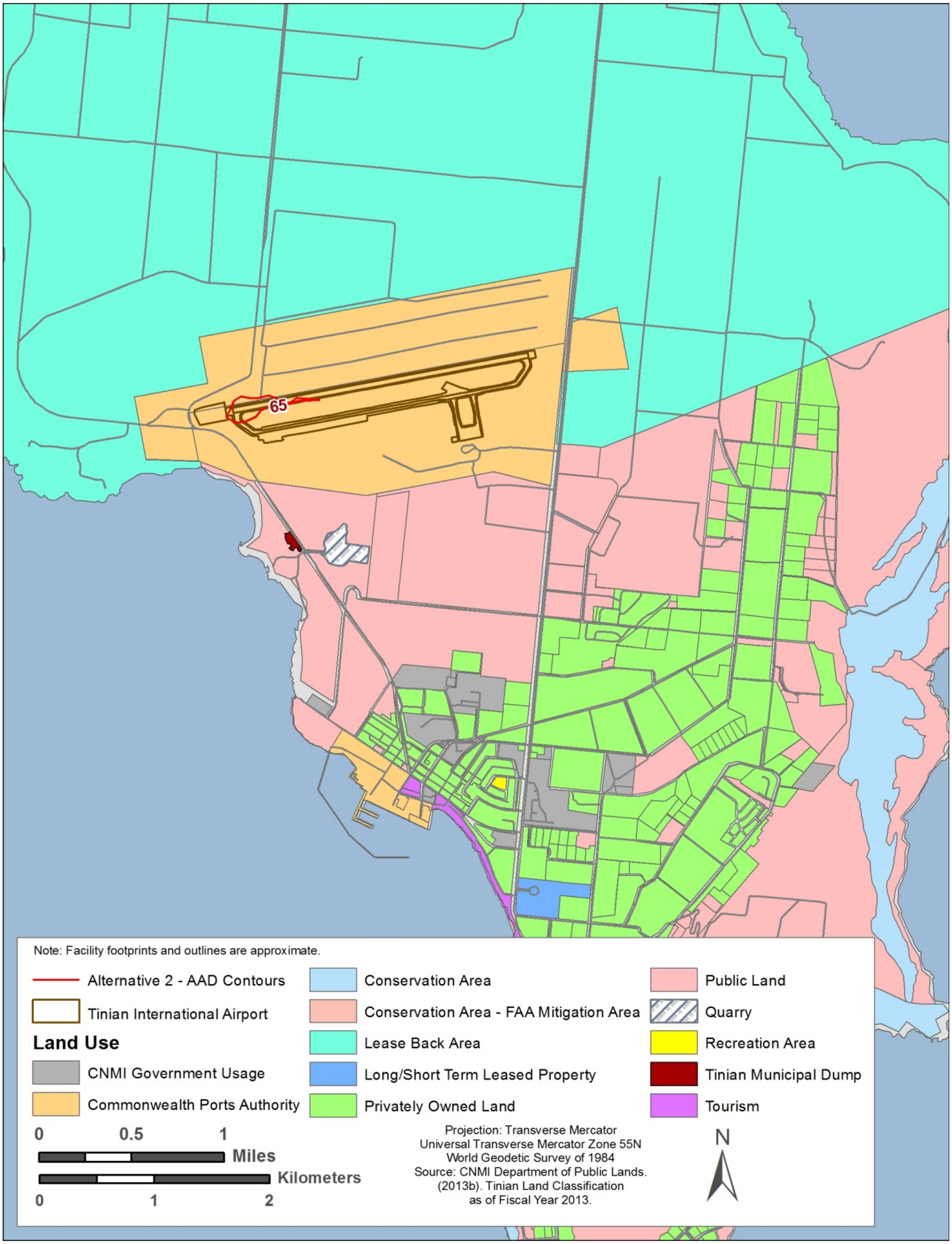


Figure 4.10-2. Alternative 2 Noise Contours on the Tinian International Airport Land Use Map

Table 4.10-2. Alternative 2 Noise Levels at Noise-Sensitive Locations around Tinian International Airport

Land Use	DNL Noise Level
Marpo Heights–Residential	< 45 dBA
Private Land	< 45 dBA
Old San Jose Bell Tower	< 45 dBA

Source: HDR

4.10.3 Alternative 3 – Hybrid Modified Alternative

4.10.3.1 Construction Phase

4.10.3.1.1 Saipan

Under Alternative 3 on Saipan, the construction footprint would be less than that described under Alternative 1 in **Section 4.1.1.1**. Therefore, no impacts on land use or land ownership would be expected during construction of Alternative 3 at Saipan International Airport or the Port of Saipan.

Saipan International Airport. Construction of the cargo pad, maintenance facility, and fuel tanks at Saipan International Airport would occur on lands managed by the CPA and designated as Industrial by the CNMI Zoning Board. The proposed activities at the airport would be consistent with the designated Industrial land use (CNMI Zoning Board 2013). Approved industrial uses include Airport and Wholesale Gas and Fuel. The Airport designation includes "any public or privately owned or operated ground facility designed to accommodate landing and take-off operations of general aircraft." The Wholesale Gas and Fuel designation includes "the use of land for bulk storage and wholesale distribution of 2,500 or more gallons of flammable liquid…" All of the proposed construction activities would be consistent with stipulations of the Saipan Zoning Law, and no impacts on land use would be anticipated.

Alternative 3 at Saipan International Airport would also be consistent with the *2002 Saipan Airport Master Plan*. The proposed construction is consistent with the development plans outlined in the plan and would not preclude future development at the airport. No impacts would be anticipated.

Further, the USAF would obtain the necessary authority or minimum property interest necessary to construct the facilities on public lands and would maintain some of the facilities as common-use facilities for use by the CPA and other airport users. Therefore, no impacts on land use or land ownership would be expected from implementation of Alternative 3 at Saipan International Airport.

COASTAL ZONE AND SUBMERGED LANDS

No construction would occur at the Port of Saipan under Alternative 3; therefore, no impacts on APCs on Saipan would be expected.

4.10.3.1.2 Tinian

4.10.3.1.2.1 NORTH OPTION

LAND USE AND OWNERSHIP

Under Alternative 3 Tinian North Option, the construction footprint would be less than that described under Alternative 2, Modified Tinian in **Section 4.1.2.1**. Therefore, minor, direct, adverse impacts on land use or land ownership would be expected from construction of the Alternative 2, North Option at Tinian International Airport or the Port of Tinian.

Tinian International Airport. Construction of the parking apron, cargo pad, maintenance facility, access road, fire water system, fuel pumps, fill stands, hydrant system, and fuel tanks at Tinian International Airport would occur on lands managed by the CPA and designated as urban/built-up by the CNMI DPL. All of the proposed construction activities would be consistent with this designated Industrial land use and no impacts on land use would be anticipated.

The USAF would obtain the necessary authority or minimum property interest necessary to construct the facilities on public lands and would maintain some of the facilities as common-use facilities for use by the CPA and other airport users. Therefore, no significant impacts on land use or land ownership would be expected from implementation of Alternative 3 at Tinian International Airport.

Port of Tinian. Construction of the fuel tanks at the Port of Tinian would occur on lands currently owned and operated by the CPA and designated as undeveloped/site in natural state and urban/built-up by the CNMI DPL. The proposed activities at the port would be consistent with the designated land use. No impacts on land use or land ownership would be expected from construction or operation of the fuel tanks at the Port of Tinian.

COASTAL ZONE AND SUBMERGED LANDS

The USAF would be required to apply for a CRM permit for all actions that occur wholly or partially within an APC. Construction at Tinian International Airport would not occur within any designated APCs; therefore, a CRM permit would not be required for this portion of construction. Construction at the Port of Tinian would occur within the Port and Industrial APC and the Shoreline APC. Therefore, the USAF will prepare a CRM permit for this portion of construction. Pending completion of this permit and implementation of any potential BMPs identified in the permit, minor, adverse impacts on APCs on Tinian would be anticipated.

The USAF has prepared a coastal zone consistency determination for the proposed project and it was submitted with the 2012 Draft EIS. Pursuant to 15 CFR Part 930.35(c), since the CNMI Coastal Resources Management Office (CRMO) did not respond to the ND within 60 days, the CNMI CRMO concurrence with the ND was presumed. **Appendix C** contains the consistency determination correspondence. The USAF has initiated additional correspondence regarding this Revised Draft EIS with CNMI CRMO to ensure compliance with the CZMA.

4.10.3.1.2.2 SOUTH OPTION

LAND USE AND OWNERSHIP

Under the Alternative 3 Tinian South Option, the construction footprint would be less than that described under Alternative 2 in **Section 4.1.2.1**. Therefore, minor, direct, adverse impacts on land use or land ownership would be expected from construction of the Alternative 2, South Option at Tinian International Airport or the Port of Tinian.

Tinian International Airport. Construction of the parking apron, cargo pad, maintenance facility, access road, fire water system, fuel pumps, fill stands, hydrant system, and fuel tanks at the Tinian International Airport would occur on lands managed by the CPA and designated as urban/built-up by the CNMI DPL. All of the proposed construction activities would be consistent with this designated Industrial land use and no impacts on land use would be anticipated.

The USAF would obtain the necessary authority or minimum property interest necessary to construct the facilities on public lands and would maintain some of the facilities as common-use facilities for use by the CPA and other airport users. Therefore, no significant impacts on land use or land ownership would be expected from implementation of Alternative 3 at Tinian International Airport.

Port of Tinian. Construction of the fuel tanks at the Port of Tinian would occur on lands currently owned and operated by the CPA and designated as undeveloped/site in natural state and urban/built-up by the CNMI DPL. The proposed activities at the port would be consistent with the designated land use. No impacts on land use or land ownership would be expected from construction or operation of the fuel tanks at the Port of Tinian.

Coastal Zone and Submerged Lands

The USAF would be required to apply for a CRM permit for all actions that occur wholly or partially within an APC. Construction at Tinian International Airport would not occur within any designated APCs; therefore, a CRM permit would not be required for this portion of construction. Construction at the Port of Tinian would occur within the Port and Industrial APC and the Shoreline APC. Therefore, the USAF will prepare a CRM permit for this portion of construction. Pending completion of this permit and implementation of any potential BMPs identified in the permit, minor, adverse impacts on APCs on Tinian would be anticipated.

The USAF has prepared a coastal zone consistency determination for the proposed project and it was submitted with the 2012 Draft EIS. Pursuant to 15 CFR Part 930.35(c), since the CNMI CRMO did not respond to the ND within 60 days, the CNMI CRMO concurrence with the ND was presumed. **Appendix C** contains the consistency determination correspondence. The USAF has initiated additional correspondence regarding this Revised Draft EIS with CNMI CRMO to ensure compliance with the CZMA.

4.10.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts would be to land use would occur on both islands.

4.10.3.2.1 Saipan

Under Alternative 3 Saipan, the same number of aircraft operations could occur as described under Alternative 1. Therefore, long-term, direct, negligible, adverse impacts on land use or land ownership would be expected from implementation of Alternative 3 on Saipan as a result of increased noise levels due to aircraft operations. See **Section 4.1.1** for more information on the noise analysis.

Figure 4.10-1 presents noise levels on the most current zoning map at Saipan International Airport. Under this scenario, the contours above 65 dBA DNL would occur entirely on airport property. Small portions of the 65 dBA DNL contour would extend over the rural zoning district which contains undeveloped land. There are approximately zero to three residences within the rural zoning district of the 65 dBA DNL contour. Therefore, it is assumed that a population of less than 12 would be exposed to the 65 dBA noise level on Saipan.

Noise levels were calculated for noise-sensitive locations around Saipan International Airport. Most of the population around the airport is north of Saipan International Airport. As shown in **Table 4.10-1**, there are numerous noise-sensitive land uses around Saipan International Airport including residences, schools, and recreation areas. Portions of the Coral Ocean Point Golf Course are within the 60 dBA DNL contour, which is an increase from 58 dBA DNL.

According to a DOD policy memorandum published in 2009, populations exposed to noise greater than 80 dBA DNL are at the greatest risk of hearing loss (DOD 2009). To assess the effects on mental and physical health, populations that would be impacted by the noise under Alternative 3 were evaluated. There are no schools that would be exposed to noise levels at or above 65 dBA DNL and, therefore, no impacts on children's health or learning would be expected. Additionally, none of the locations surrounding Saipan International Airport (see **Table 4.10-1**) are within or above 65 dBA DNL. Hearing loss is unlikely to occur. Since the average person spends the majority of their time indoors, they would be exposed to lower noise levels due to the noise attenuation provided by the house. Consequently, extensive mental and physical health effects are not expected. The KC-135 produces 46dBA SEL during departure when they are 200 feet off the ground. No significant impacts on land use are expected under Alternative 3 Saipan.

Table 4-10.2 shows the varying peak noise levels from the aircraft that were modeled under Alternative 3. The table also shows the KC-135 during departures and arrivals at varying speeds, altitudes, and distances to illustrate how the changes in aircraft profiles affect the noise levels. Overall, arrivals tend to be quieter than departures.

4.10.3.2.2 Tinian North and South Options

Under Alternative 3 at Tinian, the same number of aircraft operations could occur as described under Alternative 2. Therefore, long-term, direct, negligible, adverse impacts on land use or land ownership would be expected from implementation of Alternative 3 on Tinian as a result of increased noise levels due to aircraft operations. See **Section 4.1.2** for more information on the noise analysis.

Figure 4.10-2 presents the Alternative 3 noise analysis at Tinian International Airport on the most current land use map. Under Alternative 3, the 65 dBA DNL contour would occur entirely on airport property. Therefore, existing residences and population on Tinian would not be exposed to these noise levels.

Noise levels were calculated for noise-sensitive locations around Tinian International Airport. Since the land north of the airport is leased for military use, the areas on Tinian that are sensitive to noise are south of Tinian International Airport. As shown in **Table 4.10-2**, the residential areas, Marpo Heights and private land, and the Old San Jose Bell Tower would be exposed to very low noise levels from aircraft operations under Alternative 2. As discussed in **Section 3.1.1**, noise levels below 45 dBA DNL are well below the typical ambient levels in a quiet suburban area. Therefore, no impacts on land use are expected under Alternative 3.

4.10.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Section 3.1.3** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with *36th Wing Instruction 13-204, Airfield Operations Instructions*, planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on land use would be expected as a result of the No Action Alternative. Land use on Saipan and Tinian would not be impacted by construction activities. The No Action Alternative would result in a continuation of existing conditions.

4.11 Transportation

Various construction and implementation activities that could lead to transportation impacts were evaluated based on traffic volume and existing level of service (LOS). Impacts were considered minor if LOS would not degrade as a result of the additional traffic or if the increase in traffic volume was less than 10 percent. Impacts were considered major if LOS would degrade as a result of the additional traffic and the increase in traffic volumes was greater than 10 percent. Additionally, major impacts could occur with a relatively small traffic volume increase if the existing LOS was “F.” Short-term impacts on the ground transportation network were considered to be those occurring during construction and immediately thereafter (approximately 1- to 4-year timeframe) and long-term impacts were considered to occur and continue starting from approximately 5 years from start of construction.

Several possible activities associated with the Proposed Action could impact the transportation network, including construction, transporting fuel from the seaport, and the movement of personnel during construction and subsequent to implementation of the Proposed Action. The impacts of these activities were qualitatively assessed based on information from the CNMI Comprehensive Master Plan and estimated number of trips generated by the activities associated with the Proposed Action. The impacts discussed in the subsequent sections are identified as direct, adverse impacts unless otherwise noted.

4.11.1 Alternative 1- Modified Saipan Alternative

4.11.1.1 Construction Phase

Short-term, direct, minor, adverse impacts would be expected on the local transportation network in Saipan due to construction under Alternative 1. Transportation impacts during the Construction Phase are limited to traffic added to the existing roadway network as a result of construction activities at Saipan International Airport and the Port of Saipan. It is estimated that the number of construction workers associated with Alternative 1 would not exceed 500 at any given time. This maximum number of workers would be limited to several months during the 24- to 36-month construction period. Considerably fewer workers would be required during the remaining months. Based on the local construction workforce, it is assumed that all of these workers would be local residents.

It is assumed that the estimated 500 local construction worker residents would carpool and the average vehicle occupancy would be three to four people. It is estimated that 150 trips would be generated in the morning and 150 trips would be generated in the evening, totaling 300 daily trips as a result of local worker travel during the Construction Phase.

In addition to worker travel, construction activities would generate additional traffic resulting from delivery of materials, including concrete, and other miscellaneous trips occurring by inspectors, project managers, and other personnel that might visit the site multiple times a day. The number of trips associated with deliveries and miscellaneous trips was estimated as one round trip for every 25 workers on site. During the peak construction period when 500 workers are on site, this would equate to 40 trips per day. These construction-related trips would be dispersed throughout the day. It is anticipated that the maximum of 40 construction-related trips would occur when concrete is being poured. During that time, concrete mixer trucks would account for approximately 30 of the 40 trips. It is estimated that concrete would be delivered 64 days per year to provide the concrete needed for Alternative 1. For the remaining construction days, it is anticipated that substantially fewer construction-related trips would occur.

Table 4.11-1 summarizes the estimated daily trips expected during the Construction Phase. It should be noted that this is the estimated maximum number of trips expected to occur only for several months during the peak of construction activity.

Table 4.11-1. Estimated Maximum Daily Trips – Alternative 1 Construction Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Local Worker Transport	300	Morning and afternoon
Miscellaneous Trips	40	All day
Total Additional Trips per Day	**340**	

Source: HDR 2012

The daily trips generated during the Construction Phase have the potential to impact the existing transportation network in two ways: by increasing congestion and delay on local roadways, thereby reducing LOS, and by causing additional stress on roadway surfaces resulting in deterioration (e.g., rutting, cracking, pavement breakup) of the driving surface.

While the transportation network of Saipan is rather limited, it is assumed that the local traffic generated by construction activities would be distributed, preventing major impact on any one roadway. Thus, it is anticipated that additional traffic generated during the Construction Phase would result in only minor increases in delay and no changes to existing LOS. One roadway segment to note is Isa Drive north of Chalan Monsignor Gurerrero. This segment currently operates at LOS D with an ADT of 7,530 vehicles. Capacity of this segment is 10,000 vehicles per day (CNMI DPW 2009). If all construction-generated trips used Isa Drive, vehicular delay would increase, but the segment LOS would not change because the delay increase would not be enough to degrade the LOS. Traffic operations impacts could be lessened by requiring construction activities to begin and end outside of peak travel periods.

According to the CNMI Comprehensive Highway Master Plan, current traffic operations on some roadway segments on the island are at or exceed capacity based on a daily volume analysis. Traffic operations along these segments might be poor during peak periods and poor operations can cause extended peak periods, but failing LOS does not typically mean that the facility is operating poorly during all hours of the day. It is estimated that more than half of the trips generated by Alternative 1 would occur outside of typical peak hours.

Roadway surfaces have a limited lifespan and deteriorate incrementally over time. The amount of deterioration is in part a function of the materials used to construct the roadway, the amount of vehicular traffic, and the mix of vehicles (trucks vs. cars). The additional vehicular traffic during the Construction Phase, specifically truck traffic resulting from deliveries, would likely increase the normal deterioration of the roadways in the vicinity of the project area. For roadways that currently carry 20,000 vehicles per day or more, the deterioration would be minor since the additional traffic (at peak construction) would be less than 2 percent of the existing volume. For roadways that carry less than 20,000 vehicles per day, the deterioration would be slightly more pronounced because the additional traffic would be close to a 5 percent increase over the existing volume. Although deterioration is expected to varying degrees, it is not possible to estimate the extent of the deterioration because current pavement condition and the existing vehicle mix are unknown.

To help prevent potential roadway deterioration, the roadways that would be used for construction could be repaired, overlaid, and reinforced as needed to accommodate the additional traffic prior to the start of substantial construction activities. These routes could also be repaired and overlaid as needed upon completion of construction to restore the pavement condition to pre-construction levels.

Indirect impacts could occur on corridors not directly impacted by the worker routes as a result of existing congestion. Some traffic operation impacts could be lessened by requiring a majority of the worker transport activities to occur outside of peak periods.

4.11.1.2 Implementation Phase

Minor, direct, adverse impacts would be expected on the local transportation network in Saipan under the Alternative 1 Implementation Phase. These impacts are expected on a long-term basis, but would only occur periodically (e.g., 3 weeks at a time) during planned military exercises. Transportation impacts as a result of the Implementation Phase include fuel truck traffic, daily transport of personnel, and miscellaneous trips, including deliveries to and from Saipan International Airport as a result of Alternative 1. Fuel tanks at the airport would be filled from the fuel tanks constructed at the seaport. It is anticipated that 6 fuel trucks (10,000 gallon capacity) making 5 round trips to and from the seaport each day for 14 days would be necessary to fill the new tank. This would result in 60 additional daily trips. During exercises, it is anticipated the same amount of fuel truck traffic would be necessary to maintain adequate fuel storage at Saipan International Airport. The proposed truck route is shown in **Figure 3.11-1** in **Section 3.11**.

Temporary lodging for up to 265 personnel would be required to support Alternative 1. Buses would be used to transport personnel to and from Saipan International Airport during the Implementation Phase. Assuming 50 people per bus, approximately 6 round trips would be required to transport personnel. It is assumed that this would generate 24 daily trips (6 round trips in the morning and 6 round trips in the afternoon). The proposed bus route would follow the same route outlined for the fuel trucks destined for the seaport: Chalan Pale Arnold, Chalan Monsignor Guerrero, Tun Herman Pan, and Airport Road (see **Figure 3.11-1** in **Section 3.11**).

In addition to trips associated with fuel delivery and personnel travel, miscellaneous trips are expected to occur for deliveries and other activities associated with Alternative 1. It is assumed that one additional round trip would be generated for every 50 personnel. This would equate to approximately 10 additional trips per day.

Table 4.11-2 summarizes the estimated daily trips expected during implementation.

Table 4.11-2. Estimated Maximum Daily Trips – Alternative 1 Implementation Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Fuel Truck Trips	60	All day
Personnel Transport	24	Morning and afternoon
Miscellaneous Trips	10	All day
Total Additional Trips per Day	**94**	

Source: HDR 2012

The daily trips generated during the Implementation Phase have the potential to impact the existing transportation network in two ways: by increasing congestion and delay on local roadways, thereby reducing LOS, and by causing additional stress on roadway surfaces resulting in deterioration (e.g., rutting, cracking, pavement breakup) of the driving surface.

According to the CNMI Comprehensive Highway Master Plan current traffic operations on some roadway segments on the island are at or exceed capacity based on a daily volume analysis. Traffic operations along these segments might be poor during peak periods and poor operations can cause extended peak periods, but failing LOS does not typically mean that the facility is operating poorly during all hours of the day. It is estimated that more than half of the trips generated by Alternative 1 will occur outside of typical peak hours.

Traffic congestion is of concern for one segment of the proposed fuel truck route, Beach Road. Beach Road carries the highest volume of traffic in the vicinity of the project area and is currently experiencing some congestion issues. Based on the analysis conducted for the CNMI Comprehensive Master Plan, the ADT capacity for this segment is 30,000 vehicles per day and the existing estimated ADT is 39,890 vehicles per day, almost 10,000 vehicles more than capacity. At this LOS, relatively minor increases in traffic can cause major impacts on current traffic operations. The total traffic generated as a result of the Alternative 1 is less than 0.25 percent of the daily traffic on Beach Road and less than half of those trips would use Beach Road. Therefore, it is anticipated that delay and congestion impacts on Beach Road related to Alternative 1 would be intermittent short-term, minor, and adverse.

Based on repairing, overlaying, or reinforcing the roadway surfaces prior to the Construction Phase, it is assumed that the pavement on the proposed fuel truck route would be adequate to handle additional truck and bus traffic resulting from implementation with negligible roadway deterioration.

4.11.2 Alternative 2- Modified Tinian Alternative

4.11.2.1 Construction Phase

4.11.2.1.1 North Option

Short-term, minor, direct, adverse impacts would be expected on the local transportation network in Tinian due to construction under Alternative 2 North Option. Transportation impacts during the Construction Phase are limited to traffic added to the existing roadway network as a result of construction, including the reroute of 8th Avenue. It is estimated that the number of construction workers associated with Alternative 2 North Option would not exceed 750 at any given time. This maximum number of workers would be limited to several months during the 24- to 36-month construction period. Considerably fewer workers would be required during the remaining months. Based on the limited local construction workforce, it is assumed that 85 percent of these workers would not be local Tinian residents.

It is assumed that the estimated 100 local residents would carpool and the average vehicle occupancy would be three to four people. It is estimated that 30 trips would be generated in the morning and 30 trips would be generated in the evening, totaling 60 daily trips as a result of local worker travel during the Construction Phase.

Non-local workers would most likely be housed at the Tinian Dynasty Hotel and Casino (located adjacent to the Tinian Harbor) or the Fleming Hotel. Buses would be used to transport the workers to and from the Tinian Dynasty Hotel and Casino via Broadway during the Construction Phase (see **Figure 2.4-6**). If lodging for all the workers were provided at the Tinian Dynasty Hotel and Casino and assuming 50 people per bus, approximately 26 round trips (13 round trips in the morning and 13 round trips in the afternoon) would be required to transport the non-resident workers, totaling 52 daily trips. It is assumed that a majority of the workers would remain on site for all breaks.

In addition to worker travel, construction activities would generate additional traffic resulting from delivery of materials including concrete and other miscellaneous trips occurring by inspectors, project managers, and other personnel that visit the site multiple times a day. The number of trips associated with deliveries and miscellaneous trips was estimated as one round trip for every 25 workers on site. During the peak construction period when 750 workers are on site, this would equate to 30 trips per day. These construction-related trips would be dispersed throughout the day. It is anticipated that the maximum of 30 construction-related trips would occur when concrete is being poured. During that time, concrete mixer trucks would account for approximately 25 of the 30 trips. It is estimated that concrete would be delivered approximately 274 days per year to provide the concrete for the Tinian North Option. For the remaining construction days it is anticipated that substantially fewer construction-related trips would occur.

Table 4.11-3 summarizes the estimated daily trips expected during the Construction Phase. It should be noted that this is the estimated maximum number of trips expected to occur only for several months during the peak of construction activity.

Table 4.11-3. Estimated Maximum Daily Trips – Alternative 2 North Option Construction Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Local Worker Transport	60	Morning and afternoon
Non-Local Worker Transport	52	Morning and afternoon
Miscellaneous Trips	30	All day
Total Additional Trips per Day	**142**	

Source: HDR 2012

The daily trips generated during the Construction Phase have the potential to impact the existing transportation network in two ways: by increasing congestion and delay on local roadways, thereby reducing LOS and by causing additional stress on roadway surfaces resulting in deterioration (e.g., rutting, cracking, pavement breakup) of the driving surface.

The proposed bus route to transport non-local workers would use Broadway. Broadway currently operates at LOS A with an ADT of 1,470 vehicles. Capacity of this segment is 8,000 vehicles per day (CNMI DPW 2009). If all construction-generated trips used Broadway, vehicular delay would increase, but the segment LOS would not change because the delay increase would not be enough to degrade the LOS.

Under this alternative the USAF proposes to reroute 8th Avenue. Traffic along 8th Avenue would be maintained during construction of the relocated 8th Avenue. Minor impacts would be expected for a few days when the existing 8th Avenue route is decommissioned and routed onto the relocated roadway section.

Roadway surfaces have a limited lifespan and deteriorate incrementally over time. The amount of deterioration is in part a function of the materials used to construct the roadway, the amount of vehicular traffic, and the mix of vehicles (trucks vs. cars). The additional vehicular traffic during the Construction Phase, specifically truck traffic resulting from deliveries, would likely increase the normal deterioration of the roadways in the vicinity of the project area. Although deterioration is expected to varying degrees, it is not possible to estimate the extent of the deterioration because current pavement condition and the existing vehicle mix are unknown.

To help prevent potential roadway deterioration, the roadways that would be used for construction could be repaired, overlaid, and reinforced as needed to accommodate the additional traffic prior to the start of substantial construction activities. Additionally, these routes would be repaired and overlaid as needed upon completion of construction to restore the pavement condition to pre-construction levels.

4.11.2.1.2 South Option

Short-term, minor, direct, adverse impacts would be expected on the local transportation network in Tinian due to construction under Alternative 2 South Option. Transportation impacts during the Construction Phase are limited to traffic added to the existing roadway network as a result of construction. It is estimated that the number of construction workers associated with the Alternative 2 South Option would not exceed 500 at any given time for the South Option. This maximum number of workers would be limited to several months during the 24- to 36-month construction period. Considerably fewer workers would be required during the remaining months. Based on the limited local construction workforce, it is assumed that 80 percent of these workers would not be local Tinian residents.

It is assumed that the estimated 100 local residents would carpool and the average vehicle occupancy would be three to four people. It is estimated that 30 trips would be generated in the morning and 30 trips would be generated in the evening, totaling 60 daily trips as a result of local worker travel during the Construction Phase.

Non-local workers would most likely be housed at the Tinian Dynasty Hotel and Casino (located adjacent to the Tinian Harbor) or the Fleming Hotel. Buses would be used to transport the workers to and from the Tinian Dynasty Hotel and Casino via Broadway during the Construction Phase (see **Figure 2.4-6**). If lodging for all the workers were provided at the Tinian Dynasty Hotel and Casino and assuming 50 people per bus, approximately 16 round trips (8 round trips in the morning and 8 round trips in the afternoon) would be required to transport the non-resident workers, totaling 32 daily trips. It is assumed that a majority of the workers would remain on site for all breaks.

In addition to worker travel, construction activities would generate additional traffic resulting from delivery of materials including concrete and other miscellaneous trips occurring by inspectors, project managers, and other personnel that visit the site multiple times a day. The number of trips associated with deliveries and miscellaneous trips was estimated as one round trip for every 25 workers on site. During the peak construction period when 500 workers are on site, this would equate to 20 trips per day. These construction-related trips would be dispersed throughout the day. It is anticipated that the maximum of 20 construction-related trips would occur when concrete is being poured. During that time, concrete mixer trucks would account for approximately 17 of the 20 trips. It is estimated that concrete would be delivered approximately 254 days per year to provide the concrete for the Tinian South Option. For the remaining construction days it is anticipated that substantially fewer construction-related trips would occur.

Table 4.11-4 summarizes the estimated daily trips expected during the Construction Phase. It should be noted that this is the estimated maximum number of trips expected to occur only for several months during the peak of construction activity.

Table 4.11-4. Estimated Maximum Daily Trips – Alternative 2 South Option Construction Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Local Worker Transport	60	Morning and afternoon
Non-Local Worker Transport	32	Morning and afternoon
Miscellaneous Trips	20	All day
Total Additional Trips per Day	**112**	

Source: HDR 2012

The daily trips generated during the Construction Phase have the potential to impact the existing transportation network in two ways: by increasing congestion and delay on local roadways, thereby reducing LOS and by causing additional stress on roadway surfaces resulting in deterioration (e.g., rutting, cracking, pavement breakup) of the driving surface.

The proposed bus route to transport non-local workers would use Broadway. Broadway currently operates at LOS A with an ADT of 1,470 vehicles. Capacity of this segment is 8,000 vehicles per day (CNMI DPW 2009). If all construction-generated trips used Broadway, vehicular delay would increase, but the segment LOS would not change because the delay increase would not be enough to degrade the LOS.

Roadway surfaces have a limited lifespan and deteriorate incrementally over time. The amount of deterioration is in part a function of the materials used to construct the roadway, the amount of vehicular traffic, and the mix of vehicles (trucks vs. cars). The additional vehicular traffic during the Construction Phase, specifically truck traffic resulting from deliveries, would likely increase the normal deterioration of the roadways in the vicinity of the project area. Although deterioration is expected to varying degrees, it is not possible to estimate the extent of the deterioration because current pavement condition and the existing vehicle mix are unknown.

To help prevent potential roadway deterioration, the roadways that would be used for construction could be repaired, overlaid, and reinforced as needed to accommodate the additional traffic prior to the start of substantial construction activities. Additionally, these routes would be repaired and overlaid as needed upon completion of construction to restore the pavement condition to pre-construction levels.

4.11.2.2 Implementation Phase- North and South Options

Minor, direct, adverse impacts would be expected on the local transportation network in Tinian under the Alternative 2 North and South Options Implementation Phase. These impacts are expected on a long-term basis, but would only occur periodically (e.g., 3 weeks at a time) during planned joint military exercises. Transportation impacts as a result of the Implementation Phase of Alternative 2 include fuel truck traffic and miscellaneous trips including deliveries to and from Tinian International Airport. The fuel tanks at the airport would be filled from the fuel tank constructed at the seaport. It is anticipated that 6 fuel trucks (10,000 gallon capacity) making 5 round trips to and from the seaport each day for 30 days would be necessary to fill the airport tanks. This would result in 60 additional daily trips. During exercises, it is anticipated the same number of fuel truck traffic would be necessary to maintain adequate fuel storage at Tinian International Airport. The proposed truck route is shown in **Figure 2.4-6**.

Temporary lodging for up to 265 personnel would be required to support Alternative 2. Buses would be used to transport personnel to and from Tinian International Airport during the Implementation Phase. Assuming 50 people per bus, approximately 6 round trips would be required to transport personnel. It is assumed that this would generate 24 daily trips (6 round trips in the morning and 6 round trips in the afternoon). The proposed bus route would follow the same route outlined for the fuel trucks destined for the seaport (**Figure 2.4-6**).

In addition to trips associated with fuel delivery, miscellaneous trips are expected to occur for deliveries and other activities associated with Alternative 2. It is assumed that one additional round trip would be generated for every 25 personnel. This would equate to approximately 10 additional trips per day.

Table 4.11-5 summarizes the estimated daily trips expected during implementation.

Table 4.11-5. Estimated Maximum Daily Trips – Alternative 1 Implementation Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Fuel Truck Trips	60	All day
Personnel Transport	24	Morning and afternoon
Miscellaneous Trips	10	All day
Total Additional Trips per Day	**94**	

Source: HDR 2012

According to the CNMI Comprehensive Highway Master Plan current traffic operations on all Tinian roadway segments are LOS A. While proportionally the additional number of trips could be high for some of the roadway segments, all of the Tinian roadway facilities have substantial excess capacity; therefore, minor, direct, adverse impacts are anticipated under Alternative 2.

Based on repairing, overlaying, or reinforcing the roadway surfaces prior to the Construction Phase, it is assumed that the pavement on the proposed fuel truck route would be adequate to handle additional truck traffic resulting from implementation with negligible roadway deterioration.

4.11.3 Alternative 3- Hybrid Modified Alternative

4.11.3.1 Construction Phase

4.11.3.1.1 Saipan

Short-term, direct, negligible, adverse impacts would be expected on the local transportation network in Saipan due to construction under Alternative 3 on Saipan. Transportation impacts during the Construction Phase are limited to traffic added to the existing roadway network as a result of construction activities at Saipan International Airport. There would be no construction at the Port of Saipan. It is estimated that the number of construction workers associated with

Alternative 2 would not exceed 250 at any given time. This maximum number of workers would be limited to several months during the 24- to 36-month construction period. Considerably fewer workers would be required during the remaining months. Based on the local construction workforce, it is assumed that all of these workers would be local residents.

It is assumed that the estimated 250 local construction worker residents would carpool and the average vehicle occupancy would be three to four people. It is estimated that 75 trips would be generated in the morning and 75 trips would be generated in the evening, totaling 150 daily trips as a result of local worker travel during the Construction Phase.

In addition to worker travel, construction activities would generate additional traffic resulting from delivery of materials, including concrete, and other miscellaneous trips occurring by inspectors, project managers, and other personnel that visit the site multiple times a day. The number of trips associated with deliveries and miscellaneous trips was estimated as one round trip for every 25 workers on site. During the peak construction period when 250 workers are on site, this would equate to 20 trips per day. These construction-related trips would be dispersed throughout the day. It is anticipated that the maximum of 20 construction-related trips would occur when concrete is being poured. During that time, concrete mixer trucks would account for approximately 15 of the 20 trips. It is estimated that concrete would be delivered 40 days per year to provide the concrete needed for Alternative 3 on Saipan. For the remaining construction days, it is anticipated that substantially fewer construction-related trips would occur.

Table 4.11-6 summarizes the estimated daily trips expected during the Construction Phase. It should be noted that this is the estimated maximum number of trips expected to occur only for several months during the peak of construction activity.

Table 4.11-6. Estimated Maximum Daily Trips – Alternative 1 Construction Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Local Worker Transport	150	Morning and afternoon
Miscellaneous Trips	20	All day
Total Additional Trips per Day	**170**	

Source: HDR 2012

The daily trips generated during the Construction Phase have the potential to impact the existing transportation network in two ways: by increasing congestion and delay on local roadways, thereby reducing LOS, and by causing additional stress on roadway surfaces resulting in deterioration (e.g., rutting, cracking, pavement breakup) of the driving surface.

While the transportation network of Saipan is rather limited, it is assumed that the local traffic generated by construction activities would be distributed, preventing major impact on any one roadway. Thus, it is anticipated that additional traffic generated during the Construction Phase would result in only negligible increases in delay and no changes to existing LOS. One roadway segment to note is Isa Drive north of Chalan Monsignor Guerrero. This segment currently operates at LOS D with an ADT of 7,530 vehicles. Capacity of this segment is 10,000 vehicles per day (CNMI DPW 2009). If all construction-generated trips used Isa Drive, vehicular delay would increase, but the segment LOS would not change because the delay increase would not be enough to degrade the LOS. Traffic operations impacts could be lessened by requiring construction activities to begin and end outside of peak travel periods.

According to the CNMI Comprehensive Highway Master Plan, current traffic operations on some roadway segments on the island are at or exceed capacity based on a daily volume analysis. Traffic operations along these segments might be poor during peak periods and poor operations can cause extended peak periods, but failing LOS does not typically mean that the facility is operating poorly during all hours of the day. It is estimated that more than half of the trips generated by Alternative 3 would occur outside of typical peak hours.

Roadway surfaces have a limited lifespan and deteriorate incrementally over time. The amount of deterioration is in part a function of the materials used to construct the roadway, the amount of vehicular traffic, and the mix of vehicles (trucks vs. cars). The additional vehicular traffic during the Construction Phase, specifically truck traffic resulting from deliveries, would likely increase the normal deterioration of the roadways in the vicinity of the project area. For roadways that currently carry 20,000 vehicles per day or more, the deterioration would be minor since the additional traffic (at peak construction) would be less than 1 percent of the existing volume. For roadways that carry less than 20,000 vehicles per day, the deterioration would be slightly more pronounced because the additional traffic would close to a 2.5 percent increase over the existing volume. Although deterioration is expected to varying degrees, it is not possible to estimate the extent of the deterioration because current pavement condition and the existing vehicle mix are unknown.

To help prevent potential roadway deterioration, the roadways that would be used for construction could be repaired, overlaid, and reinforced as needed to accommodate the additional traffic prior to the start of substantial construction activities. These routes could also be repaired and overlaid as needed upon completion of construction to restore the pavement condition to pre-construction levels.

Indirect impacts could occur on corridors not directly impacted by the worker bus routes as a result of existing congestion. Some traffic operation impacts could be lessened by requiring a majority of the worker transport activities to occur outside of peak periods.

4.11.3.1.2 Tinian

4.11.3.1.2.1 NORTH OPTION

Short-term, minor, direct, adverse impacts would be expected on the local transportation network in Tinian due to construction under Alternative 3 Tinian North Option. Transportation impacts during the Construction Phase are limited to traffic added to the existing roadway network as a result of construction, including the reroute of 8th Avenue. It is estimated that the number of construction workers associated with Alternative 3 North Option would not exceed 750 at any given time. This maximum number of workers would be limited to several months during the 24- to 36-month construction period. Considerably fewer workers would be required during the remaining months. Based on the limited local construction workforce, it is assumed that 85 percent of these workers would not be local Tinian residents.

It is assumed that the estimated 100 local residents would carpool and the average vehicle occupancy would be three to four people. It is estimated that 30 trips would be generated in the morning and 30 trips would be generated in the evening, totaling 60 daily trips as a result of local worker travel during the Construction Phase.

Non-local workers would most likely be housed at the Tinian Dynasty Hotel and Casino (located adjacent to the Tinian Harbor). Other potential housing options would include the Fleming Hotel. Buses would be used to transport the workers to and from the Tinian Dynasty Hotel and Casino via Broadway during the Construction Phase (see **Figure 2.4-6**). If lodging for all the workers were provided at the Tinian Dynasty Hotel and Casino and assuming 50 people per bus, approximately 26 round trips (13 round trips in the morning and 13 round trips in the afternoon) would be required to transport the non-resident workers, totaling 52 daily trips. It is assumed that a majority of the workers would remain on site for all breaks.

In addition to worker travel, construction activities would generate additional traffic resulting from delivery of materials including concrete and other miscellaneous trips occurring by inspectors, project managers, and other personnel that visit the site multiple times a day. The number of trips associated with deliveries and miscellaneous trips was estimated as one round trip for every 25 workers on site. During the peak construction period when 750 workers are on site, this would equate to 30 trips per day. These construction-related trips would be dispersed throughout the day. It is anticipated that the maximum of 30 construction-related trips would occur when concrete is being poured. During that time, concrete mixer trucks would account for approximately 25 of the 30 trips. It is estimated that concrete would be delivered approximately 217 days per year to provide the concrete for the Tinian North Option. For the remaining construction days it is anticipated that substantially fewer construction-related trips would occur.

Table 4.11-7 summarizes the estimated daily trips expected during the Construction Phase. It should be noted that this is the estimated maximum number of trips expected to occur only for several months during the peak of construction activity.

Table 4.11-7. Estimated Maximum Daily Trips – Alternative 3 Tinian North Option Construction Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Local Worker Transport	60	Morning and afternoon
Non-Local Worker Transport	52	Morning and afternoon
Miscellaneous Trips	30	All day
Total Additional Trips per Day	**142**	

Source: HDR 2012

The daily trips generated during the Construction Phase have the potential to impact the existing transportation network in two ways: by increasing congestion and delay on local roadways, thereby reducing LOS and by causing additional stress on roadway surfaces resulting in deterioration (e.g., rutting, cracking, pavement breakup) of the driving surface.

The proposed bus route to transport non-local workers would use Broadway. Broadway currently operates at LOS A with an ADT of 1,470 vehicles. Capacity of this segment is 8,000 vehicles per day (CNMI DPW 2009). If all construction-generated trips used Broadway, vehicular delay would increase, but the segment LOS would not change because the delay increase would not be enough to degrade the LOS.

Under this alternative the USAF proposes to reroute 8th Avenue. Traffic along 8th Avenue would be maintained during construction of the relocated 8th Avenue. Minor impacts would be expected for a few days when the existing 8th Avenue route is decommissioned and routed onto the relocated roadway section.

Roadway surfaces have a limited lifespan and deteriorate incrementally over time. The amount of deterioration is in part a function of the materials used to construct the roadway, the amount of vehicular traffic, and the mix of vehicles (trucks vs. cars). The additional vehicular traffic during the Construction Phase, specifically truck traffic resulting from deliveries, would likely increase the normal deterioration of the roadways in the vicinity of the project area. Although deterioration is expected to varying degrees, it is not possible to estimate the extent of the deterioration because current pavement condition and the existing vehicle mix are unknown.

To help prevent potential roadway deterioration, the roadways that would be used for construction could be repaired, overlaid, and reinforced as needed to accommodate the additional traffic prior to the start of substantial construction activities. Additionally, these routes would be repaired and overlaid as needed upon completion of construction to restore the pavement condition to pre-construction levels.

4.11.3.1.2.2 SOUTH OPTION

Short-term, minor, direct, adverse impacts would be expected on the local transportation network in Tinian due to construction under Alternative 3 Tinian South Option. Transportation impacts during the Construction Phase are limited to traffic added to the existing roadway network as a result of construction. It is estimated that the number of construction workers associated with the Alternative 3 South Option would not exceed 500 at any given time for the South Option. This maximum number of workers would be limited to several months during the 24- to 36-month construction period. Considerably fewer workers would be required during the remaining months. Based on the limited local construction workforce, it is assumed that 80 percent of these workers would not be local Tinian residents.

It is assumed that the estimated 100 local residents would carpool and the average vehicle occupancy would be three to four people. It is estimated that 30 trips would be generated in the morning and 30 trips would be generated in the evening, totaling 60 daily trips as a result of local worker travel during the Construction Phase.

Non-local workers would most likely be housed at the Tinian Dynasty Hotel and Casino (located adjacent to the Tinian Harbor) or the Fleming Hotel. Buses would be used to transport the workers to and from the Tinian Dynasty Hotel and Casino via Broadway during the Construction Phase (see **Figure 2.4-6**). If lodging for all the workers were provided at the Tinian Dynasty Hotel and Casino and assuming 50 people per bus, approximately 16 round trips (8 round trips in the morning and 8 round trips in the afternoon) would be required to transport the non-resident workers, totaling 32 daily trips. It is assumed that a majority of the workers would remain on site for all breaks.

In addition to worker travel, construction activities would generate additional traffic resulting from delivery of materials including concrete and other miscellaneous trips occurring by inspectors, project managers, and other personnel that visit the site multiple times a day. The number of trips associated with deliveries and miscellaneous trips was estimated as one round trip for every 25 workers on site. During the peak construction period when 500 workers are on site, this would equate to 20 trips per day. These construction-related trips would be dispersed throughout the day. It is anticipated that the maximum of 20 construction-related trips would occur when concrete is being poured. During that time, concrete mixer trucks would account for approximately 17 of the 20 trips. It is estimated that concrete would be delivered approximately 173 days per year to provide the concrete for the Tinian South Option. For the remaining construction days it is anticipated that substantially fewer construction-related trips would occur.

Table 4.11-8 summarizes the estimated daily trips expected during the Construction Phase. It should be noted that this is the estimated maximum number of trips expected to occur only for several months during the peak of construction activity.

Table 4.11-8. Estimated Maximum Daily Trips – Alternative 3 Tinian South Option Construction Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Local Worker Transport	60	Morning and afternoon
Non-Local Worker Transport	32	Morning and afternoon
Miscellaneous Trips	20	All day
Total Additional Trips per Day	**112**	

Source: HDR 2012

The daily trips generated during the Construction Phase have the potential to impact the existing transportation network in two ways: by increasing congestion and delay on local roadways, thereby reducing LOS and by causing additional stress on roadway surfaces resulting in deterioration (e.g., rutting, cracking, pavement breakup) of the driving surface.

The proposed bus route to transport non-local workers would use Broadway. Broadway currently operates at LOS A with an ADT of 1,470 vehicles. Capacity of this segment is 8,000 vehicles per day (CNMI DPW 2009). If all construction-generated trips used Broadway, vehicular delay would increase, but the segment LOS would not change because the delay increase would not be enough to degrade the LOS.

Roadway surfaces have a limited lifespan and deteriorate incrementally over time. The amount of deterioration is in part a function of the materials used to construct the roadway, the amount of vehicular traffic, and the mix of vehicles (trucks vs. cars). The additional vehicular traffic during the Construction Phase, specifically truck traffic resulting from deliveries, would likely increase the normal deterioration of the roadways in the vicinity of the project area. Although deterioration is expected to varying degrees, it is not possible to estimate the extent of the deterioration because current pavement condition and the existing vehicle mix are unknown.

To help prevent potential roadway deterioration, the roadways that would be used for construction could be repaired, overlaid, and reinforced as needed to accommodate the additional traffic prior to the start of substantial construction activities. Additionally, these routes would be repaired and overlaid as needed upon completion of construction to restore the pavement condition to pre-construction levels.

4.11.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.11.3.2.1 Saipan

Minor, direct, adverse impacts would be expected on the local transportation network in Saipan under the Alternative 3 Implementation Phase. These impacts are expected on a long-term basis, but would only occur periodically (e.g., 3 weeks at a time) during planned military exercises. Transportation impacts under the Implementation Phase include fuel truck traffic, daily transport of personnel, and miscellaneous trips, including deliveries to and from Saipan International Airport. Fuel tanks at the airport would be filled from the fuel tanks constructed at the seaport. It is anticipated that 6 fuel trucks (10,000 gallon capacity) making 5 round trips to and from the seaport each day for 14 days would be necessary to fill the new tank. This would result in 60 additional daily trips. During exercises, it is anticipated the same amount of fuel truck traffic would be necessary to maintain adequate fuel storage at Saipan International Airport. The proposed truck route is shown in **Figure 3.11-1** in **Section 3.11**.

Temporary lodging for up to 265 personnel would be required to support Alternative 3. Buses would be used to transport personnel to and from Saipan International Airport during the Implementation Phase. Assuming 50 people per bus, approximately 6 round trips would be required to transport personnel. It is assumed that this would generate 24 daily trips (6 round trips in the morning and 6 round trips in the afternoon). The proposed bus route would follow the same route outlined for the fuel trucks destined for the seaport: Chalan Pale Arnold, Chalan Monsignor Guerrero, Tun Herman Pan, and Airport Road (see **Figure 3.11-1** in **Section 3.11**).

In addition to trips associated with fuel delivery and personnel travel, miscellaneous trips are expected to occur for deliveries and other activities associated with Alternative 3. It is assumed that one additional round trip would be generated for every 50 personnel. This would equate to approximately 10 additional trips per day.

Table 4.11-9 summarizes the estimated daily trips expected during implementation.

Table 4.11-9. Estimated Maximum Daily Trips – Alternative 3 Implementation Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Fuel Truck Trips	60	All day
Personnel Transport	24	Morning and afternoon
Miscellaneous Trips	10	All day
Total Additional Trips per Day	**94**	

Source: HDR 2012

The daily trips generated during the Implementation Phase have the potential to impact the existing transportation network in two ways: by increasing congestion and delay on local roadways, thereby reducing LOS, and by causing additional stress on roadway surfaces resulting in deterioration (e.g., rutting, cracking, pavement breakup) of the driving surface.

According to the CNMI Comprehensive Highway Master Plan current traffic operations on some roadway segments on the island are at or exceed capacity based on a daily volume analysis. Traffic operations along these segments might be poor during peak periods and poor operations can cause extended peak periods, but failing LOS does not typically mean that the facility is operating poorly during all hours of the day. It is estimated that more than half of the trips generated by Alternative 3 will occur outside of typical peak hours.

Traffic congestion is of concern for one segment of the proposed fuel truck route, Beach Road. Beach Road carries the highest volume of traffic in the vicinity of the project area and is currently experiencing some congestion issues. Based on the analysis conducted for the CNMI Comprehensive Master Plan, the ADT capacity for this segment is 30,000 vehicles per day and the existing estimated ADT is 39,890 vehicles per day, almost 10,000 vehicles more than capacity. At this LOS, relatively minor increases in traffic can cause major impacts on current traffic operations. The total traffic generated under Alternative 3 is less than 0.25 percent of the daily traffic on Beach Road and less than half of those trips would use Beach Road. Therefore, it is anticipated that delay and congestion impacts on Beach Road related to Alternative 3 would be intermittent short-term, minor, and adverse.

Based on repairing, overlaying, or reinforcing the roadway surfaces prior to the Construction Phase, it is assumed that the pavement on the proposed fuel truck route would be adequate to handle additional truck and bus traffic resulting from implementation with negligible roadway deterioration.

4.11.3.2.2 Tinian North and South Options

Minor, direct, adverse impacts would be expected on the local transportation network in Tinian under the Alternative 3 North and South Options Implementation Phase. These impacts are expected on a long-term basis, but would only occur periodically (e.g., 3 weeks at a time) during planned joint military exercises. Transportation impacts under the Implementation Phase of Alternative 3 include fuel truck traffic and miscellaneous trips including deliveries to and from Tinian International Airport. The fuel tanks at the airport would be filled from the fuel tank constructed at the seaport. It is anticipated that 6 fuel trucks (10,000 gallon capacity) making 5 round trips to and from the seaport each day for 17 days would be necessary to fill the airport tank. This would result in 60 additional daily trips. During exercises, it is anticipated the same number of fuel truck traffic would be necessary to maintain adequate fuel storage at Tinian International Airport. The proposed truck route is shown in **Figure 2.4-6**.

Temporary lodging for up to 265 personnel would be required to support Alternative 3. Buses would be used to transport personnel to and from Tinian International Airport during the Implementation Phase. Assuming 50 people per bus, approximately 6 round trips would be required to transport personnel. It is assumed that this would generate 24 daily trips (6 round trips in the morning and 6 round trips in the afternoon). The proposed bus route would follow the same route outlined for the fuel trucks destined for the seaport (**Figure 2.4-6**).

In addition to trips associated with fuel delivery, miscellaneous trips are expected to occur for deliveries and other activities associated with Alternative 3. It is assumed that one additional round trip would be generated for every 25 personnel. This would equate to approximately 10 additional trips per day.

Table 4.11-10 summarizes the estimated daily trips expected during implementation.

Table 4.11-10. Estimated Maximum Daily Trips – Alternative 3 Implementation Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Fuel Truck Trips	60	All day
Personnel Transport	24	Morning and afternoon
Miscellaneous Trips	10	All day
Total Additional Trips per Day	**94**	

Source: HDR 2012

According to the CNMI Comprehensive Highway Master Plan current traffic operations on all island roadway segments are LOS A. While proportionally the additional number of trips could be high for some of the roadway segments, all of the Tinian roadway facilities have substantial excess capacity; therefore, minor, direct, adverse impacts are anticipated under Alternative 3.

Based on repairing, overlaying, or reinforcing the roadway surfaces prior to the Construction Phase, it is assumed that the pavement on the proposed fuel truck route would be adequate to handle additional truck traffic resulting from implementation with negligible roadway deterioration.

4.11.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Section 3.11** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with *36th Wing Instruction 13-204, Airfield Operations Instructions*, planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on traffic or transportation would be expected as a result of the No Action Alternative. Traffic levels on Saipan and Tinian would not increase due to construction traffic, planned military exercises, and support personnel traffic. The No Action Alternative would result in a continuation of existing conditions.

4.12 Hazardous Materials and Wastes

Impacts associated with hazardous materials and wastes were assessed to determine if the Proposed Action would result in the following:

- Noncompliance with applicable Federal or CNMI regulations.
- Increases in the amounts generated or procured beyond current waste management procedures and capacities.
- The disturbance or creation of contaminated sites that cause negative impacts on human health or the environment.
- Impacts that include actions that make it more difficult or costly to remediate hazardous substance clean-up sites.

4.12.1 Alternative 1 - Modified Saipan Alternative

4.12.1.1 Construction Phase

Hazardous Materials and Hazardous Wastes. Short-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected from the construction activities proposed under Alternative 1. Construction activities would require the use and onsite storage of hazardous materials such as paints, welding gases, solvents, preservatives, and sealants. Additionally, some construction vehicles and heavy equipment would use hazardous materials such as hydraulic fluids and lead-acid batteries. It is anticipated that the quantities of hazardous materials needed during the construction would be minimal, and their use would be limited to the period of construction. All hazardous materials would be stored and handled in accordance with applicable Federal, CNMI, and USAF hazardous materials management regulations.

Construction activities would generate minor quantities of hazardous wastes from the use of hazardous materials. Contractors would be responsible for the storage, handling, and disposal of hazardous wastes in accordance with Federal, CNMI, and USAF hazardous waste management regulations. As such, Saipan International Airport's RCRA SQG status would not be affected. Because only limited quantities of hazardous wastes would be generated during construction of Alternative 1, the additional hazardous wastes would not be expected to exceed the capacities of existing hazardous waste disposal streams available to Saipan. No hazardous materials or hazardous wastes are known to be stored within the Alternative 1 areas; therefore, no hazardous materials or hazardous wastes would need to be removed prior to construction.

Petroleum Products. Short-term, direct, minor, adverse impacts due to petroleum product use would be expected from construction activities proposed under Alternative 1. Minimal quantities of liquid fuels, such as diesel and gasoline, would be needed to fuel construction vehicles, concrete and material haul trucks, and other equipment. Additionally, construction vehicles and equipment would use minimal quantities of oils and lubricants. Onsite storage of petroleum products would likely be accomplished through the installation of temporary diesel and gasoline ASTs as necessary. Contractors would obtain an AST Permit to Install and an AST Permit to Operate from the CNMI DEQ for all ASTs needed to support construction. These ASTs would be removed following the completion of construction, and all contractors would use proper BMPs (e.g., secondary containment, inspections, and spill kits) and adhere to Federal, CNMI, and USAF regulations to prevent releases from the ASTs. All petroleum products needed for the construction of Alternative 1 would be delivered to the Port of Saipan by ship and trucked to Saipan International Airport. Waste petroleum products would be disposed of through the hazardous waste disposal streams available to contractors at Saipan International Airport.

To support Alternative 1, upgrades in aircraft refueling capability at the Saipan International Airport would be required. The USAF would construct a Hydrant Refueling System adjacent to the proposed jet fuel storage tanks. This refueling system would tie into the proposed parking apron via an underground hydrant fuel pipeline. Other fuel infrastructure that would be constructed includes 100,000 barrels (4.2 million gallons) of jet fuel storage, likely configured using two 50,000-barrel (2.1 million-gallon) jet fuel ASTs, on Saipan International Airport-owned property and on federally leased land at the Port of Saipan (i.e., 100,000 barrels [4.2 million gallons] at each location). The USAF would obtain the necessary permits from the CNMI DEQ for construction, as appropriate. No petroleum products or associated infrastructure are located within the Alternative 1 areas; therefore, no petroleum products or associated infrastructure would need to be removed prior to construction.

Impacts from the operation of the proposed refueling infrastructure are discussed in **Section 4.12.1.2**, and impacts with respect to infrastructure improvements are discussed in **Sections 4.11.1.1** and **4.11.1.2**.

Existing Contamination Areas. Short-term, direct, minor, adverse impacts associated with existing contamination areas could occur during the construction activities proposed for Alternative 1. While no known areas of contamination have been identified within the Alternative 1 areas, there is the potential for finding contamination at Saipan International Airport due to the former use of these areas during World War II. Additionally, there is the potential for the discovery of UXO at Saipan International Airport and the seaport dating from the World War II era. Prior to conducting any soil-disturbing activities, a visual survey of the areas proposed to be disturbed should be conducted. If environmental contamination is identified, construction site plans should be revised to avoid the contamination areas or remediate them as practicable. If environmental contamination is discovered during construction, the contractor should immediately stop work at the affected area, report the discovery to the USAF, property owner, and CNMI, as necessary, and implement appropriate safety measures. Commencement of field activities should not resume in the affected area until the issue is investigated and resolved. The remediation of any existing contamination area would be a long-term, minor, beneficial effect.

Several areas of existing contamination have been identified near the Alternative 1 areas; however, Alternative 1 is unlikely to affect these contaminated areas because they are primarily soil contamination sites, except for the Puerto Rico Dump that has soil and groundwater contamination. The Puerto Rico Dump is 200 feet west of and seaward of the Alternative 1 seaport bulk fuel storage area; therefore, it is assumed that any groundwater contamination associated with the Puerto Rico Dump has and would flow towards the ocean and not impact the Alternative 1 seaport bulk fuel storage area. Additionally, it is assumed that construction work at the Alternative 1 seaport bulk fuel storage area would not impact the underlying groundwater.

Asbestos-Containing Materials. Short-term, direct, minor, adverse impacts are associated with ACMs that could be encountered during the construction activities proposed for Alternative 1. Because the Alternative 1 areas at Saipan International Airport are associated with former facilities from the World War II era, there is the potential for asbestos to be present in abandoned utility lines and demolition debris potentially buried in surface or near-surface soils. Prior to conducting any soil-disturbing activities, a visual survey of the proposed disturbance areas should be conducted. If potential ACMs are observed, the applicable sites should be classified as areas with potential asbestos-containing soils/materials, the notification process should be implemented. If potential ACMs are not observed during the visual survey, construction would move forward as planned. However, if any potential ACMs are encountered during the soil-disturbing activities, all site work should cease and the site should be re-evaluated. Any ACMs encountered during soil-disturbing activities would be handled in accordance with established Federal, CNMI, and USAF regulations and would be disposed of at an asbestos-permitted landfill. Long-term, minor, beneficial impacts would be expected from the removal of any ACMs.

USAF regulations restrict the use of ACMs for new construction. AFI 32-1023 requires that a substitution study be conducted whenever the use of an ACM in construction, maintenance, or repair is considered. If the study determines that the ACM is superior in cost and performance characteristics, and has minimal actual or potential health hazards, then the ACM should be used. In all other cases, non-ACMs should be used.

Lead-Based Paint. Short-term, direct, minor, adverse impacts associated with LBP could be encountered during the construction activities proposed for Alternative 1. Because the Alternative 1 areas at Saipan International Airport are associated with former facilities from the World War II era, there is the potential for buried debris containing LBP and lead-contaminated soil to be present in surface or near-surface soil. Prior to conducting any soil-disturbing activities, a visual survey of the proposed disturbance areas should be conducted. Should debris containing potential LBP be discovered during the survey, site preparation, or excavation, work should stop immediately and measures would be taken to secure the area and prevent the release of lead. Debris containing LBP would be removed and disposed of in accordance with applicable Federal and CNMI regulations. Long-term, minor, beneficial impacts would be expected from the removal of any LBP.

Air Force Policy and Guidance on Lead-Based Paint in Facilities, 24 May 1993, states that paint containing more than the regulated amount for nonindustrial facilities (i.e., LBP) will not be used on industrial or nonindustrial facilities; therefore, the structures proposed for construction would not contain LBP. AFI 32-1042, *Standards for Marking Airfields*, states that lead-free pavement marking paints are to be used at airfields; therefore, the proposed airfield pavement areas would not contain LBP.

Polychlorinated Biphenyls. Short-term, direct, negligible, adverse impacts are associated with PCBs that could be encountered from the construction of Alternative 1. If any potential PCB-containing equipment not labeled PCB-free or missing date-of-manufacture labels requires removal, then this equipment would be removed and handled in accordance with Federal and CNMI hazardous waste regulations. Alternative 1 does not entail building demolition; therefore, the quantity of equipment possibly containing PCBs that are proposed for removal is limited. Long-term, minor, beneficial impacts would be expected from the removal of any PCB-containing equipment.

Pesticides. No impacts on pesticides would be expected from the construction activities proposed under Alternative 1. Construction activities would not require any significant changes in the quantities of pesticides used or significantly alter pesticide application areas on Saipan.

Radon. No impacts associated with radon would be expected from the construction activities proposed under Alternative 1. Most construction activities would occur outdoors or inside of buildings with ample fresh air circulation during construction. Radon-resistant construction techniques would be implemented during construction to limit the potential for radon intrusion during occupancy, as applicable.

4.12.1.2 Implementation Phase

Hazardous Materials and Hazardous Wastes. Long-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected from implementation of Alternative 1. This alternative would increase the number of personnel, aircraft, aircraft maintenance operations, vehicles, and other equipment on Saipan and, specifically, at Saipan International Airport. This increase in personnel, equipment, and maintenance operations would increase the quantities of hazardous materials, such as hydraulic fluids, lead-acid batteries, solvents, and other chemicals, needed at Saipan International Airport during the proposed exercises. Most hazardous materials would be stored at the proposed maintenance facility at Saipan International Airport. All hazardous materials would be stored and handled in accordance with applicable Federal, CNMI, and USAF hazardous materials management regulations.

The increase in the quantities of hazardous materials needed during the proposed exercises would result in an increase in the quantities of hazardous wastes generated. The additional quantities of hazardous wastes would be mostly stored at the proposed maintenance facility at Saipan International Airport. These hazardous wastes would be disposed of by the USAF and transported to Andersen AFB for disposal through the installation's Defense Logistics Agency (DLA) Disposition Service. Implementation of Alternative 1 might require Saipan International Airport to reevaluate its RCRA SQG status should any changes in the amounts and types of hazardous wastes stored and generated at Saipan International Airport exceed SQG threshold limits. All hazardous wastes would be stored, handled, and disposed of in accordance with Federal, CNMI, and USAF hazardous waste management regulations.

Petroleum Products. Long-term, direct, minor to moderate, adverse impacts from petroleum products would be expected due to implementation of Alternative 1. The demand for petroleum products, such as jet fuel, gasoline, diesel, oils and lubricants, and other miscellaneous petroleum products, would increase during exercises, and additional quantities of these petroleum products would need to be delivered to Saipan by ocean-going tankers. Small amounts of oils and lubricants for aircraft maintenance would likely be delivered via cargo ship or aircraft. The additional quantities of petroleum products that are delivered to Saipan in bulk, such as jet fuel, gasoline, and diesel, would be off-loaded from the tanker vessels using the existing fuel transfer infrastructure available at the Port of Saipan and stored in the existing and proposed fuel storage tanks.

Alternative 1 would increase the demand for other liquid fuel petroleum products on Saipan. The added military personnel during exercises would require additional truck, car, and bus traffic during the up to 8 weeks each year when exercises would occur. The added vehicle traffic would increase the amounts of gasoline and diesel consumed. Additionally, Alternative 1 could include the construction of an electrical generator. This generator would provide emergency electrical power to operate the refueling hydrant system. The generator fuel type would be either diesel or JP-8 fuel and would depend on what is available and which type of fuel the USAF procures.

Alternative 1 would increase the amounts of oils and lubricants needed at Saipan International Airport for aircraft- and infrastructure-maintenance operations. The use of oils and lubricants would predominantly occur during the up to 8 weeks each year when exercises would occur, and most oils and lubricants would be stored at the proposed maintenance facility at Saipan International Airport. Waste oils and lubricants, including those collected from the proposed oil/water separator at the bulk storage area at Saipan International Airport, would be disposed of through the hazardous waste disposal streams available to the USAF.

Alternative 1 would increase the amounts of petroleum products used, stored, and transported on Saipan. The additional quantities of petroleum products and liquid fuel storage infrastructure would increase the chance for a release of petroleum products as compared to existing conditions. Additionally, the increase in fuel truck traffic on Saipan would slightly increase the risk of a release due to the added volumes of liquid fuels being transported over public roadways. To limit the potential for a release of petroleum products, all proposed petroleum product storage and transfer infrastructure, including storage tanks, piping, and hydrants, would be constructed new and in accordance with manufacturer design specifications. The USAF would obtain all necessary permits from CNMI DEQ, as appropriate. All petroleum products would be stored and handled in accordance with applicable Federal, CNMI, and USAF management regulations.

Existing Contamination Areas. Implementation of Alternative 1 would not affect any existing contamination areas because these areas would be remediated or avoided during the Construction Phase.

Asbestos-Containing Materials. No impacts associated with ACMs would be expected from implementation of Alternative 1. As noted in **Section 4.12.1.1**, USAF regulations restrict the use of ACMs for new construction. ACM only would be used if a study determines that the ACM is superior in cost and performance characteristics and has minimal actual or potential health hazards.

Lead-Based Paint and Polychlorinated Biphenyls. No impacts associated with LBP and PCBs would be expected from implementation of Alternative 1. LBP and PCBs would not be used during operations.

Pesticides. No impacts associated with pesticides would be expected from implementation of Alternative 1. Implementation of this alternative would not require any significant changes in the quantities of pesticides used or significantly alter pesticide application areas on Saipan.

Radon. Long-term, direct, negligible to minor, adverse impacts associated with radon could be encountered during implementation of Alternative 1. Although radon-resistant construction techniques would be implemented during construction, it is possible that the proposed facilities would encounter radon intrusion following construction. The USAF would test facilities that have known radon intrusion issues based on location periodically to verify that no unacceptable radon gas buildup occurs. As appropriate, radon gas removal equipment would be installed at buildings that consistently show indoor radon levels greater than 4 pCi/L.

4.12.2 Alternative 2 - Modified Tinian Alternative

4.12.2.1 Construction Phase

4.12.2.1.1 North Option

Hazardous Materials and Hazardous Wastes. Short-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected from the construction activities proposed under Alternative 2 North Option. Construction activities would require the use and onsite storage of hazardous materials such as paints, welding gases, solvents, preservatives, and sealants. Additionally, some construction vehicles and heavy equipment would use hazardous materials such as hydraulic fluids and lead-acid batteries. It is anticipated that the quantities of hazardous materials needed during the construction would be minimal, and their use would be limited to the period of construction. All hazardous materials would be stored and handled in accordance with applicable Federal, CNMI, and USAF hazardous materials management regulations.

Construction activities would generate minor quantities of hazardous wastes from the use of hazardous materials. Contractors would be responsible for the storage, handling, and disposal of hazardous wastes in accordance with Federal, CNMI, and USAF hazardous waste management regulations. Because only limited quantities of hazardous wastes would be generated during construction of Alternative 2 North Option, the additional hazardous wastes would not be expected to exceed the capacities of existing hazardous waste disposal streams available to Tinian.

No hazardous materials or hazardous wastes currently are stored within the Alternative 2 North Option areas; therefore, no hazardous materials and hazardous wastes would need to be removed prior to construction.

Petroleum Products. Short-term, direct, minor, adverse impacts due to petroleum products would be expected from the construction activities proposed under Alternative 2 North Option. Minimal quantities of liquid fuels, such as diesel and gasoline, would be needed to fuel construction vehicles, concrete and material haul trucks, and other equipment. Additionally, construction vehicles and equipment would use minimal quantities of oil and lubricants. Onsite storage of petroleum products would be accomplished through the installation of temporary diesel and gasoline ASTs as necessary. Contractors would obtain an AST Permit to Install and an AST Permit to Operate from the CNMI DEQ for all ASTs needed to support construction.

These temporary ASTs would be removed following the completion of construction, and all contractors would use proper BMPs (e.g., secondary containment, inspections, and spill kits) and adhere to Federal, CNMI, and USAF regulations to prevent releases from the ASTs. All petroleum products needed for the construction of Alternative 2 North Option would be delivered to the Port of Tinian by ship and trucked to the Tinian International Airport. Waste petroleum products would be disposed of through the hazardous waste disposal streams available to contractors on Tinian International Airport.

To support Alternative 2 North Option, construction of jet fuel receiving, storing, and dispensing infrastructure on Tinian would be required. The USAF would construct 220,000 barrels of jet fuel storage at Tinian International Airport, likely configured as two 60,000-bbl (2.5 million-gallon) and one 100,000-bbl (4.2 million-gallon) fuel tanks; and 100,000 bbl of jet fuel storage at the Port of Tinian, configured as two 50,000-bbl (2.1 million-gallon) fuel tanks. Additionally, the USAF would construct fuel pumps and fill stands, truck offload area, refueler parking, and possibly a fuel pump house at Tinian International Airport. The USAF would obtain necessary permits from the CNMI DEQ for construction, as appropriate. No petroleum products or associated infrastructure are located within the Alternative 2 North Option areas; therefore, no petroleum products or associated infrastructure would need to be removed prior to construction.

Impacts from the operation of this refueling infrastructure are discussed in **Section 4.12.2.2**, and impacts with respect to infrastructure improvements are discussed in **Sections 4.11.2.1** and **4.11.2.2**.

Existing Contamination Areas. Short-term, direct, minor, adverse impacts associated with existing contamination areas could be encountered during the construction activities proposed for Alternative 2 North Option. While no known areas of contamination have been identified within the North Option areas, there is the potential for finding contamination at Tinian International Airport due to the former use of these areas during World War II. Additionally, there is the potential for the discovery of UXO at Tinian International Airport and the Port of Tinian dating from the World War II era. Prior to conducting any soil-disturbing activities, a visual survey of the areas proposed to be disturbed should be conducted. If environmental contamination is identified, construction site plans should be revised to avoid the contamination areas or remediate them as practicable. If environmental contamination is discovered during construction, the contractor should immediately stop work at the affected area, report the discovery to the USAF, property owner, and CNMI, as necessary, and implement appropriate safety measures. Commencement of field activities should not resume in the affected area until the issue is investigated and resolved. The remediation of any existing contamination area would be a long-term, minor, beneficial effect.

One Formerly Used Defense Site is approximately 1,000 feet from the nearest component of Alternative 2 North Option; however, based on the distance, construction of Alternative 2 North Option would be unlikely to affect this site.

Asbestos-Containing Materials. Short-term, direct, minor, adverse impacts associated with ACMs could be encountered during the construction activities proposed for Alternative 2 North Option. Because the North Option areas at Tinian International Airport are associated with former development from the World War II era, there is the potential for asbestos to be present in abandoned utility lines and demolition debris potentially buried in surface or near-surface soils. Prior to conducting any soil-disturbing activities, a visual survey of the proposed disturbance areas should be conducted. If potential ACMs are observed, the applicable sites should be classified as areas with potential asbestos-containing soils or materials, and the notification process should be implemented. If potential ACMs are is not observed during the visual survey, construction would move forward as planned. However, if any potential ACMs are encountered during the soil-disturbing activities, all site work should cease and the site should be re-evaluated. Any ACMs encountered during soil-disturbing activities would be handled in accordance with established Federal, CNMI, and USAF regulations and would be disposed of at an asbestos-permitted landfill. Long-term, minor, beneficial impacts would be expected from the removal of any ACMs.

USAF regulations restrict the use of ACMs for new construction. AFI 32-1023 requires that a substitution study be conducted whenever the use of an ACM in construction, maintenance, or repair is considered. If the study determines that the ACM is superior in cost and performance characteristics, and has minimal actual or potential health hazards, then the ACM should be used. In all other cases, non-ACMs should be used.

Lead-Based Paint. Short-term, direct, minor, adverse impacts associated with LBP could be encountered during the construction activities proposed for Alternative 2 North Option. Because the North Option construction areas at Tinian International Airport are associated with former development from the World War II era, there is the potential for buried debris containing LBP and lead-contaminated soil to be present in surface or near-surface soil. Prior to conducting any soil-disturbing activities, a visual survey of the proposed disturbance areas should be conducted. Should debris containing potential LBP be discovered during the survey, site preparation, or excavation, work should stop immediately and measures should be taken to secure the area and prevent the release of lead. Debris containing LBP would be removed and disposed of in accordance with applicable Federal and CNMI regulations. Long-term, minor, beneficial impacts would be expected from the removal of any LBP.

Air Force Policy and Guidance on Lead-Based Paint in Facilities, 24 May 1993, states that paint containing more than the regulated amount for nonindustrial facilities (i.e., LBP) will not be used on industrial or nonindustrial facilities; therefore, the structures proposed for construction would not contain LBP. AFI 32-1042, *Standards for Marking Airfields*, states that lead-free pavement marking paints are to be used at airfields; therefore, the proposed airfield pavement areas would not contain LBP.

Polychlorinated Biphenyls. Short-term, direct, negligible, adverse impacts associated with PCBs could be encountered from the construction of Alternative 2 North Option. If any potential PCB-containing equipment not labeled PCB-free or missing date-of-manufacture labels requires removal, then this equipment would be removed and handled in accordance with Federal and CNMI hazardous waste regulations. The North Option does not entail building demolition; therefore, the quantity of equipment possibly containing PCBs that would require removal is limited. Long-term, minor, beneficial impacts would be expected from the removal of any PCB-containing equipment.

Pesticides. No impacts on pesticides would be expected from Alternative 2 North Option. Construction activities would not require any significant changes in the quantities of pesticides used or significantly alter pesticide application areas on Tinian.

Radon. No impacts associated with radon would be expected from the construction activities proposed under Alternative 2 North Option. Most construction activities would occur outdoors or inside of buildings with ample fresh air circulation during construction. Radon resistant construction techniques would be implemented during construction to limit the potential for radon intrusion during occupancy, as applicable.

4.12.2.1.2 South Option

Hazardous Materials and Hazardous Wastes. Construction activities under Alternative 2 South Option would be the same as those described under the North Option, but would occur south of Tinian International Airport. Therefore, short-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected from the construction activities.

Petroleum Products. Construction activities and fuel infrastructure constructed under Alternative 2 South Option would be the same as those described under the North Option, but would occur south of Tinian International Airport. Therefore, short-term, direct, minor, adverse impacts due to petroleum products would be expected from the construction activities.

Existing Contamination Areas. Short-term, direct, minor, adverse impacts associated with existing contamination areas could be encountered during the construction activities proposed for Alternative 2 South Option. No known areas of contamination have been identified within the areas proposed for the South Option. However, there is the potential for finding contamination in the proposed areas south of Tinian International Airport and for the discovery of UXO at Tinian International Airport and the Port of Tinian due to the former use of these areas during World War II. As described under the North Option, pre-construction visual surveys would be conducted and applicable procedures followed if environmental contamination is observed prior to construction or discovered during construction of Alternative 2 South Option. The remediation of any existing contamination area would be a long-term, minor, beneficial effect.

One Formerly Used Defense Site is approximately 800 feet from the nearest component of Alternative 2 South Option; however, based on the distance, construction of Alternative 2 South Option would be unlikely to affect this site.

Asbestos-Containing Materials. Short-term, direct, minor, adverse impacts are associated with ACMs that could be encountered during the construction activities proposed for Alternative 2 South Option. Because areas south of Tinian International Airport are associated with former development from the World War II era, there is the potential for asbestos to be present in abandoned utility lines and demolition debris potentially buried in surface or near-surface soils. Similar to the North Option, pre-construction visual surveys would be conducted and procedures followed if potential ACMs are observed prior to construction or encountered during construction. Long-term, minor, beneficial impacts would be expected from the removal of any ACMs.

Lead-Based Paint. Short-term, direct, minor, adverse impacts associated with LBP could be encountered during the construction activities proposed for Alternative 2 South Option. Because areas south of Tinian International Airport are associated with former development from the World War II era, there is the potential for buried debris containing LBP and lead-contaminated soil to be present in surface or near-surface soil. Similar to the North Option, pre-construction visual surveys would be conducted and procedures followed if potential LBP is discovered prior to or during construction. Long-term, minor, beneficial impacts would be expected from the removal of any LBP.

Polychlorinated Biphenyls. Short-term, direct, negligible, adverse impacts associated with PCBs could be encountered from the construction of Alternative 2 South Option. Similar to the North Option, the South Option does not entail building demolition; therefore, the quantity of equipment possibly containing PCBs that would require removal is limited. Long-term, minor, beneficial impacts would be expected from the removal of any PCB-containing equipment.

Pesticides. No impacts on pesticides would be expected from Alternative 2 South Option. Construction activities would not require any significant changes in the quantities of pesticides used or significantly alter pesticide application areas on Tinian.

Radon. No impacts associated with radon would be expected from the construction activities proposed under Alternative 2 South Option. Most construction activities would occur outdoors or inside of buildings with ample fresh air circulation during construction. Radon resistant construction techniques would be implemented during construction to limit the potential for radon intrusion during occupancy.

4.12.2.2 Implementation Phase- North and South Options

Hazardous Materials and Hazardous Wastes. Long-term, minor, direct adverse impacts associated with hazardous materials and hazardous wastes would be expected from the implementation of Alternative 2. This alternative would increase the number of personnel, aircraft, aircraft maintenance operations, vehicles, and other equipment on Tinian and, specifically, at Tinian International Airport. This increase in personnel, equipment, and maintenance operations would increase the quantities of hazardous materials, such as hydraulic fluids, lead-acid batteries, solvents, and other chemicals, needed at Tinian International Airport. Most hazardous materials would be stored and used at the proposed aircraft hangar and maintenance facility at the Tinian International Airport. All hazardous materials would be stored and handled in accordance with applicable Federal, CNMI, and USAF hazardous materials management regulations.

The increase in the quantities of hazardous materials needed during the proposed exercises would result in an increase in the quantities of hazardous wastes generated. The additional quantities of hazardous wastes would be mostly stored at the proposed maintenance facility at Tinian International Airport. These hazardous wastes would be disposed of by the USAF and transported to Andersen AFB for disposal through the installation’s DLA Disposition Service. Implementation of Alternative 2 might require Tinian International Airport to obtain an RCRA hazardous waste generator permit and be classified as a hazardous waste generator should the changes in the amounts and types of hazardous wastes stored and generated at Tinian

International Airport meet applicable regulatory thresholds. All hazardous wastes would be stored, handled, and disposed of in accordance with Federal, CNMI, and USAF hazardous waste management regulations.

Petroleum Products. Long-term, direct, minor to moderate, adverse impacts from petroleum products would be expected due to implementation of Alternative 2. The demand for petroleum products, such as gasoline, diesel, oils and lubricants, and other miscellaneous petroleum products, would increase during exercises, and additional quantities of these petroleum products would need to be delivered to Tinian by ocean-going vessels. Jet fuel, which currently is not delivered to Tinian, would also require delivery to and storage on Tinian. Small amounts of oils and lubricants for aircraft maintenance would likely be delivered via cargo ship or aircraft.

This alternative would increase the demand for other liquid fuel petroleum products on Tinian. The added military personnel during exercises would require additional truck, car, and bus traffic during the up to 8 weeks each year when exercises occur. The added vehicle traffic would increase the amounts of gasoline and diesel fuels consumed. There would be no changes in the use of 100 Low Lead Aviation Gasoline, which currently is the only aviation fuel available to Tinian International Airport.

This alternative would increase the amounts of oils and lubricants needed at Tinian International Airport for aircraft- and infrastructure-maintenance operations. The use of oils and lubricants would predominantly occur during the up to 8 weeks each year when exercises occur, and most oils and lubricants would be stored at the proposed maintenance facility on Tinian International Airport. Waste oils and lubricants, including those collected from the proposed oil/water separator, would be disposed of through the hazardous waste disposal streams available to the USAF.

Alternative 2 would increase the amounts of petroleum products used, stored, and transported on Tinian. The additional quantities of petroleum products and liquid fuel storage infrastructure would increase the chance for a release of petroleum products as compared to existing conditions. Additionally, the increase in fuel truck traffic on Tinian would slightly increase the risk of a release due to the added volumes of liquid fuels being transported over public roadways. To limit the potential for a release of petroleum products, all proposed petroleum product storage and transfer infrastructure would be constructed new and in accordance with manufacturer design specifications. The USAF would obtain all necessary permits from the CNMI DEQ, as appropriate. All petroleum products would be stored and handled in accordance with applicable Federal, CNMI, and USAF management regulations.

Existing Contamination Areas. Implementation of Alternative 2 would not affect any existing contamination areas because these areas would be remediated or avoided during the Construction Phase.

Asbestos-Containing Materials. No impacts associated with ACMs would be expected from implementation of Alternative 2. As noted in **Section 4.12.2.1**, USAF regulations restrict the use of ACMs for new construction. ACM would only be used if a study determines that the ACM is superior in cost and performance characteristics and has minimal actual or potential health hazards.

Lead-Based Paint and Polychlorinated Biphenyls. No impacts associated with LBP and PCBs would be expected from implementation of Alternative 2. LBP and PCBs would not be used during operations.

Pesticides. No impacts associated with pesticides would be expected from implementation of Alternative 2. Implementation of this alternative would not require any significant changes in the quantities of pesticides used or significantly alter pesticide application areas on Tinian.

Radon. Long-term, direct, negligible to minor, adverse impacts associated with radon could be encountered during implementation of Alternative 2. Although radon-resistant techniques would be implemented during construction, it is possible that the proposed facilities would encounter radon intrusion following construction. The USAF would test facilities that have known radon intrusion issues periodically to verify that no unacceptable radon gas buildup occurs. As appropriate, radon gas removal equipment would be installed at buildings that consistently show indoor radon gas levels greater than 4 pCi/L.

4.12.3 Alternative 3 - Hybrid Modified Alternative

4.12.3.1 Construction Phase

4.12.3.1.1 Saipan

Hazardous Materials and Hazardous Wastes. Under Alternative 3 on Saipan, construction activities would be similar to those described under Alternative 1, but would likely require use of less hazardous materials and generation of smaller quantities of hazardous wastes due to construction of less infrastructure and a smaller construction footprint. Short-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected from the construction activities.

Petroleum Products. Under Alternative 3 on Saipan, construction activities would be similar to those described under Alternative 1, but would likely require use of less petroleum products and generation of smaller quantities of waste petroleum products due to construction of less infrastructure and less construction vehicle trips. Additionally, a hydrant system and fuel storage at the Port of Saipan would not be required under Alternative 3 on Saipan. Short-term, direct, minor, adverse impacts due to petroleum products would be expected from the construction activities.

Existing Contamination Areas. Under Alternative 3 on Saipan, construction would occur in similar areas at Saipan International Airport to those described under Alternative 1, except the hydrant system and parking apron would not be constructed. Additionally, the fuel storage area at the Port of Saipan would not be constructed. Therefore, short-term, direct, minor, adverse impacts associated with potential existing contamination areas at Saipan International Airport due to the former use of this area during World War II could be encountered during construction activities. The remediation of any existing contamination area would be a long-term, minor, beneficial effect. No impacts from contamination at the Puerto Rico Dump would be expected during construction.

Asbestos-Containing Materials. Short-term, direct, minor, adverse impacts associated with ACMs could be encountered during the construction activities proposed for Alternative 3 on

Saipan. Because areas at Saipan International Airport are associated with former facilities from the World War II era, there is the potential for asbestos to be present in abandoned utility lines and demolition debris potentially buried in surface or near-surface soils. Similar to Alternative 1, pre-construction visual surveys would be conducted and procedures followed if potential ACMs are observed prior to construction or encountered during construction. Long-term, minor, beneficial impacts would be expected from the removal of any ACMs.

Lead-Based Paint. Short-term, direct, minor, adverse impacts associated with LBP could be encountered during the construction activities proposed for Alternative 3 on Saipan. Because areas at Saipan International Airport are associated with former development from the World War II era, there is the potential for buried debris containing LBP and lead-contaminated soil to be present in surface or near-surface soil. Similar to Alternative 1, pre-construction visual surveys would be conducted and procedures followed if potential LBP is discovered prior to or during construction. Long-term, minor, beneficial impacts would be expected from the removal of any LBP.

Polychlorinated Biphenyls. Short-term, direct, negligible, adverse impacts associated with PCBs could be encountered from the construction of Alternative 3 on Saipan. Similar to Alternative 1, this alternative does not entail building demolition; therefore, the quantity of equipment possibly containing PCBs requiring removal is limited. Long-term, minor, beneficial impacts would be expected from the removal of any PCB-containing equipment.

Pesticides. No impacts on pesticides would be expected from the construction activities proposed under Alternative 3 on Saipan. Construction activities would not require any significant changes in the quantities of pesticides used or significantly alter pesticide application areas on Saipan.

Radon. No impacts associated with radon would be expected from the construction activities proposed under Alternative 3 on Saipan. Most construction activities would occur outdoors or inside of buildings with ample fresh air circulation during construction. Radon-resistant construction techniques would be implemented during construction to limit the potential for radon intrusion during occupancy.

4.12.3.1.2 Tinian

4.12.3.1.2.1 NORTH OPTION

Hazardous Materials and Hazardous Wastes. Under Alternative 3 North Option, construction activities would be similar to those described under Alternative 2 North Option, but would likely require use of less hazardous materials and generation of smaller quantities of hazardous wastes due to construction of less infrastructure and a smaller construction footprint. Short-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected from the construction activities.

Petroleum Products. Under Alternative 3 North Option, construction activities would be similar to those described under Alternative 2 North Option, but would likely require use of less petroleum products and generation of smaller quantities of waste petroleum products due to construction of less infrastructure and less construction vehicle trips. Additionally, this alternative would only require construction of 120,000 barrels (5 million gallons) of fuel storage (likely configured as two 60,000-barrel [2.5 million-gallon] storage tanks). Short-term, direct, minor, adverse impacts due to petroleum products would be expected from the construction activities.

Existing Contamination Areas. Under Alternative 3 North Option, construction activities would occur in similar areas at Tinian International Airport and the Port of Tinian to those described under Alternative 2 North Option. Therefore, short-term, direct, minor, adverse impacts associated with potential existing contamination areas due to the former use of these areas during World War II could be encountered during construction activities. The remediation of any existing contamination area would be a long-term, minor, beneficial effect.

Asbestos-Containing Materials. Short-term, direct, minor, adverse impacts associated with ACMs could be encountered during the construction activities proposed for Alternative 3 North Option. Because areas north of Tinian International Airport are associated with former facilities from the World War II era, there is the potential for asbestos to be present in abandoned utility lines and demolition debris potentially buried in surface or near-surface soils. Similar to Alternative 2 North Option, pre-construction visual surveys would be conducted and procedures followed if potential ACMs are observed prior to construction or encountered during construction. Long-term, minor, beneficial impacts would be expected from the removal of any ACMs.

Lead-Based Paint. Short-term, direct, minor, adverse impacts associated with LBP could be encountered during the construction activities proposed for Alternative 3 North Option. Because areas north of the Tinian International Airport are associated with former development from the World War II era, there is the potential for buried debris containing LBP and lead-contaminated soil to be present in surface or near-surface soil. Similar to Alternative 2 North Option, pre-construction visual surveys would be conducted and procedures followed if LBP is discovered prior to or during construction w. Long-term, minor, beneficial impacts would be expected from the removal of any LBP.

Polychlorinated Biphenyls. Short-term, direct, negligible, adverse impacts associated with PCBs could be encountered from the construction of Alternative 3 North Option. Similar to Alternative 2 North Option, this alternative does not entail building demolition; therefore, the quantity of equipment possibly containing PCBs that require removal would be limited. Long-term, minor, beneficial impacts would be expected from the removal of any PCB-containing equipment.

Pesticides. No impacts on pesticides would be expected from the construction activities proposed under Alternative 3 North Option. Construction activities would not require any significant changes in the quantities of pesticides used or significantly alter pesticide application areas on Saipan.

Radon. No impacts associated with radon would be expected from the construction activities proposed under Alternative 3 North Option. Most construction activities would occur outdoors or inside of buildings with ample fresh air circulation during construction. Radon-resistant construction techniques would be implemented during construction to limit the potential for radon intrusion during occupancy.

4.12.3.1.2.2 SOUTH OPTION

Hazardous Materials and Hazardous Wastes. Under Alternative 3 South Option, construction activities would be similar to those described under Alternative 2 South Option and Alternative 3 North Option, but would require use of less hazardous materials and generation of smaller quantities of hazardous wastes due to construction of less infrastructure and a smaller construction footprint. Short-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected from the construction activities.

Petroleum Products. Under Alternative 3 South Option, construction activities would be similar to those described under Alternative 2 South Option and Alternative 3 North Option, but would require use of less petroleum products and generation of smaller quantities of waste petroleum products due to construction of less infrastructure and fewer construction vehicle trips. This alternative would only require construction of 120,000 barrels (5 million gallons) of fuel storage (likely configured as two 60,000-barrel [2.5 million-gallon] storage tanks). Short-term, direct, minor, adverse impacts due to petroleum products would be expected from the construction activities.

Existing Contamination Areas. Under Alternative 3 South Option, construction activities would occur in similar areas at the Tinian International Airport and the Port of Tinian to those described under Alternative 2 South Option and Alternative 3 North Option. Therefore, short-term, direct, minor, adverse impacts associated with potential existing contamination areas due to the former use of these areas during World War II could be encountered during construction activities. The remediation of any existing contamination area would be a long-term, minor, beneficial effect.

Asbestos-Containing Materials. Short-term, direct, minor, adverse impacts associated with ACMs could be encountered during the construction activities proposed for Alternative 3 South Option. Because areas south of Tinian International Airport are associated with former facilities from the World War II era, there is the potential for asbestos to be present in abandoned utility lines and demolition debris potentially buried in surface or near-surface soils. Similar to Alternative 2 South Option and Alternative 3 North Option, pre-construction visual surveys would be conducted and procedures followed if potential ACMs are observed prior to construction or encountered during construction. Long-term, minor, beneficial impacts would be expected from the removal of any ACMs.

Lead-Based Paint. Short-term, direct, minor, adverse impacts associated with LBP could be encountered during the construction activities proposed for Alternative 3 South Option. Because areas south of Tinian International Airport are associated with former development from the World War II era, there is the potential for buried debris containing LBP and lead-contaminated soil to be present in surface or near-surface soil. Similar to Alternative 2 South Option and Alternative 3 North Option, pre-construction visual surveys would be conducted and procedures followed if potential LBP is discovered prior to or during construction. Long-term, minor, beneficial impacts would be expected from the removal of any LBP.

Polychlorinated Biphenyls. Short-term, direct, negligible, adverse impacts associated with PCBs could be encountered from the construction of Alternative 3 South Option. Similar to Alternative 2 South Option and Alternative 3 North Option, this alternative does not entail building demolition; therefore, the quantity of equipment possibly containing PCBs that require removal is limited. Long-term, minor, beneficial impacts would be expected from the removal of any PCB-containing equipment.

Pesticides. No impacts on pesticides would be expected from the construction activities proposed under Alternative 3 South Option. Construction activities would not require any significant changes in the quantities of pesticides used or significantly alter pesticide application areas on Tinian.

Radon. No impacts associated with radon would be expected from the construction activities proposed under Alternative 3 South Option. Most construction activities would occur outdoors or inside of buildings with ample fresh air circulation during construction. Radon-resistant construction techniques would be implemented during construction to limit the potential for radon intrusion during occupancy.

4.12.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up the 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.12.3.2.1 Saipan

Hazardous Materials and Hazardous Wastes. Implementation of Alternative 3 on Saipan would include the same number of aircraft, personnel, and aircraft operations as described under Alternative 1. Therefore, impacts during the Implementation Phase would be the same and long-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected.

Petroleum Products. Implementation of Alternative 3 on Saipan would include the same number of aircraft, personnel, and aircraft operations as described under Alternative 1. Therefore, impacts during the Implementation Phase would be the same and long-term, direct, minor to moderate, adverse impacts associated with petroleum products would be expected.

Existing Contamination Areas. Implementation of Alternative 3 on Saipan would not affect any existing contamination areas because these areas would be remediated or avoided during the Construction Phase.

Asbestos-Containing Materials. No impacts associated with ACMs would be expected from implementation of Alternative 3 on Saipan. As noted in **Section 4.12.1.1**, USAF regulations restrict the use of ACMs for new construction. ACM only would be used if a study determines that the ACM is superior in cost and performance characteristics and has minimal actual or potential health hazards.

Lead-Based Paint and Polychlorinated Biphenyls. No impacts associated with LBP and PCBs would be expected from implementation of Alternative 3 on Saipan. LBP and PCBs would not be used during operations.

Pesticides. No impacts associated with pesticides would be expected from implementation of Alternative 3 on Saipan. Implementation of this alternative would not require any significant changes in the quantities of pesticides used or significantly alter pesticide application areas on Saipan.

Radon. Long-term, direct, negligible to minor, adverse impacts associated with radon could be encountered during implementation of Alternative 3 on Saipan. Although radon-resistant construction techniques would be implemented during construction, it is possible that the proposed facilities would encounter radon intrusion following construction. The USAF would test facilities that have known radon intrusion issues periodically to verify that no unacceptable radon gas buildup occurs. As appropriate, radon gas removal equipment would be installed at buildings that consistently show indoor radon levels greater than 4 pCi/L.

4.12.3.2.2 Tinian North and South Options

Hazardous Materials and Hazardous Wastes. Implementation of Alternative 3 on Tinian would include the same number of aircraft, personnel, and aircraft operations as described under Alternative 2. Therefore, impacts during the Implementation Phase would the same and long-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected.

Petroleum Products. Implementation of Alternative 3 on Tinian would include the same number of aircraft, personnel, and aircraft operations as described under Alternative 2. Alternative 3 on Tinian would require fewer fuel truck trips than Alternative 2, which would use less fuel. However, impacts during the Implementation Phase would be the same as described for Alternative 2 and long-term, direct, minor to moderate, adverse impacts associated with petroleum products would be expected.

Existing Contamination Areas. Implementation of Alternative 3 on Tinian would not affect any existing contamination areas because these areas would be remediated or avoided during the Construction Phase.

Asbestos-Containing Materials. No impacts associated with ACMs would be expected from implementation of Alternative 3 on Tinian. As noted in **Section 4.12.2.1**, USAF regulations restrict the use of ACMs for new construction. ACM would only be used if a study determines that the ACM is superior in cost and performance characteristics and has minimal actual or potential health hazards.

Lead-Based Paint and Polychlorinated Biphenyls. No impacts associated with LBP and PCBs would be expected from implementation of Alternative 3 on Tinian. LBP and PCBs would not be used in any of the buildings or infrastructure proposed for construction.

Pesticides. No impacts associated with pesticides would be expected from implementation of Alternative 3 on Tinian. Implementation of this alternative would not require any significant changes in the quantities of pesticides used or significantly alter pesticide application areas on Tinian.

Radon. Long-term, direct, negligible to minor, adverse impacts associated with radon could be encountered during implementation of Alternative 3 on Tinian. Although radon-resistant techniques would be used during construction, it is possible that the proposed facilities would encounter radon intrusion following construction. The USAF would test facilities that have known radon intrusion issues periodically to verify that no unacceptable radon gas buildup occurs. As appropriate, radon gas removal equipment would be installed at buildings that consistently show indoor radon gas levels greater than 4 pCi/L.

4.12.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Sections 3.12.2.1** and **3.12.2.2** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo and tanker aircraft and associated support personnel for periodic exercises, or humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with *36th Wing Instruction 13-204, Airfield Operations Instructions*, planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts associated with hazardous materials and wastes would be expected as a result of the No Action Alternative. The quantities of hazardous materials used and the quantities of hazardous wastes generated at Saipan and Tinian would remain unchanged under the No Action Alternative.

4.13 Infrastructure and Utilities

Impacts on infrastructure are evaluated based on their potential for disruption, excessive use, or improvement of the existing level of service for transportation systems, utilities, and solid waste management. Impacts might arise from physical changes to utility needs created by either direct or indirect changes related to the Proposed Action. Assessing impacts on utilities entails a determination of utilities that would be used or improved as a result of the Proposed Action. Effects on infrastructure were assessed to determine if the Proposed Action would result in the following impacts:

- Exceed the capacity of a utility or transportation artery
- Result in a long-term interruption of a utility or transportation artery
- Result in a violation of a permit condition
- Result in a violation of an approved plan for a utility.

4.13.1 Alternative 1 - Modified Saipan Alternative

4.13.1.1 Construction Phase

***Airfield*.** Short-term, direct, minor, adverse impacts on the airfield would be expected from the disruption to commercial aircraft operations during construction activities associated with Alternative 1. However, these impacts would be minimized by optimizing the scheduling of construction activities and commercial flights to minimize overlap. These impacts would be temporary because the Construction Phase would last only 3 years. Long-term, direct, moderate, beneficial impacts on the airfield would be expected from the proposed improvements.

Port. Short-term, direct, negligible, adverse impacts on the port would be expected from the disruption caused by construction activities associated with Alternative 1. Long-term, direct, minor, beneficial impacts on the port would be expected because of additional fuel storage capacity. Any buried utility lines on the site of the proposed fuel tanks would have to be permanently relocated.

***Electrical Supply*.** Short-term, direct, negligible, adverse impacts on the existing electrical system would be expected from the extension of electrical lines to and the relocation or upgrading of any buried electrical lines. These impacts would be temporary because the Construction Phase would last approximately 3 years. Additional short-term, negligible, adverse impacts would be expected from potential power disruptions when new facilities and lighting systems are connected to the power grid and when power lines are deactivated during construction. New electrical lines at the Saipan International Airport and Port of Saipan would be connected to existing electrical transmission lines. Long-term, direct, minor, beneficial impacts would expected from the upgrades provided to the electrical system. The addition of new electrical systems on the Saipan power grid would not exceed the existing capacity of the Saipan.

It is assumed that the construction contractors would primarily use diesel- or battery-powered equipment. Any construction equipment that is powered via electricity would likely receive power from a portable generator or a temporary electrical panel.

***Central Heating and Cooling*.** No impacts on heating or cooling systems would be expected because there are no cooling or heating systems within the project area and Alternative 1 does not include a connection to existing heating and cooling systems.

***Natural Gas Supply*.** No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 1 does not include the installation of natural gas infrastructure.

***Liquid Fuel Supply*.** Short-term, direct, negligible, adverse impacts on the liquid fuel supply would be expected from the minimal amounts of petroleum that would be required for construction equipment and cement and concrete transportation during the proposed construction activities. The required petroleum would be brought on site by contractors and removed when construction activities are complete.

Long-term, direct, major, beneficial impacts on the capacity to receive, store and distribute aviation fuel at Saipan International Airport and the seaport would result from Alternative 1. The Port of Saipan currently has an aviation fuel storage capacity of 1,134,000 gallons[3]. Alternative 1 would increase the bulk storage capacity of the Port of Saipan and the airport by 100,000 barrels (4.2 million gallons) of fuel each. The proposed construction improvements to jet fuel infrastructure at Saipan International Airport (i.e., storage tanks and fuel hydrant system including pipeline) and the seaport would be expected to involve limited disruptions to the existing Jet A fuel system. Short-term, direct, negligible, adverse impacts on the liquid fuel supply lines at the seaport would be expected during connection of the proposed fuel tanks.

Cement trucking from the Port of Saipan to the commercial concrete supply company would involve dump trucks driving 7 miles per trip to the commercial concrete supply company in Obyan, Saipan. Approximately 102 cement truck trips would be expected per year. Concrete trucking from the commercial concrete supply company to Saipan International Airport would involve concrete mixer trucks driving 2 miles per trip to Obyan, Saipan resulting in approximately 1,798 concrete truck trips per year.

***Water Supply*.** Short-term, direct, negligible, adverse and long-term, direct, moderate, beneficial impacts on the water supply would be expected from the temporary shutoff, relocation, extension, upgrade, and connection of water lines during construction activities. Any existing water pipes would be relocated and upgraded as necessary. The proposed maintenance facility would require permanent 6-inch water connections for the fire water line and 1.5-inch domestic water line connections.

Short-term, direct, negligible, adverse impacts on the water supply would be expected from the water used during construction for dust suppression. Saipan residents already lack access to a continuous potable water supply. An estimated 500 gallons/acre/day could be used for dust suppression during construction activities. Alternative 1 would involve about 28.5 acres of construction resulting in the use of about 15,000 gallons of water per day over the course of 36 months. This is negligible (less than 0.1 percent) compared to the approximate 10 million gallons per day that Saipan produces, 1 million gallons of which is produced within the airport area. Additionally, if non-potable water is available for dust suppression, the effect on the potable water supply would be even less.

***Sanitary Sewer and Wastewater Treatment*.** Short-term, direct, negligible to minor, adverse impacts on the sewer system would be expected from the temporary shutoff of sewer lines during the connection of a 6-inch sewer line from the proposed maintenance facility to the sewer main line. Existing sanitary sewer pipes within the Alternative 1 area would be relocated and upgraded as necessary. It is assumed that the construction workers would use portable toilets at the site.

***Storm Water*.** Short-term, direct, minor, adverse impacts on the storm water management system would be expected from construction activities associated with Alternative 1. A

[3] Each AST has a “safe fill” level of 504,000 gallons limiting the actual storage capacity to 1,008,000 gallons.

temporary increase in storm water runoff, erosion, and sedimentation would be expected during the proposed construction activities. Storm water runoff is already a major environmental concern for Saipan residents. The discharge of storm water runoff from construction activities at Saipan International Airport and the seaport must be authorized by a construction water permit issued by the USEPA in accordance with the *General Permit for Storm Water Discharges from Construction Activities*. The permit requires the development and implementation of a construction-specific SWPPP for construction activities at a site totaling 1 acre or more and where storm water discharges from the construction area enter a Municipal Separate Storm Sewer System (MS4) that leads to natural drainage channels or streams classified as surface waters of the United States. An SWPPP approved by the DEQ would be required and must contain an NPDES permit declaration. In addition, the permit requires that discharges from storm water controls be directed to vegetated areas to increase sediment removal and maximize storm water infiltration wherever feasible (USEPA 2012b). This would minimize the temporary increase in storm water runoff, erosion, and sedimentation. In order to get DEQ approval, the construction activities would need to implement BMPs and meet their location-specific storm water quality and quantity requirements. Due to the development of an SWPPP, the vegetated surrounding area of Saipan International Airport and the Seaport, and the high infiltration rates of the island, the impacts would not be significant.

Construction under Alternative 1 would create approximately 1,245,382 ft^2 of new impervious surfaces. Storm water management controls would be designed and implemented consistent with construction storm water permit requirements and the USAF Engineering Technical Letter (ETL) 03-1: *Storm Water Construction Standards* to minimize potential adverse impacts on surface waters associated with the construction of the impervious surfaces. Compliance with USAF ETL 03-1 requires implementation of BMPs to reduce site storm water discharges and pollutant loadings to preconstruction levels or better. A storm water-control site plan would be required and must contain an NPDES permit declaration.

Because this is a Federal project, Alternative 1 would also involve the use of low-impact development strategies to comply with EISA Section 438. Low-impact development strategies include the construction of grass swales or infiltration ditches to intercept and contain any runoff during heavy rains. Additionally, drywells could be installed at all air conditioning units to prevent muddy and unsafe working conditions. Lastly, rain barrels, a cistern, or other collection devices could be installed to capture rain water for recycling (AFCEE/PACAF 2010).

Preventive BMPs include limiting stockpiling of materials on site; managing stockpiled materials to minimize the time between delivery and use; covering stockpiled materials with tarps; installing silt fences around material stockpiles, storm water drainage routes, culverts, and drains; installing fabric filters, netting, and mulching around material stockpiles, storm water drainage routes, culverts, and drains; revegetation of disturbed areas with native species as soon as possible upon completion of construction to stabilize topsoil and prevent water erosion; using rip rap in areas susceptible to erosion; and using a sedimentation basin for collection of runoff to allow suspended solids to precipitate out of solution to improve surface water quality.

Communications. Short-term, direct, negligible, adverse impacts on the communications system would occur as the permanent facilities at Saipan International Airport are connected to the existing telephone line system at the airport.

Solid Waste. Short-term, direct, minor, adverse impacts on solid waste management would be expected from the generation of construction debris. Construction debris is generally composed of clean materials, and most of this waste would be recycled because the MSWF uses state-of-the-art waste reduction and diversion technologies and implements recycling programs. However, debris that cannot be recycled would be landfilled, which would be a long-term, irreversible, adverse effect. Contractors hired for the various construction projects would be responsible for the removal and disposal of their construction wastes generated on site. The estimated amounts of debris that would be generated from the proposed construction activities are provided in **Table 4.13-1.**

Table 4.13-1. Estimated Debris Generated from the Proposed Construction Activities for Alternative 1

Project	Total Square Footage	Multiplier (pounds/ft²)	Debris Generated (pounds)	Debris Generated (tons)
Parking Apron	502,682	1	502,682	0.25
Cargo Pad	250,470	1	250,470	0.125
Maintenance Facility	6,100	4.34	26,474	0.013
Jet Fuel Systems	131,987	4.34	572,823	286
Hydrant System	161,172	4.34	699,486	0.35
Total	**1,052,411**	**N/A**	**2,051,935**	**1,025**

Source: USEPA 2009

The debris generated from the proposed construction activities associated with Alternative 1 would total an estimated 1,025 tons over a period of approximately 3 years. Considering that the MSWF can process at least 40,000 tons of solid waste per year and uses state-of-the-art waste reduction and diversion technologies, there is sufficient solid waste processing infrastructure to divert most of the construction debris and landfill the remaining material.

4.13.1.2 Implementation Phase

Airfield. Long-term, direct, negligible, adverse impacts on the airfield would be expected from the increased use of the runway and taxiways. Long-term, direct, minor, beneficial impacts on the airfield would be expected due to the increased aircraft parking capacity at the airfield. The USAF would coordinate with CPA to determine potential common use of all new infrastructure improvements except the proposed maintenance facility.

Port. No impacts on the port infrastructure would be expected from implementation of Alternative 1.

Electrical Supply. Long-term, indirect, minor, adverse impacts on electrical supply would be expected because energy demand would increase due to the additional buildings and water consumption. The impacts would be considered minor because the central power plant and the Kiya Substation have an electrical capacity well above its current load. Saipan has an electrical generation capacity 12 MW above its peak load. Although Saipan International Airport's electricity is supplied by the Kiya Substation, which has an electrical capacity of more than double its current load of approximately 16 MW, the generators supplying the Kiya Substation are in poor condition and the additional demand could stress their condition further, thus reducing their long-term reliability. In addition, a more expansive high-voltage transmission backbone would be needed to tap into this potential for many areas of Saipan International Airport. Extending transmission might be necessary and would result in increased maintenance needs.

Minor impacts would be expected because the increase in population and energy demand for exercises would be no more than 8 weeks per year. In addition, the new facilities would be designed to achieve Leadership in Energy and Environmental Design (LEED) Silver certification; therefore, state-of-the-art energy efficiency would be expected. The JRM Energy Conservation Instruction also aims to adopt sustainable design concepts in all new construction.

***Central Heating and Cooling*.** No impacts on central heating or cooling would be expected because the airport has its own separate cooling system. The proposed buildings would use self-contained, electrically powered air conditioning units.

***Natural Gas Supply*.** No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 1 does not include the use of natural gas.

***Liquid Fuel Supply*.** Long-term, direct, minor, adverse impacts on jet fuel would be expected from Alternative 1 due to the increase in fuel that would need to be delivered to the island. Long-term, direct, minor to moderate, beneficial impacts would also be expected from the increased liquid fuel supply of 100,000 barrels (4.2 million gallons) at both the seaport and Saipan International Airport, respectively.

***Water Supply*.** Long-term, direct, minor, adverse impacts on the water supply would be expected under Alternative 1 due to periodic use of an already strained system. Saipan lacks a continuous potable water supply in areas and the water supply system is highly inefficient. The temporary slight increase in population is negligible compared to the 48,220 people that currently populate Saipan. Based on up to 265 personnel using an average of 98 gallons per day per person (USGS 2009b), implementation of Alternative 1 would result in the consumption of up to 25,970 gallons per day, which is 0.5 percent of the water production capacity in Saipan. The USAF would coordinate with the CUC to ensure the water supply is sufficient. Because it is assumed that exercises would not occur for 8 weeks straight per year, significant localized impacts on water supply are not expected. Coordination with local regulatory authorities and CUC should avoid any localized impacts during this time. If local regulatory authorities determine that there would be a potential for adverse effects on the drinking water or aquifer to occur, the USAF would use other methods (e.g., bottled water, potable desalinization/water purification units) to obtain drinking water.

***Sanitary Sewer and Wastewater Treatment*.** Long-term, indirect, minor, adverse impacts on sanitary sewer and wastewater treatment would be expected from implementation of Alternative 1. The *2009 Comprehensive Economic Development Strategic Plan for the U.S. Commonwealth of the Northern Mariana Islands* highlighted that the existing wastewater and sewer systems need major rehabilitation and upgrades in order to be USEPA-compliant and achieve sufficiency. It is assumed that the constructed facilities would also be connected to the existing sewer system on Saipan. Alternative 1 would add additional input into a deficient wastewater treatment system. However, the wastewater resulting from the additional personnel increase for only 8 weeks per year would be minor compared to the wastewater produced by Saipan's current population. The USAF would coordinate with the CUC to determine how to use the wastewater and sewer system in a manner that would not contribute to noncompliance with the NPDES permit requirements.

Storm Water. Long-term, direct, minor, adverse impacts on storm water would result from Alternative 1. Implementing Alternative 1 would increase impervious surfaces by 1,245,382 ft^2. As a result, there would be an increase in runoff and a reduction of groundwater recharge. Alternative 1 would exacerbate the already insufficient storm water drainage on the island. Storm water from the impervious surfaces of Alternative 1 would be partially handled by the existing ditches, swales, and culverts that transport storm water to the 20-million-gallon water-catchment reservoir east of Taxiway D. Alternative 1 would also reduce adverse impacts via implementation and maintenance of the storm water BMPs that would be put in place during the proposed construction activities.

***Communications*.** Long-term, direct, minor, adverse impacts on communications would result from Alternative 1. Communication systems at the Saipan International Airport would be upgraded on an as-needed basis and the upgrades would be minimal. Communications would be provided from local commercial telephone and internet service providers. It is anticipated that the existing telephone company infrastructure would have the capacity to support any additional, necessary communication lines.

***Solid Waste*.** Long-term, direct, negligible, adverse impacts on solid waste would be expected from the periodic population increase associated with Alternative 1. The solid waste generated by personnel related to Alternative 1 would be approximately 0.2 percent of the solid waste generated by the 48,220 people at Saipan. Saipan has sufficient solid waste processing infrastructure to divert a considerable amount of solid waste and landfill the remaining material. In addition, recycling bins would be used on site to minimize materials sent to the landfill.

4.13.2 Alternative 2 - Modified Tinian Alternative

4.13.2.1 Construction Phase

4.13.2.1.1 North Option

***Airfield*.** Short-term, direct, moderate, adverse impacts on the airfield would be expected from the disruption to commercial aircraft operations during construction activities associated with Alternative 2 North Option. However, these impacts would be minimized by optimizing the scheduling of construction activities and commercial flights to minimize overlap. These impacts would be temporary because the Construction Phase would last only 3 years. Long-term, direct, moderate, beneficial impacts on the airfield would be expected from the proposed improvements.

Port. Short-term, direct, negligible, adverse impacts on the port would be expected from the disruption caused by construction activities associated with Alternative 2 North Option. Long-term, direct, minor, beneficial impacts on the port would be expected because of additional fuel storage capacity. Any buried utility lines on the site of the proposed fuel storage tanks would have to be permanently relocated.

***Electrical Supply*.** Short-term, direct, negligible, adverse impacts on the existing electrical system would be expected from the extension of electrical lines to and the relocation or upgrading of any buried electrical lines under Alternative 2 North Option. These short-term impacts could include potential power disruptions when new facilities and lighting systems are connected to the power grid and when power lines are deactivated during construction. However, long-term, direct, minor, beneficial impacts would be expected from the upgrades provided to the electrical system.

It is assumed that the construction contractors would primarily use diesel- or battery-powered equipment. Any construction equipment that is powered via electricity would likely receive power from a portable generator or a temporary electrical panel.

***Central Heating and Cooling*.** No impacts on central heating or cooling would be expected because the airport has its own separate cooling system.

Natural Gas Supply. No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 2 North Option does not include the use of natural gas.

***Liquid Fuel Supply*.** Short-term, direct, negligible, adverse impacts on liquid fuel supply would be expected due to the minimal amounts of petroleum that would be required for construction equipment and cement and concrete transportation during the proposed construction activities. The required petroleum would be brought on site by contractors and removed when construction activities are complete.

Cement trucking from the Port of Tinian to the commercial concrete supply company would involve 6 dump trucks driving 1.7 miles per trip for a total of 364 trips per year. In addition, concrete trucking from the commercial concrete supply company to Tinian International Airport would involve 10 concrete mixer trucks driving 2.3 miles per trip for a total of 6,478 trips per year. Therefore 15,518 miles would be driven transporting cement and concrete per year. The average medium-sized construction truck has a fuel economy of approximately 6.4 miles per gallon of diesel fuel, resulting in an estimated 2,425 gallons of diesel fuel consumed per year for 3 years.

Tinian International Airport has no capacity to receive, store, and distribute A1 jet fuel. Construction of the proposed jet fuel infrastructure improvements would be expected to involve no disruptions to commercial aircraft fueling operations. Likewise, the seaport has no A1 jet fuel storage and distribution system, so construction of the proposed fuel tanks at the seaport would not interrupt existing liquid fuel operations.

Long-term, direct, major, beneficial impacts on the capacity to receive, store and distribute aviation fuel would result from Alternative 2 North Option, which would increase fuel storage capacity at Tinian International Airport by 220,000 barrels (9.24 million gallons) of fuel. Fuel storage capacity at the Port of Tinian would increase by 100,000 barrels (4.2 million gallons.

***Water Supply*.** Short-term, direct, negligible, adverse and long-term, direct, moderate, beneficial impacts on the water supply would be expected from the temporary shutoff, relocation, extension, upgrade, and connection of water lines during construction. Any existing water pipes within the project area would be relocated and upgraded as necessary. The proposed maintenance facility would require permanent 1.5-inch water connections for domestic water use and a 6-inch water line for fire suppression systems.

Short-term, direct, minor, adverse impacts on the water supply would be expected from the water used during construction for dust suppression. An estimated 500 gallons/acre/day could be used for dust suppression during construction activities. Alternative 2 North Option would involve approximately 103 acres of construction resulting in about 51,500 gallons of water per day over the course of 3 years. This is a minor amount (4 percent) compared to the 1,260,000 gallons of water per day Tinian is able to generate.

***Sanitary Sewer and Wastewater Treatment*.** No impacts on sewer or wastewater treatment would be expected from the construction associated Alternative 2 North Option because residents and businesses on Tinian have individual septic tanks. It is assumed that the construction workers would use portable toilets at the construction site.

One or more septic systems would need to be constructed to handle up to 265 personnel for Alternative 2 North Option. An Individual Wastewater Disposal System Permit Application from CNMI DEQ would be obtained for each septic system.

Storm Water. Short-term, direct, minor, adverse impacts on the storm water management system would be expected from the construction activities associated with Alternative 2 North Option. A temporary increase in storm water runoff, erosion, and sedimentation would be expected during the proposed construction activities. The discharge of storm water runoff from construction activities at Tinian International Airport and the seaport must be authorized by a separate construction storm water permit issued by the USEPA in accordance with the *General Permit for Storm Water Discharges from Construction Activities*. The permit requires the development and implementation of a construction-specific SWPPP for construction activities at a site totaling 1 acre or more and where storm water discharges from the construction area enter an MS4 system that leads to natural drainage channels or streams classified as surface waters of the United States. An SWPPP approved by the DEQ would be required and must contain an NPDES permit declaration. In addition, the permit requires that discharges from storm water controls be directed to vegetated areas of the site to increase sediment removal and maximize storm water infiltration wherever feasible (USEPA 2012b). This would minimize the temporary increase in storm water runoff, erosion, and sedimentation. In order to get DEQ approval, the construction activities would need to implement BMPs and meet their location-specific storm water quality and quantity requirements. Due to the development of an SWPPP, the vegetated areas surrounding Tinian International Airport, and the high infiltration rates of the island, the impacts would not be significant.

Construction under Alternative 2 North Option would create approximately 4,483,194 ft^2 of new impervious surfaces. Storm water management controls would be designed and implemented consistent with construction storm water permit requirements and the USAF ETL 03-1: *Storm Water Construction Standards* to minimize potential adverse impacts on surface waters associated with the construction of the impervious surfaces. Compliance with USAF ETL 03-1 requires implementation of BMPs to reduce site storm water discharges and pollutant loadings to preconstruction levels or better. A storm water-control site plan would be required and must contain an NPDES permit declaration.

Because this is a Federal project, Alternative 2 North Option also would involve the use of low-impact development strategies to comply with EISA Section 438. Low-impact development strategies include the construction of grass swales or infiltration to intercept and contain any runoff during heavy rains. Additionally, drywells could be installed at all air conditioning units to prevent muddy and unsafe working conditions. Lastly, rain barrels, a cistern, or other collection devices could be installed to capture rain water for recycling (AFCEE/PACAF 2010).

Communications. Short-term, direct, negligible, adverse impacts on the communications system could occur as the proposed facilities are connected to the existing communication systems in the vicinity of the airport.

Solid Waste. Short-term, direct, moderate, adverse impacts on solid waste management would be expected from the generation of construction debris. Construction debris is generally composed of clean materials, and this waste would be recycled as available. However, debris that is not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Contractors hired for the various construction projects would be responsible for the removal and disposal of their construction wastes generated on site. The estimated amounts of debris generated from the proposed construction activities are provided in **Table 4.13-2.**

Table 4.13-2. Estimated Debris Generated from the Proposed Construction Activities for Alternative 2 North Option

Project	Total Square Footage	Multiplier (pounds/ft²)	Debris Generated (pounds)	Debris Generated (tons)
Access Road	128,924	1	128,924	64
Road Reroute	40,585	1	40,585	20
Taxiway	1,385,300	1	1,385,300	692
Parking Apron	1,729,805	1	1,729,805	864
Cargo Pad	299,754	1	299,754	149
Maintenance Facility	7,570	4.34	26,040	16
Airport Fuel Storage	527,437	4.34	2,951,200	1,475
Seaport Fuel Storage	230,587	4.34	2,903,460	1,451
Fuel Pump Tanks and Wells	83,705	4.34	363,279	181
Fire Water System	49,527	4.34	214,947	107
Total	**4,483,194**	**N/A**	**10,043,294**	**5,020**

Source: USEPA 2009

The debris generated from the proposed construction activities associated with Alternative 2 North Option would total an estimated 5,020 tons over a period of 3 years. There is a lack of municipal solid waste facilities on Tinian; therefore, the construction debris would have to be collected and transported off the Island of Tinian using commercial solid waste haulers and commercial barges or ships until a permitted municipal solid waste facility is constructed.

4.13.2.1.2 South Option

***Airfield*.** Short-term, direct, moderate, adverse impacts on the airfield would be expected from the disruption to commercial aircraft operations during construction activities associated with Alternative 2 South Option. However, these impacts would be minimized by optimizing the scheduling of construction activities and commercial flights to minimize overlap. These impacts would be temporary because the Construction Phase would last only 3 years. Additionally, impacts under Alternative 2 South Option would be less than those mentioned under the North Option because there would be no reroute of 8th Avenue or construction of a taxiway. Long-term, direct, moderate, beneficial impacts on the airfield would be expected from proposed improvements to the airport.

Port. Short-term, direct, negligible, adverse impacts on the Port of Tinian would be expected from the disruption caused by construction activities associated with Alternative 2 South Option. Long-term, direct, minor, beneficial impacts on the port would be expected because of additional fuel storage capacity. Any buried utility lines on the site of the proposed fuel storage tanks would have to be permanently relocated.

***Electrical Supply*.** Short-term, direct, negligible, adverse impacts on the existing electrical system would be expected from the extension of electrical lines to and the relocation or upgrading of any buried electrical lines. These short-term impacts could include potential power disruptions when new facilities and lighting systems are connected to the power grid and when power lines are deactivated during construction. However, long-term, direct, minor, beneficial impacts would be expected from the upgrades provided to the electrical system.

It is assumed that the construction contractors would primarily use diesel- or battery-powered equipment. Any construction equipment that is powered via electricity would likely receive power from a portable generator or a temporary electrical panel.

***Central Heating and Cooling*.** No impacts on central heating or cooling would be expected because the airport has its own separate cooling system.

***Natural Gas Supply*.** No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 2 South Option does not include the use of natural gas.

Liquid Fuel Supply. Short-term, direct, negligible, adverse impacts on liquid fuel supply would be expected due to the minimal amounts of petroleum that would be required for construction equipment and cement and concrete transportation during the proposed construction activities. The required petroleum would be brought on site by contractors and removed when construction activities are complete.

Cement trucking from the Port of Tinian to the commercial concrete supply company would involve 6 dump trucks driving 1.7 miles per trip for a total of 230 trips per year. In addition, concrete trucking from the commercial concrete supply company to Tinian International Airport would involve 10 concrete mixer trucks driving 2.3 miles per trip for a total of 4,093 trips per year. Therefore 9,805 miles would be driven transporting cement and concrete per year. The average medium-sized construction truck has a fuel economy of approximately 6.4 miles per gallon of diesel fuel, resulting in an estimated 1,532 gallons of diesel fuel consumed per year for 3 years.

The proposed fuel infrastructure improvements would be expected to involve no disruptions to commercial aircraft fueling operations. Likewise, the seaport has no A1 jet fuel storage and distribution system, so construction of the proposed fuel storage tanks and fuel line at the seaport would not interrupt existing liquid fuel operations.

Long-term, direct, major, beneficial impacts on the capacity to receive, store and distribute aviation fuel would result from Alternative 2 South Option. Similar to the North Option, Alternative 2 South Option would increase the fuel storage at the airport by 220,000 barrels (9.24 million gallons) of fuel. Fuel storage capacity at the Port of Tinian would increase by 100,000 barrels (4.2 million gallons.

***Water Supply*.** Short-term, direct, negligible, adverse and long-term, direct, moderate, beneficial impacts on the water supply would be expected from the temporary shutoff, relocation, extension, upgrade, and connection of water lines during construction. Any existing water pipes would be relocated and upgraded as necessary. The proposed maintenance facility would require permanent 1.5-inch water connections for domestic water use and a 6-inch water line for fire suppression systems.

Short-term, direct, minor, adverse impacts on the water supply would be expected from the water used during construction for dust suppression. An estimated 500 gallons/acre/day could be used for dust suppression during construction activities. Alternative 2 South Option would involve about approximately 65 acres of construction resulting in about 32,500 gallons of water per day over the course of 3 years. This is a minor amount (2.5 percent) compared to the 1,260,000 gallons of water per day Tinian is able to generate.

***Sanitary Sewer and Wastewater Treatment*.** No impacts would be expected from the construction associated with Alternative 2 South Option because residents and businesses on Tinian have individual septic tanks. It is assumed that the construction workers would use portable toilets at the site.

One or more septic systems would need to be constructed to handle up to 265 personnel for Alternative 2 South Option. An Individual Wastewater Disposal System Permit Application from CNMI DEQ would be obtained for each septic system.

Storm Water. Short-term, direct, negligible to minor, adverse impacts on the storm water management system would be expected from the construction activities associated with Alternative 2 South Option. A temporary increase in storm water runoff, erosion, and sedimentation would be expected during the proposed construction activities. The discharge of storm water runoff from construction activities at Tinian International Airport and the seaport must be authorized by a separate construction storm water permit issued by the USEPA in accordance with the *General Permit for Storm Water Discharges from Construction Activities*.

The permit requires the development and implementation of a construction-specific SWPPP for construction activities at a site totaling 1 acre or more and where storm water discharges from the construction area enter an MS4 system that leads to natural drainage channels or streams classified as surface waters of the United States. An SWPPP approved by the DEQ would be required and must contain an NPDES permit declaration. In addition, the permit requires that discharges from storm water controls be directed to vegetated areas of the site to increase sediment removal and maximize storm water infiltration wherever feasible (USEPA 2012b). This would minimize the temporary increase in storm water runoff, erosion, and sedimentation. In order to get DEQ approval, the construction activities would need to implement BMPs and meet their location-specific storm water quality and quantity requirements. Due to the development of an SWPPP, the vegetated areas surrounding Tinian International Airport, and the high infiltration rates of the island, the impacts would not be significant.

Construction under Alternative 2 South Option would create approximately 2,832,615 ft^2 of new impervious surfaces. Storm water management controls would be designed and implemented consistent with construction storm water permit requirements and the USAF ETL 03-1: *Storm Water Construction Standards* to minimize potential adverse impacts on surface waters associated with the construction of the impervious surfaces. Compliance with USAF ETL 03-1 requires implementation of BMPs to reduce site storm water discharges and pollutant loadings to preconstruction levels or better. A storm water-control site plan would be required and must contain an NPDES permit declaration.

Because this is a Federal project, Alternative 2 South Option also would involve the use of low-impact development strategies to comply with EISA Section 438. Low-impact development strategies include the construction of grass swales or infiltration to intercept and contain any runoff during heavy rains. Additionally, drywells could be installed at all air conditioning units to prevent muddy and unsafe working conditions. Lastly, rain barrels, a cistern, or other collection devices could be installed to capture rain water for recycling (AFCEE/PACAF 2010).

***Communications*.** Short-term, direct, negligible, adverse impacts on the communications system could occur as the proposed facilities are connected to the existing communication systems in the vicinity of the airport.

***Solid Waste*.** Short-term, direct, moderate, adverse impacts on solid waste management would be expected from the generation of construction debris. Construction debris is generally composed of clean materials, and waste would be recycled, as available. However, debris that is not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Contractors hired for the various construction projects would be responsible for the removal and disposal of their construction wastes generated on site. The estimated amounts of debris generated from the proposed construction activities are provided in **Table 4.13-3.**

The debris generated from the proposed construction activities associated with Alternative 2 South Option would total an estimated 2,948 tons over a period of 3 years. There is a lack of municipal solid waste facilities on Tinian; therefore, the construction debris would have to be collected and transported off the Island of Tinian using commercial solid waste haulers and commercial barges or ships until a permitted municipal solid waste facility is constructed.

Table 4.13-3. Estimated Debris Generated from the Proposed Construction Activities for Alternative 2 South Option

Project	Total Square Footage	Multiplier (pounds/ft²)	Debris Generated (pounds)	Debris Generated (tons)
Roadway Improvements	177,294	1	177,294	88
Parking Apron	1,508,251	1	1,508,251	754
Cargo Pad	230,165	1	230,165	115
Maintenance Facility	7,972	4.34	34,624	17
Airport Fuel Storage	542,464	4.34	2,354,293	1177
Seaport Fuel Storage	230,587	4.34	1,000,747	500
Fuel Pump Tanks and Wells	82,230	4.34	356,878	178
Fire Water System	53,652	4.34	232,849	116
Total	**2,832,615**	**N/A**	**5,895,101**	**2,948**

Source: USEPA 2009

4.13.2.2 Implementation Phase - North and South Options

Airfield. Long-term, direct, negligible, adverse impacts on the airfield would be expected from the increased use of the runway and taxiways. Implementation of Alternative 2 would include up to 720 aircraft operations per year, which would be a 5.5 percent increase above the existing number of air operations at Tinian International Airport.

Long-term, direct, moderate, beneficial impacts on the airfield would be expected at Tinian International Airport. Alternative 2 implementation would increase the aircraft parking capacity at the airfield. The USAF would coordinate with CPA to determine potential common use of new infrastructure improvements.

Port. No impacts on the port infrastructure would be expected from implementation of Alternative 2.

Electrical Supply. Long-term, indirect, minor, adverse impacts on electrical supply would be expected because energy demand would increase due to the additional buildings, temporary population, and water consumption. The impacts would be considered minor because Tinian has an electrical capacity well above its current load. The energy infrastructure has a maximum capacity of about 20 MW, while the current load is below 5 MW. In addition, the energy infrastructure is in good condition and is well-maintained. Although an electrical line runs along the east end of the airport property, there is currently no access to commercial power at the project areas (AFCEE/PACAF 2010). A more expansive electrical grid would be needed to tap into this potential for the project areas due to Tinian International Airport's limited feeder distribution network (CNMI 2011). This expansion would result in slightly increased maintenance needs. The increased electrical demand would also affect the goals of the JRM Energy Conservation Instruction to reduce energy consumption by 3 percent every year for a cumulative reduction of 30 percent by 2015.

Minor impacts would be expected because the increase in population and energy demand for exercises would be no more than 8 weeks per year. In addition, the new facilities would be designed to achieve LEED Silver certification; therefore, state-of-the-art energy efficiency would be expected. The JRM Energy Conservation Instruction also aims to adopt sustainable design concepts in all new construction.

***Central Heating and Cooling*.** No impacts on central heating or cooling would be expected because the airport has its own separate cooling system. The proposed buildings would use self-contained, electrically powered air conditioning units.

Natural Gas Supply. No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 2 does not include the use of natural gas.

***Liquid Fuel Supply*.** Long-term, minor, adverse impacts on jet and diesel fuel would be expected from Alternative 2 due to the increase in fuel that would need to be delivered to the island. Long-term, major, beneficial impacts on the capacity to receive, store, and distribute aviation fuel would result from Alternative 2 implementation, which would increase the jet fuel bulk storage capacity at Tinian International Airport by 220,000 barrels (9.24 million gallons) and include the installation of a hydrant fuel system. Similarly, Alternative 2 would increase fuel storage capacity at the Port of Tinian.

***Water Supply*.** Long-term, direct, minor, adverse impacts on the water supply would be expected from implementation of Alternative 2 due to the temporary increase in population (up to 265 personnel). The resulting water demand for exercises would only be on an as-needed basis totaling no more than 8 weeks per year; however, the temporary increase in population is considerable compared to the population of Tinian (3,136 people). Based on up to 265 personnel using an average of 98 gallons per day per person (USGS 2009b), implementation of Alternative 2 would result in the consumption of up to 25,970 gallons per day, which is 2 percent of the daily water production capacity in Tinian.

Additionally, the proposed fire suppression system on Tinian would require groundwater withdrawal to initially fill the associated water tanks. The calculated water storage to meet the requirement for fire suppression is 240,000 gallons; therefore, two 120,000-gallon water storage tanks would need to be filled. The size of the wells and the pumps are based on the requirement to replenish the water storage tanks within 24 hours. The total consumption of water for support personnel and the fire suppression water tanks in one day, as a conservative estimate, would be approximately 20 percent of the daily water production capacity in Tinian. However, after the initial fill of the fire suppression tanks they would only need to be refilled after a fire emergency.

The primary source of water for Alternative 2 would be the existing municipal water system; however, rain barrels, cisterns, or other collection devices could be used to reduce the demand on the municipal water system. The new facilities would be designed to achieve LEED Silver certification; therefore, state-of-the-art water efficiency would be expected.

***Sanitary Sewer and Wastewater Treatment*.** No impacts would be expected on the existing wastewater system because residents and businesses on Tinian have individual septic tanks.

Under Alternative 2, one or more septic systems would be used to handle the needs of up to 265 personnel. The septic systems would require long-term maintenance.

Storm Water. As discussed in **Section 4.13.2.1**, Alternative 2 would create up to 4,483,194 ft^2 of new impervious surfaces. Storm water management controls would be implemented consistent with construction storm water permit requirements and the USAF ETL 03-1: *Storm Water Construction Standards* to minimize potential adverse impacts on surface waters associated with the impervious surfaces. Compliance with USAF ETL 03-1 requires implementation of BMPs to reduce site storm water discharges and pollutant loadings to preconstruction levels or better. A storm water-control site plan would be required and must contain an NPDES permit declaration. Because this is a Federal project, Alternative 2 would involve the use and maintenance of low-impact development strategies to comply with EISA Section 438.

Communications**.** Long-term, direct, minor, adverse impacts on communications would result from Alternative 2. Communication systems at the Tinian International Airport would be upgraded on an as-needed basis and would be minimal. Communications would be provided from local commercial telephone and internet service providers. It is anticipated that the existing telephone company infrastructure would have the capacity to support any additional, necessary communication lines.

Solid Waste**.** Long-term, direct, minor, adverse impacts on solid waste would be expected from the lack of municipal solid waste facilities on Tinian. All solid waste would be collected and transported off the Island of Tinian using commercial solid waste haulers and commercial barges or ships until a permitted municipal solid waste facility was constructed. The solid waste generated by up to 265 people 8 weeks per year under Alternative 2 would be approximately 3 percent of the solid waste generated by 3,136 people at Tinian 52 weeks per year.

4.13.3 Alternative 3 - Hybrid Modified Alternative

4.13.3.1 Construction Phase

4.13.3.1.1 Saipan

Airfield**.** Short-term, direct, moderate, adverse impacts on the airfield would be expected from the disruption to commercial aircraft operations during construction activities associated with Alternative 3. However, these impacts would be minimized by optimizing the scheduling of construction activities and commercial flights to minimize overlap. These impacts would be temporary because the Construction Phase would last only 3 years. Long-term, direct, moderate, beneficial impacts on the airfield would be expected from the proposed improvements.

Port. No impacts on the port would be expected because construction is not proposed at the Port under Alternative 3 on Saipan.

Electrical Supply**.** Short-term, direct, negligible, adverse impacts on the existing electrical system would be expected at Saipan International Airport from the extension of electrical lines to and the relocation or upgrading of any buried electrical lines. These impacts would be temporary because the Construction Phase would last approximately 3 years. However, long-term, direct, minor, beneficial impacts would expected from the upgrades provided to the electrical system. Additional short-term, negligible, adverse impacts would be expected from potential power disruptions when new facilities and lighting systems are connected to the power grid and when power lines are deactivated during construction. New electrical lines at the Saipan International Airport would be connected to existing electrical transmission lines. The addition of new electrical systems on the Saipan power grid would not exceed the existing capacity of the Saipan power grids.

It is assumed that the construction contractors would primarily use diesel- or battery-powered equipment. Any construction equipment that is powered via electricity would likely receive power from a portable generator or a temporary electrical panel.

***Central Heating and Cooling*.** No impacts on heating or cooling systems would be expected because Alternative 3 does not include a connection to existing airport cooling system.

***Natural Gas Supply*.** No impacts on natural gas would be expected because there is no natural gas infrastructure on Saipan and Alternative 3 does not include the use of natural gas.

***Liquid Fuel Supply*.** Short-term, direct, negligible, adverse impacts on the liquid fuel supply would be expected from the minimal amounts of petroleum that would be required for construction equipment and cement and concrete transportation during the proposed construction activities. The required petroleum would be brought on site by contractors and removed when construction activities are complete.

Long-term, direct, major, beneficial impacts on the capacity to receive, store and distribute aviation fuel at Saipan International Airport would result from Alternative 3. The proposed construction improvements to jet fuel infrastructure at Saipan International Airport (i.e., storage tanks) would be expected to involve limited disruptions to the existing fuel system.

Cement trucking from the Port of Saipan to the commercial concrete supply company and from the commercial concrete supply company to the airport would be same as routes described in **Section 4.13.1.1**.

***Water Supply*.** Short-term, direct, negligible, adverse and long-term, direct, moderate, beneficial impacts on the water supply would be expected from the temporary shutoff, relocation, extension, upgrade, and connection of water lines during construction activities. Any existing water pipes would be relocated and upgraded as necessary. The proposed maintenance facility would require permanent 6-inch water connections for the fire water line and 1.5-inch domestic water line connections.

Short-term, direct, negligible, adverse impacts on the water supply would be expected from the water used during construction for dust suppression. However, under Alternative 3 on Saipan, the construction footprint would be less than that described under the Alternative 1 in **Section 4.13.1.1** and thus would require less water for dust suppression or construction purposes.

***Sanitary Sewer and Wastewater Treatment*.** Short-term, direct, negligible to minor, adverse impacts on the sewer system would be expected from any temporary shutoff during proposed construction. Existing sanitary sewer pipes would be relocated and upgraded as necessary. It is assumed that the construction workers would use portable toilets at the site.

Storm Water. Short-term, direct, negligible to minor, adverse impacts on the storm water management system would be expected from construction activities associated with Alternative 3 on Saipan. A temporary increase in storm water runoff, erosion, and sedimentation would be expected during the proposed construction activities. Storm water runoff is already a major environmental concern for Saipan residents. The discharge of storm water runoff from construction activities at Saipan International Airport and the seaport must be authorized by a construction storm water permit issued by the USEPA in accordance with the *General Permit for Storm Water Discharges from Construction Activities*. The permit requires the development and implementation of a construction-specific SWPPP for construction activities at a site totaling 1 acre or more and where storm water discharges from the construction area enter a MS4 that leads to natural drainage channels or streams classified as surface waters of the United States. An SWPPP approved by the DEQ would be required and must contain an NPDES permit declaration. In addition, the permit requires that discharges from storm water controls be directed to vegetated areas to increase sediment removal and maximize storm water infiltration wherever feasible (USEPA 2012b). This would minimize the temporary increase in storm water runoff, erosion, and sedimentation. In order to get DEQ approval, the construction activities would need to implement BMPs and meet their location-specific storm water quality and quantity requirements. Due to the development of an SWPPP, the vegetated areas surrounding Saipan International Airport, and the high infiltration rates of the island, the impacts would not be significant. Additionally, impacts under Alternative 3 on Saipan would be less than that described under Alternative 1 in **Section 4.13.1.1** because there would be less impervious surface associated with the alternative.

Because this is a Federal project, Alternative 3 on Saipan would also involve the use of low-impact development strategies to comply with EISA Section 438. Low-impact development strategies include the construction of grass swales or infiltration ditches to intercept and contain any runoff during heavy rains. Additionally, drywells could be installed at all air conditioning units to prevent muddy and unsafe working conditions construction areas. Lastly, rain barrels, a cistern, or other collection devices could be installed to capture rain water for recycling (AFCEE/PACAF 2010).

Preventive BMPs include limiting stockpiling of materials on site; managing stockpiled materials to minimize the time between delivery and use; covering stockpiled materials with tarps; installing silt fences around material stockpiles, storm water drainage routes, culverts, and drains; installing fabric filters, netting, and mulching around material stockpiles, storm water drainage routes, culverts, and drains; revegetation of disturbed areas with native species as soon as possible upon completion of construction to stabilize topsoil and prevent water erosion; using rip rap in areas susceptible to erosion; and using a sedimentation basin for collection of runoff to allow suspended solids to precipitate out of solution to improve surface water quality.

Communications. Short-term, direct, negligible, adverse impacts on the communications system could occur as the proposed facilities are connected to the existing communication systems in the vicinity of the airport.

Solid Waste. Short-term, direct, negligible to minor, adverse impacts on solid waste management would be expected from the generation of construction debris. Construction debris is generally composed of clean materials, and most of this waste would be recycled because the MSWF uses state-of-the-art waste reduction and diversion technologies and implements recycling programs. However, debris that cannot be recycled would be landfilled, which would be a long-term, irreversible, adverse effect. Contractors hired for the various construction projects would be responsible for the removal and disposal of their construction wastes generated on site. The estimated amounts of debris under Alternative 3 on Saipan would be less than that described under Alternative 1 in **Section 4.13.1.1** because less infrastructure would be constructed. Therefore, negligible impacts on solid waste on Saipan during the Construction Phase would be expected.

4.13.3.1.2 Tinian

4.13.3.1.2.1 NORTH OPTION

Airfield. Short-term, direct, moderate, adverse impacts on the airfield would be expected from the disruption to commercial aircraft operations during construction activities associated with Alternative 3 North Option. However, these impacts would be minimized by optimizing the scheduling of construction activities and commercial flights to minimize overlap. These impacts would be temporary because the Construction Phase would last only up to 3 years. Long-term, direct, moderate, beneficial impacts on the airfield would be expected from the proposed improvements. Additionally, under Alternative 3 North Option the construction footprint would be less than that described under Alternative 2 North Option in **Section 4.13.2.1**.

Port. Short-term, direct, negligible, adverse impacts on the port would be expected from the disruption caused by construction activities associated with Alternative 3 North Option. Long-term, direct, minor, beneficial impacts on the port would be expected because of additional fuel storage capacity. Any buried utility lines on the site of the proposed fuel storage tanks would have to be permanently relocated.

Electrical Supply. Short-term, direct, negligible, adverse impacts on the existing electrical system would be expected from the extension of electrical lines to and the relocation or upgrading of any buried electrical lines within the airport and seaport. However, long-term, direct, minor, beneficial impacts would be expected from any upgrades provided to the electrical system. Additional short-term, negligible, adverse impacts would be expected due to potential power disruptions when new facilities and lighting systems are connected to the power grid and when power lines are deactivated during construction.

It is assumed that the construction contractors would primarily use diesel- or battery-powered equipment. Any construction equipment that is powered via electricity would likely receive power from a portable generator or a temporary electrical panel.

Central Heating and Cooling. No impacts on central heating or cooling would be expected because Alternative 3 North Option does not involve connecting to the airport's cooling system.

Natural Gas Supply. No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 3 North Option does not include the use of natural gas.

***Liquid Fuel Supply*.** Short-term, direct, negligible, adverse impacts on liquid fuel supply would be expected due to the minimal amounts of petroleum that would be required for construction equipment and cement and concrete transportation during the proposed construction activities. The required petroleum would be brought on site by contractors and removed when construction activities are complete.

Cement trucking from the Port of Tinian, to the commercial concrete supply company, and then to Tinian International Airport would be same as the routes described in **Section 4.13.2.1**.

Long-term, minor, adverse impacts on jet and diesel fuel would be expected from Alternative 3 North Option due to the increase in fuel that would need to be delivered to the island. Tinian International Airport has no capacity to receive, store, and distribute A1 jet fuel. The proposed jet fuel infrastructure improvements would be expected to involve no disruptions to commercial aircraft fueling operations. Likewise, the seaport has no A1 jet fuel storage and distribution system, so construction of the proposed fuel storage tanks at the seaport would not interrupt existing liquid fuel operations.

Long-term, direct, major, beneficial impacts on the capacity to receive, store and distribute aviation fuel would result from Alternative 3 North Option, which would increase fuel storage capacity at the Tinian International Airport by 120,000 barrels (5.04 million gallons) of fuel.

***Water Supply*.** Short-term, direct, negligible, adverse and long-term, direct, moderate, beneficial impacts on the water supply would be expected from the temporary shutoff, relocation, extension, upgrade, and connection of water lines during construction. Any existing water pipes would be relocated and upgraded as necessary. The proposed maintenance facility would require permanent 1.5-inch water connections for domestic water use and a 6-inch water line for fire suppression systems.

Impacts associated with water use for dust suppression under Alternative 3 North Option would be less than those mentioned under Alternative 2 in **Section 4.13.2** because the construction footprint for Alternative 3 would be smaller than that for Alternative 2.

***Sanitary Sewer and Wastewater Treatment*.** No impacts would be expected from the construction associated with Alternative 3 North Option because residents and businesses on Tinian have individual septic tanks. It is assumed that the construction workers would use portable toilets at the site.

One or more septic systems would need to be constructed to handle up to 265 personnel for the Alternative 3 North Option. An Individual Wastewater Disposal System Permit Application from CNMI DEQ would be obtained for each septic system.

Storm Water. Short-term, direct, minor, adverse impacts on the storm water management system would be expected from the construction activities associated with Alternative 3 North Option. A temporary increase in storm water runoff, erosion, and sedimentation would be expected during the proposed construction activities; however, these impacts would be less than those mentioned under **Section 4.13.2.1**. The discharge of storm water runoff from construction activities at Tinian International Airport and the seaport must be authorized by a separate construction storm water permit issued by the USEPA in accordance with the *General*

Permit for Storm Water Discharges from Construction Activities. The permit requires the development and implementation of a construction-specific SWPPP for construction activities at a site totaling 1 acre or more and where storm water discharges from the construction area enter an MS4 system that leads to natural drainage channels or streams classified as surface waters of the United States. An SWPPP approved by the DEQ would be required and must contain an NPDES permit declaration. In addition, the permit requires that discharges from storm water controls be directed to vegetated areas of the site to increase sediment removal and maximize storm water infiltration wherever feasible (USEPA 2012b). This would minimize the temporary increase in storm water runoff, erosion, and sedimentation. In order to get DEQ approval, the construction activities would need to implement BMPs and meet their location-specific storm water quality and quantity requirements. Due to the development of an SWPPP, the vegetated areas surrounding Tinian International Airport, and the high infiltration rates of the island, the impacts would not be significant.

Storm water management controls would be designed and implemented consistent with construction storm water permit requirements and the USAF ETL 03-1: *Storm Water Construction Standards* to minimize potential adverse impacts on surface waters associated with the construction of the impervious surfaces. Compliance with USAF ETL 03-1 requires implementation of BMPs to reduce site storm water discharges and pollutant loadings to preconstruction levels or better. A storm water-control site plan would be required and must contain an NPDES permit declaration.

Because this is a Federal project, Alternative 3 North Option also would involve the use of low-impact development strategies to comply with EISA Section 438. Low-impact development strategies include the construction of grass swales or infiltration to intercept and contain any runoff during heavy rains. Additionally, drywells could be installed at all air conditioning units to prevent muddy and unsafe working conditions. Lastly, rain barrels, a cistern, or other collection devices could be installed to capture rain water for recycling (AFCEE/PACAF 2010).

***Communications*.** Short-term, direct, negligible, adverse impacts on the communications system could occur as the proposed facilities are connected to the existing communication systems in the vicinity of the airport.

***Solid Waste*.** Short-term, direct, moderate, adverse impacts on solid waste management would be expected from the generation of construction debris. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris that is not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Contractors hired for the various construction projects would be responsible for the removal and disposal of their construction wastes generated on site. Impacts on solid waste management under Alternative 3 North Option would be less than those mentioned under Alternative 2 in **Section 4.13.2.1** because the construction footprint for Alternative 3 would be smaller than that for Alternative 2.

4.13.3.1.2.2 SOUTH OPTION

***Airfield*.** Under Alternative 3 South Option, the construction footprint on the south portion of Tinian International Airport would be less than that described under Alternative 2 South Option and less than Alternative 3 North Option in **Sections 4.13.2.1.2** and **4.13.3.1.2.1**, respectively.

Therefore, minor impacts on the Tinian International Airport during the Construction Phase would be expected.

Port. Short-term, direct, negligible, adverse impacts on the port would be expected from the disruption caused by construction activities associated with Alternative 3 South Option. Long-term, direct, minor, beneficial impacts on the port would be expected because of additional fuel storage capacity. Any buried utility lines on the site of the proposed fuel storage tanks would have to be permanently relocated.

Electrical Supply**.** Under Alternative 3 South Option, the construction footprint on the south portion of Tinian International Airport would be less than that described under Alternative 2 South Option and Alternative 3 North Option in **Sections 4.13.2.1.2** and **4.13.3.1.2.1**, respectively. Therefore, negligible to minor impacts on the electrical supply at Tinian International Airport during the Construction Phase would be expected.

It is assumed that the construction contractors would primarily use diesel- or battery-powered equipment. Any construction equipment that is powered via electricity would likely receive power from a portable generator or a temporary electrical panel.

Central Heating and Cooling**.** No impacts on central heating or cooling would be expected because Alternative 3 South Option does not involve connecting to the airport's cooling system.

Natural Gas Supply. No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 3 South Option does not include the use of natural gas.

Liquid Fuel Supply**.** Under Alternative 3 South Option, the construction footprint on the south portion of Tinian International Airport would be less than that described under Alternative 2 South Option and Alternative 3 North Option in **Sections 4.13.2.1.2** and **4.13.3.1.2.1**, respectively. Therefore, less construction equipment would be necessary and less fuel for the construction equipment would also be needed. Short-term, direct, negligible, adverse impacts on liquid fuel supply would be expected due to the minimal amounts of petroleum that would be required for construction equipment and cement and concrete transportation during the proposed construction activities. The required petroleum would be brought on site by contractors and removed when construction activities are complete.

Cement trucking from the Port of Tinian, to the commercial concrete supply company, and then to Tinian International Airport would be same as those routes described in **Section 4.13.2.1.2**.

Long-term, minor, adverse impacts on jet and diesel fuel would be expected from Alternative 3 South Option due to the slight increase in fuel that would need to be delivered to the island. Tinian International Airport has no capacity to receive, store, and distribute A1 jet fuel. The proposed jet fuel infrastructure improvements would be expected to involve no disruptions to commercial aircraft fueling operations. Likewise, the seaport has no A1 jet fuel storage and distribution system, so construction of the proposed fuel storage tanks at the seaport would not interrupt existing liquid fuel operations.

Long-term, direct, major, beneficial impacts on the capacity to receive, store and distribute aviation fuel would result from Alternative 3 South Option, which would increase the fuel storage capacity at Tinian International Airport by 100,000 barrels (4.2 million gallons) of fuel.

***Water Supply*.** Short-term, direct, negligible, adverse and long-term, direct, moderate, beneficial impacts on the water supply would be expected from the temporary shutoff, relocation, extension, upgrade, and connection of water lines during construction. Any existing water pipes would be relocated and upgraded as necessary. The proposed maintenance facility would require permanent 1.5-inch water connections for domestic water use and a 6-inch water line for fire suppression systems.

Impacts under Alternative 3 South Option would be less than those mentioned under Alternative 2 South Option in **Section 4.13.2.1.2** because the construction footprint is smaller.

***Sanitary Sewer and Wastewater Treatment*.** No impacts would be expected from the construction associated with Alternative 3 South Option because residents and businesses on Tinian have individual septic tanks. It is assumed that the construction workers would use portable toilets at the site.

One or more septic systems would need to be constructed to handle up to 265 personnel on Tinian. An Individual Wastewater Disposal System Permit Application from CNMI DEQ would be obtained for each septic system.

Storm Water. Short-term, direct, negligible to minor, adverse impacts on the storm water management system would be expected from the construction activities associated with Alternative 3 South Option. A temporary increase in storm water runoff, erosion, and sedimentation would be expected during the proposed construction activities; however, these impacts would be less than those mentioned under Alternative 2 South Option described in **Section 4.13.2.1.2**. The discharge of storm water runoff from construction activities at Tinian International Airport and the seaport must be authorized by a separate construction storm water permit issued by the USEPA in accordance with the *General Permit for Storm Water Discharges from Construction Activities*. The permit requires the development and implementation of a construction-specific SWPPP for construction activities at a site totaling 1 acre or more and where storm water discharges from the construction area enter an MS4 system that leads to natural drainage channels or streams classified as surface waters of the United States. An SWPPP approved by the DEQ would be required and must contain an NPDES permit declaration. In addition, the permit requires that discharges from storm water controls be directed to vegetated areas of the site to increase sediment removal and maximize storm water infiltration wherever feasible (USEPA 2012b). This would minimize the temporary increase in storm water runoff, erosion, and sedimentation. In order to get DEQ approval, the construction activities would need to implement BMPs and meet their location-specific storm water quality and quantity requirements. Due to the development of an SWPPP, the vegetated areas surrounding Tinian International Airport and the seaport, and the high infiltration rates of the island, the impacts would not be significant.

Storm water management controls would be designed and implemented consistent with construction storm water permit requirements and the USAF ETL 03-1: *Storm Water*

Construction Standards to minimize potential adverse impacts on surface waters associated with the construction of the impervious surfaces. Compliance with USAF ETL 03-1 requires implementation of BMPs to reduce site storm water discharges and pollutant loadings to preconstruction levels or better. A storm water-control site plan would be required and must contain an NPDES permit declaration.

Because this is a Federal project, Alternative 3 South Option also would involve the use of low-impact development strategies to comply with EISA Section 438. Low-impact development strategies include the construction of grass swales or infiltration to intercept and contain any runoff during heavy rains. Additionally, drywells could be installed at all air conditioning units to prevent muddy and unsafe working conditions. Lastly, rain barrels, a cistern, or other collection devices could be installed to capture rain water for recycling (AFCEE/PACAF 2010).

***Communications*.** Short-term, direct, negligible, adverse impacts on the communications system could occur as the proposed facilities are connected to the existing communication systems in the vicinity of the airport.

***Solid Waste*.** Short-term, direct, moderate, adverse impacts on solid waste management would be expected from the generation of construction debris. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris that is not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Contractors hired for the various construction projects would be responsible for the removal and disposal of their construction wastes generated on site. Impacts on solid waste under Alternative 3 South Option would be less than those mentioned under the Alternative 3 North Option in **Section 4.13.3.1.2.1** because the construction footprint is smaller for the South Option.

4.13.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.13.3.2.1 Saipan

***Airfield*.** Long-term, direct, negligible, adverse impacts on the airfield would be expected from the increased use of the runway and taxiways for up to 720 operations (i.e., 360 take-offs and 360 landings) per year.

Long-term, direct, moderate, beneficial impacts on the airfield would be expected at Saipan International Airport. The Alternative 3 Implementation Phase would increase the aircraft parking capacity at the airfield. The USAF would coordinate with CPA to determine potential common use of new infrastructure improvements.

***Port*.** No impacts on the Port of Saipan infrastructure would be expected from the implementation of Alternative 3.

***Electrical Supply*.** Long-term, indirect, negligible, adverse impacts on electrical supply would be expected because energy demand would increase due to the additional buildings, airfield lighting, population, and water consumption; however, the current electrical capacity would not be exceeded.

Negligible impacts would be expected because the slight increase in population and energy demand for exercises would be no more than 8 weeks per year. In addition, the new facilities would be designed to achieve LEED Silver certification; therefore, state-of-the-art energy efficiency would be expected.

***Central Heating and Cooling*.** No impacts on central heating or cooling would be expected because Alternative 3 does not involve connecting to the airport's cooling system.

Natural Gas Supply. No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 3 does not include the use of natural gas.

***Liquid Fuel Supply*.** Long-term, major, beneficial impacts on the capacity to receive, store, and distribute aviation fuel would result from the Alternative 3 Implementation Phase, which would increase jet fuel storage at Saipan International Airport by 100,000 barrels (4.22 million gallons) of storage. It would take 6 standard fuel trucks (10,000 gallons each) 14 days working approximately 10 hours per day to initially to fill the jet fuel storage tanks at the airport.

***Water Supply*.** Long-term, direct, minor, adverse impacts on the water supply would be expected under Alternative 3 on Saipan due to periodic use of an already strained system. Saipan lacks a continuous potable water supply in areas and the water supply system is highly inefficient. The temporary slight increase in population is negligible compared to the 48,220 people that currently populate Saipan. Based on up to 265 personnel using an average of 98 gallons per day per person (USGS 2009b), implementation of Alternative 3 on Saipan would result in the consumption of up to 25,088 gallons per day, which is 0.5 percent of the water production capacity in Saipan.

The USAF would coordinate with the CUC to ensure the water supply is sufficient. Because it is assumed that exercises would not occur for 8 weeks straight per year, significant localized impacts on water supply are not expected. Coordination with local regulatory authorities and CUC should avoid any localized impacts during this time. If local regulatory authorities determine the potential for adverse effects on the drinking water or aquifer to occur, the USAF would use other methods (e.g., bottled water, potable desalinization/water purification units) to obtain drinking water.

The primary source of water for the Alternative 3 Implementation Phase on Saipan would be the existing municipal water system; however, rain barrels, cisterns, or other collection devices could be used to reduce the demand on the municipal water system. The new facilities would be designed to achieve LEED Silver certification; therefore, state-of-the-art water efficiency would be expected.

***Sanitary Sewer and Wastewater Treatment*.** Long-term, indirect, minor, adverse impacts on sanitary sewer and wastewater treatment would be expected from implementation of Alternative 3 on Saipan. The *2009 Comprehensive Economic Development Strategic Plan for the U.S.*

Commonwealth of the Northern Mariana Islands highlighted that the existing wastewater and sewer systems need major rehabilitation and upgrades in order to be USEPA-compliant and achieve sufficiency. It is assumed that the constructed facilities would also be connected to the existing sewer system on Saipan. Alternative 3 on Saipan would add additional input into a deficient wastewater treatment system. However, the wastewater resulting from the additional personnel increase for only 8 weeks per year would be minor compared to the wastewater produced by Saipan's current population. The USAF would coordinate with the CUC to determine how to use the wastewater and sewer system in a manner that would not contribute to noncompliance with the NPDES permit requirements.

Storm Water. Long-term, direct, minor, adverse impacts on storm water would result from the Alternative 3 Implementation Phase. Implementing Alternative 3 on Saipan would increase impervious surfaces by 388,557 ft^2. As a result, there would be an increase in runoff and a reduction of groundwater recharge. Storm water from the impervious surfaces of Alternative 3 Implementation Phase would be partially handled by existing drainage ditches and partially handled via the rain barrels, cisterns, and other collection devices used to collect storm water. The remainder of the storm water would sheet flow overland to lower elevations. Lastly, Alternative 3 would include the implementation and maintenance of the storm water BMPs that would be put in place during the proposed construction activities to reduce the adverse impacts of storm water flow from the impervious surfaces.

***Communications*.** Long-term, direct, minor, adverse impacts on communications would result from the Alternative 3 Implementation Phase. Communication systems at the Saipan International Airport would be upgraded on an as-needed basis and would be minimal. Communications would be provided from local commercial telephone and internet service providers. It is anticipated that the existing telephone company infrastructure would have the capacity to support any additional, necessary communication lines.

***Solid Waste*.** Long-term, direct, negligible, adverse impacts on solid waste would be expected from the periodic population increase associated with the Alternative 3 Implementation Phase. The solid waste generated by up to 265 people 8 weeks per year under the Alternative 3 Implementation Phase would be approximately 0.2 percent of the solid waste generated by the 48,220 people at Saipan 52 weeks per year. Saipan has sufficient solid waste processing infrastructure to divert a considerable amount of solid waste and landfill the remaining material. In addition, recycling bins would be used on site to minimize materials sent to the landfill.

4.13.3.2.2 Tinian North and South Options

***Airfield*.** Under Alternative 3 Implementation Phase at Tinian, the same number of aircraft operations could occur as described under Alternative 2. Therefore, impacts during the Implementation Phase would be the same as described in **Section 4.13.2.2** and minor, adverse impacts on Tinian International Airport would be expected

Long-term, direct, moderate, beneficial impacts on the airfield would be expected at Tinian International Airport. Alternative 3 would increase the aircraft parking capacity at the airfield. The USAF would coordinate with CPA to determine potential common use of new infrastructure improvements.

Port. No impacts on the port infrastructure would be expected from the implementation of Alternative 3 on Tinian.

***Electrical Supply*.** Long-term, indirect, minor, adverse impacts on electrical supply would be expected because energy demand would increase due to the additional buildings, population, and water consumption. The impacts would be considered minor because Tinian has an electrical capacity well above its current load. The energy infrastructure has a maximum capacity of about 20 MW, while its current load is below 5 MW. In addition, the energy infrastructure is in good condition and is well-maintained. Although an electrical line runs along the east end of the airport property, a more expansive electrical grid would be needed and would result in slightly increased long-term maintenance needs.

Minor impacts would be expected because the increase in population and energy demand for exercises would be no more than 8 weeks per year. In addition, the new facilities would be designed to achieve LEED Silver certification; therefore, state-of-the-art energy efficiency would be expected.

***Central Heating and Cooling*.** No impacts on central heating or cooling would be expected because Alternative 3 would not involve the airport's cooling system. The proposed buildings would use self-contained, electrically powered air conditioning units.

Natural Gas Supply. No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 3 does not include the use of natural gas.

***Liquid Fuel Supply*.** Long-term, major, beneficial impacts on the capacity to receive, store, and distribute aviation fuel would result from Alternative 3 on Tinian, which would increase the fuel storage capacity at Tinian International Airport by 120,000 barrels (5.04 million gallons) and include the installation of a hydrant fuel system. Similarly, Alternative 3 would increase the fuel storage capacity of the Port of Tinian by 100,000 barrels (4.2 million gallons).

***Water Supply*.** Long-term, direct, minor, adverse impacts on the water supply would be expected from implementation of Alternative 3 due to the increase in population (up to 265 personnel). The resulting water demand for exercises would only be on an as-needed basis totaling no more than 8 weeks per year; however, the temporary increase in population is not considerable compared to the population of Tinian (3,136 people). Based on up to 265 personnel using an average of 98 gallons per day per person (USGS 2009b), implementation of Alternative 3 on Tinian would result in the consumption of up to 25,970 gallons per day, which is 3 percent of the daily water production capacity in Tinian.

Additionally, the proposed fire suppression system on Tinian would require groundwater withdrawal to initially fill the associated water tanks. The calculated water storage to meet the requirement for fire suppression is 240,000 gallons; therefore, two 120,000-gallon tanks would need to be filled. The size of the wells and the pumps are based on the requirement to replenish the water storage tanks within 24 hours. The total consumption of water for support personnel and the fire suppression water tanks in one day, as a conservative estimate, would be approximately 20 percent of the daily water production capacity in Tinian. However, after the initial fill of the fire suppression tanks they would only need to be refilled after a fire emergency

The primary source of water for Alternative 3 on Tinian would be the existing municipal water system; however, rain barrels, cisterns, or other collection devices could be used to reduce the demand on the municipal water system. The new facilities would be designed to achieve LEED Silver certification; therefore, state-of-the-art water efficiency would be expected. The JRM Energy Conservation Instruction also aims to adopt sustainable design concepts in all new construction.

***Sanitary Sewer and Wastewater Treatment*.** No impacts would be expected on the existing wastewater system because residents and businesses on Tinian have individual septic tanks. Under Alternative 3, one or more septic systems would be used to handle the needs of up to 256 personnel. The septic systems would require long-term maintenance.

Storm Water. Long-term, direct, moderate, adverse impacts on storm water would result from Alternative 3 on Tinian. Implementing Alternative 3 would increase impervious surfaces on Tinian by up to 3,569,972 ft^2, which would result in a long-term increase in runoff and a reduction of groundwater recharge. Storm water from the impervious surfaces of Alternative 3 on Tinian would be partially handled by existing drainage ditches and partially handled via the rain barrels, cisterns, and other collection devices used to collect storm. The remainder of the storm water would sheet flow overland to lower elevations. Lastly, Alternative 3 would include the implementation and maintenance of the storm water BMPs that would be put in place during the proposed construction activities to reduce the adverse impacts of storm water flow from the impervious surfaces.

***Communications*.** Long-term, direct, minor, adverse impacts on communications would result from implementation of Alternative 3 on Tinian. Communications systems at the Tinian International Airport would be upgraded on an as-needed basis and would be minimal. Communications would be provided from local commercial telephone and internet service providers. It is anticipated that the existing telephone company infrastructure would have the capacity to support any additional, necessary communication lines.

***Solid Waste*.** Long-term, direct, minor, adverse impacts on solid waste would be expected from the lack of municipal solid waste facilities on Tinian. All solid waste would be collected and transported off the Island of Tinian using commercial solid waste haulers and commercial barges or ships. The solid waste generated by up to 265 people 8 weeks per year under Alternative 3 would be approximately 3 percent of the solid waste generated by 3,136 people at Tinian 52 weeks per year.

4.13.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Section 3.13** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, or similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with *36th Wing Instruction 13-204, Airfield Operations Instructions*, planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

Impacts on existing infrastructure from the No Action Alternative would be long-term, direct and indirect, minor to moderate and adverse because the existing infrastructure would continue to degrade in quality over time.

4.14 Socioeconomics and Environmental Justice

Impacts on socioeconomics and environmental justice were assessed to determine if the Proposed Action or alternatives resulted in any of the following:

- Substantial change in the local or regional population; and housing, community general services (health, police, and fire services), or social conditions from the demands of additional population/population shifts
- Substantial change in the local or regional economy, employment, or spending or earning patterns
- Disproportionately high and adverse human health and environmental impacts on minority or low-income populations.

4.14.1 Alternative 1 - Modified Saipan Alternative

4.14.1.1 Construction Phase

Population Characteristics. Short-term, negligible to minor, adverse impacts on the population of Saipan would result from construction of Alternative 1. Construction would be phased over 3 years, and it is assumed that 500 workers would be the peak number of workers required for construction. An addition of 500 people to Saipan would increase the 2010 population by 1.0 percent; however, it is assumed that the average number of construction workers would generally be lower during non-peak construction periods. Therefore, increases of the Saipan population of up to approximately 1 percent would be experienced during peak construction, but this increase would be sustained for a limited time.

In 2010, the construction workforce in the CNMI was 1,786 people with 1,554 people from Saipan and an additional 232 people from other parts of the CNMI. However, it is not known how federalization of CNMI immigration affected the availability of foreign construction workers. It should be noted that CW-1 permit program for nonimmigrant transitional foreign workers is being phased out by the end of 2019. Therefore, foreign workers holding CW-1 permits would need to obtain nonimmigrant or immigrant status to stay in the CNMI. While the specific source of construction workers is unknown, it is assumed that most workers would be from Saipan with Tinian and Rota being secondary sources of workers, and Guam and the Federated States of Micronesia being tertiary sources of workers. It is anticipated that local construction workers would be available; however, construction workers from outside of the CNMI could be required during peak work periods and for some specialty tasks.

Housing. Short-term, minor, adverse impacts on housing could occur during construction of Alternative 1. It is assumed that 500 workers would be the peak number of workers required for construction.

Depending on the quantity of construction workers from outside of Saipan, it is anticipated that a maximum of 250 hotel rooms would be needed for workers' temporary housing during peak construction periods. However, this figure would likely be lower because local workers from Saipan could return to their residence at the end of the day. Workers from Guam and the Federated States of Micronesia would need housing. Workers from Tinian and Rota might be able to commute to Saipan daily; however, if this is not feasible, they would also need to be housed on Saipan. Most construction workers could be accommodated in hotels in Saipan, likely in the villages of Garapan and Susupe. Based on the 2013 average hotel occupancy rate of 83.0 percent and assuming a total supply of 3,000 hotel rooms on Saipan, there would an average of 510 hotel rooms available at any given time. This should provide sufficient supply of available hotel rooms to house workers temporarily, even during peak construction periods, especially if two workers occupied each room. However, the ability of the Saipan hotel market to provide the necessary amount of hotel rooms for sustained periods of time would likely decrease the longer the overall duration of construction and the longer the peak level of hotel rooms was needed. Construction contractors would coordinate with local hotels to secure the required number of hotel rooms prior to construction to minimize impacts and avoid supply issues.

Economic Characteristics. Short-term, minor, direct and indirect, adverse and short-term, negligible to moderate, direct and indirect, beneficial impacts on the Saipan economy would occur from construction of Alternative 1.

Short-term, negligible to minor, direct and indirect, adverse impacts on the local economy could result from construction activities associated with Alternative 1. Construction activities might cause temporary disruption of airport services that require the intermittent, short-term closure of portions of Saipan International Airport possibly limiting the use of the runway and other areas of Saipan International Airport. However, when feasible, all construction activities that would disrupt portions of Saipan International Airport would occur during normal runway closing hours and non peak hours, which would impact the least amount of flights and Saipan International Airport customers. If necessary, procedures could also be incorporated to remove construction workers and equipment from the runway when aircraft are landing. All construction activities, the proposed work schedules, and other conditions of construction should be agreed to by the FAA, CPA, and affected commercial airlines and identified in the Safety Management Plan. Based on the type and severity of disruptions at Saipan International Airport, it could result in loss of revenue from decreased landing and other fees imposed to commercial flights, and possibly an indirect decrease in tourist visitors and effect on the local economy. Impacts could be minimized through an agreement with the FAA, CPA, and commercial airlines and identified in the Safety Management Plan. The plan would identify a mutually agreeable construction schedule that allows for disruptions to occur in non-peak hours and modifications to flight schedules to avoid construction delays.

Installation of the bulk fuel storage tanks at the Port of Saipan would not disrupt any port operations; therefore, no adverse economic impact would result from construction at the seaport.

Short-term, moderate, beneficial impacts on the local economy would be expected from construction of Alternative 1. Construction activities would result in increases of employment, purchase of goods and services, and tax revenue. Impacts on economic conditions would be concentrated in Saipan due to the presence of construction workers and locations where materials would be sourced (likely Saipan and Guam). The Construction Phase of Alternative 1 would require hiring up to 500 construction workers for 3 years, although it is assumed that the average quantity of workers on Saipan would be lower during non-peak construction periods.

The increase of employment resulting from Alternative 1 would result in increased wages paid. Based on *2014 CNMI Prevailing Wage & Workforce Assessment Study*, construction and extraction occupations earned average wages of $6.67 per hour on Saipan with other specialized, technical, and managerial positions earning more (CNMI Department of Commerce, Central Statistics Division 2015). Therefore, it is assumed that each worker would be paid at least $266.80 per week. Increased wages would, in turn, increase government revenue from employment taxes (wage and salary tax [Chapter 2 tax] and Northern Marianas territorial income tax [NMTIT]). Construction at Saipan International Airport and the Port of Saipan would increase demand for and purchase of local and regional supplies, materials, and services. While some materials and supplies might be sourced from Guam, it is anticipated that fuel and some construction supplies (e.g., concrete and structural fill) would be purchased from local distributors. Local contractors would provide services such as construction equipment/vehicle maintenance and disposal of solid, liquid, and hazardous wastes from work sites. Other purchases in the local economy would include spending on hotels for temporary housing, food, and leasing buses to transport workers to and from construction sites. It is likely that sales of construction materials and other goods and services would increase the longer construction lasts and the more workers that are present. Construction of Alternative 1 would result in moderate, beneficial impacts on the Saipan economy.

The potential increase of new people to Saipan in the form of construction workers could also create a short-term, negligible to minor, indirect, beneficial impact on the local economy by increasing local business sales volume and spending on tourist activities. Although, if there are any foreign construction workers, their expenditures would be minimal because foreign workers send much of their incomes back to their home countries through remittances (U.S. GAO 2000). However, local construction workers from the CNMI might be more inclined to buy products and services in the local economy when they are earning a steady income. Based on the volume of increased sales, there could be secondary increases in employment and income generated from local businesses.

Other potential income for the CNMI Treasury would be realized from the Business Gross Revenue Tax (BGRT) levied on businesses' gross revenues sourced within the CNMI and the corporate NMTIT. Additional tax revenues from fuel, beverage container, alcoholic beverage, and hotel occupancy taxes could also be realized.

Public Services. Short-term, minor, adverse impacts on public services could result from increased demand placed on local health and medical, law enforcement, and firefighting services from the influx of new construction workers to Saipan. If 500 non-Saipan residents are hired and brought to the island, it would increase the population by 1.0 percent; however, it is assumed that the average number of construction workers would generally be lower and some would include existing Saipan residents. It is assumed that 500 workers would be the peak number of workers for construction. Therefore, Saipan would need to accommodate the increased demands for public services associated with a 1 percent population increase for a limited time.

Depending on the frequency and level of health services required by new construction workers, it is possible that the CHC would not be able to manage the increased demand adequately. However, there are several other medical clinics throughout Saipan that could accommodate the health needs of new construction workers. Similarly, depending on the quantity of non-Saipan construction workers hired, the DPS might experience increased demand on law enforcement and firefighting services that would require additional police officers or firefighters. Appropriate levels of security and firefighting services at the construction work sites should be coordinated with DPS and the CPA's police and ARFF.

The magnitude of the impact on public services is based on the largest population increase and not necessarily the duration over which these increases would need to be sustained. Therefore, the impacts on public services would be minor during construction of Alternative 1.

Sociocultural Issues. Short-term, negligible, adverse sociocultural issues could occur during construction of Alternative 1. At the Port of Saipan, construction would occur on land currently leased by the U.S. government. Therefore, no land would be acquired and no land ownership would be transferred during construction of Alternative 1. Land currently available to Chamorros and Carolinians and other Saipan residents would not be removed from their use during construction. While the Construction Phase could require up to 500 construction workers during peak work periods, it is likely that a majority of these workers would be from Saipan or the CNMI and be respectful of local culture and customs. Therefore, there would not likely be any significant conflicts with local residents.

Environmental Justice. Disproportionately high and adverse environmental justice impacts would not be expected during construction of Alternative 1. Approximately 98 percent of the population of Saipan is considered a minority, and approximately 53 percent of the population is low-income. Districts 1 and 2 within the Alternative 1 area of impact have disproportionately high minority and low-income populations. Possible adverse impacts from construction activities include increased traffic and noise levels, and decreased air quality in Districts 1 and 2. Increased demands on healthcare/medical, law enforcement, and firefighting services could decrease the quality of service at CHC, which could impact all populations on Saipan. Elevated noise levels could be experienced in the vicinity of the construction activities, but a noise level of 67–71 dBA could be intermittently heard at the border of the village of Dandan, which is in District 1. The village of Dandan is the only area that could experience high noise exposure levels; therefore, the minority population living at this location could be disproportionately affected by noise generated from construction activities. However, this impact would be short-term and intermittent, and less than significant.

4.14.1.2 Implementation Phase

Population Characteristics. Long-term, negligible, adverse impacts on Saipan's population would under the Alternative 1 Implementation Phase. Up to 265 personnel would be on Saipan for up to 8 weeks per year for proposed military exercises. This quantity of personnel represents a population increase of 0.6 percent. Annual exercises likely would consist of 1- to 3-week joint military exercises, and other periodic exercises (totaling up to 8 weeks) for divert and humanitarian airlift staging that would occur throughout the year. Because the exercises would likely not occur during a continuous 8-week period, the population increases would be spread throughout the year, likely in 1- to 3-week increments. Therefore, implementation of Alternative 1 would cause temporary, intermittent increases in Saipan's population of up to 0.6 percent throughout each year.

No permanent population increases would occur during implementation of Alternative 1. One or two security guards might be hired for the bulk fuel storage/operational fuel tanks and hydrant area, maintenance facility, and other materials stored at the Saipan International Airport when no exercises are occurring. These personnel would be hired from a local company and would live on Saipan. During exercises, additional security would be required for personnel and aircraft at the Saipan International Airport, but this would be supplied by USAF security forces.

Housing. Long-term, negligible to minor, adverse impacts on housing could occur during implementation of Alternative 1. Up to 265 personnel would require housing for several 1- to 3-week periods (not to exceed a total of 8 weeks) per year. These personnel would be housed in local hotels, most likely in the villages of Garapan and Susupe. Given the 2010 average hotel occupancy rate of 83.0 percent and assuming a supply of 3,000 hotel rooms on Saipan, there would be an average of 510 hotel rooms available at any given time. This should provide sufficient supply to house personnel, especially if double occupancy rooms are used. The USAF would also coordinate with hotels to secure the required number of hotel rooms prior to exercises to avoid supply issues.

Economic Characteristics. Both long-term, negligible to minor, direct, adverse and long-term, negligible to minor, direct and indirect, beneficial impacts on the CNMI and Saipan economy would occur from implementation of Alternative 1.

Long-term, negligible to minor, adverse impacts on the local economy could result from conducting military exercises under Alternative 1 at Saipan International Airport. Exercises, which would occur for up to a total 8 weeks every year, might cause temporary intermittent disruption of airport operations. These disruptions would be minimized by coordination between USAF and Saipan International Airport to schedule exercises during non-peak airport operating hours (i.e., nighttime hours and between peak morning, afternoon, and evening hours). All implementation activities, including military exercise schedules, would be agreed to by the FAA, CPA, and affected commercial airlines and identified in the Safety Management Plan. While potential disruptions are unlikely to require flight cancellations or decreased flight volumes, they could result in flight delays and other nuisance problems. Nuisance issues could include traffic congestion in airport road network and parking areas, reduction in available parking, and time delays due to heightened security.

Siting of proposed facilities outside the airport fence could result in a long-term, negligible to minor, adverse impact on the local economy due to preclusion of future tourism or other commercial development. All proposed infrastructure at Saipan International Airport would be sited on CPA property with some facilities inside the airport fence (i.e., parking apron), and some outside the airport fence (i.e., maintenance facility, bulk fuel storage, and operation fuel tanks and hydrant system). The proposed infrastructure outside the airport fence would be on land designated as “Revenue Support (Non-Aviation)” (i.e., not aviation infrastructure) that could also be used for other commercial airport-support uses such as hotels, car rental facilities, and aviation-related business (CPA 2002, CPA 2011). This area is proposed as a General Aviation Area, which, based on the *Saipan International Airport Master Plan*, should be preserved for future general aviation development; however, it states timing is contingent upon demand for these functions (CPA 2002). Siting of the proposed project infrastructure in these areas would preclude future development by other commercial uses; however, it should be noted that these areas were not developed even during the peak growth periods for the CNMI economy and the tourism industry.

Siting of the bulk fuel storage tanks at the Port of Saipan would not disrupt any port operations. Thus, there would be no adverse economic impact from implementation of Alternative 1 at the seaport.

Long-term, minor, beneficial impacts on the local economy would be expected from implementation of Alternative 1. Impacts on economic conditions would be concentrated in Saipan due to use of Saipan International Airport for military exercises and the presence of up to 265 additional military personnel. Conducting intermittent exercises could result in increased purchase of goods and services. Buses to transport personnel to and from Saipan International Airport and hotels would be leased from local businesses. Food would be purchased by military personnel from local retail outlets. The USAF would pay to lease land from the CPA; thus, the CPA would realize long-term annual revenue increases. Under a mutual use agreement with the CPA, the USAF could work with the CPA to address costs for ongoing maintenance of the proposed infrastructure and additional costs for TSA security program requirements.

Minimal permanent jobs would be directly created due to implementation of Alternative 1. One or two security guards would be hired to watch some of the proposed infrastructure areas at Saipan International Airport when exercises are not occurring. The increase of employment resulting from Alternative 1 would result in negligible increased wages paid. Based on a survey of wages and salaries in Saipan, the median wage for protective service was $7.45 per hour (CNMI Department of Commerce, Central Statistics Division 2015).

Long-term, negligible, beneficial impacts on the local economy could result from increases in tourism spending. Some of the up to 265 military personnel that would be in Saipan for up to a total of 8 weeks every year could decide to take leave or liberty in Saipan before or after exercises. While the increase in tourism spending from military personnel would likely be minimal as compared to existing visitor expenditures, the increase could result in secondary increases in employment and sales of retail products and services. Increased purchases by personnel could also lead to additional tax revenues from fuel, beverage container, alcoholic beverage, and hotel occupancy taxes. Although negligible adverse impacts could be expected on tourism due to noise at some popular tourist destinations (see **Section 4.9.1.2**) during the 8 weeks of exercises per year, these adverse impacts would be outweighed by the increase in tourism from military personnel.

Public Services. Long-term, negligible to minor, adverse impacts on public services could result from increased demand placed on local health/medical, law enforcement, and fire services from the presence of up to 265 military personnel in Saipan and the occurrence of military exercises at Saipan International Airport. Medical care would be provided by USAF personnel at CHC under an agreement between the military and CHC. Similar to that discussed in **Section 4.14.1.1**, it is possible that CHC would not be able to manage the increased demand for medical services adequately. However, this issue would be minimized during the Implementation Phase because USAF personnel would provide the medical staff and supplies. USAF security personnel would accompany the exercises that occur at Saipan International Airport; therefore, there would be a negligible impact on DPS or CPA law enforcement services. The presence of up to 265 military personnel and the additional USAF aircraft at Saipan International Airport could increase ARFF requirements. These increased requirements could be satisfied through negotiated agreements between the USAF and the CPA.

Sociocultural Issues. Long-term, minor, adverse sociocultural issues could occur during implementation of Alternative 1. All proposed infrastructure at Saipan International Airport would be sited on airport property owned by the CPA. Facilities would be sited inside and outside of the airport fence. The proposed infrastructure outside the airport fence would be on land designated as “Revenue Support” that could also be used for other commercial uses such as hotels, car rental facilities, and aviation-related business (CPA 2011). Use of this land for Alternative 1 would preclude its future use by Chamorros and Carolinians and other CNMI residents; however, this land has never been developed even when the CNMI’s economy was steadily growing. No other land that is currently available for use by Chamorros and Carolinians and other CNMI residents would be removed from their use. No land would be acquired and no land ownership would be transferred during implementation of Alternative 1. The presence of up to 265 military personnel would not create any significant conflicts with local residents as their presence would be intermittent and temporary throughout the year. Noise from exercises could result in minor impacts on the island’s general tranquility and standard of living, but only in the areas that fall within the 65 dBA DNL contour and higher. Under Alternative 1, only airport property would fall within the 65 dBA DNL contour, as indicated in **Section 4.10.1.2**. Aircraft operations would be similar to existing commercial aircraft operating from Saipan International Airport. Additionally, exercises would be periodic and only occur for a maximum of 8 weeks per year. Therefore, significant impacts are not expected.

Environmental Justice. Disproportionately high and adverse impacts could occur on minority and low income populations during implementation of Alternative 1 due to noise generation. Public participation strategies, such as a neighborhood meeting were used to inform these populations of potential impacts. Approximately 98 percent of the population of Saipan is considered a minority, and approximately 53 percent of the population is low-income. Districts 1 and 2 within the Alternative 1 area of impact have disproportionately high minority and low-income populations. Possible adverse impacts from implementation of Alternative 1 include increased traffic and noise levels in Districts 1 and 2.

Elevated noise levels, as discussed in **Section 4.1.1.2**, could be experienced in the vicinity of Saipan International Airport during exercises, which could occur during nighttime hours. This noise impact would represent a disproportionate impact on the disproportionately high minority populations within District 1. Community outreach to potentially impacted communities with high minority and low-income populations on Saipan occurred in the form of special notices and two community outreach meetings the weekend prior to the public hearing on Saipan. Informational flyers which provided notice of these community outreach meetings were distributed by hand at local stores and other locations within the potentially affected neighborhoods. Local convenience stores are centers for community information as they contain local community bulletin boards and are a general gathering place for the community. A fact sheet focused on noise was developed for the meetings and meeting attendees were provided the opportunity to comment. A general informal town meeting format was used to provide the best interaction with the public. Although elevated noise levels would be expected, this impact would not be significant because it would only occur intermittently for up to 8 weeks per year. Because the impact would only occur periodically, the average annual day noise analysis for Alternative 1 was used to determine land use compatibility. Under the average annual day, the villages of Koblerville and Dandan would fall outside of the 65 dBA DNL as presented in **Section 4.10.1.2** and would not represent a significant impact. Because the Proposed Action is to improve an existing airport, Alternative 1 cannot be moved to another location on the Island of Saipan to avoid potential disproportionately high and adverse impacts on minority and low income populations.

4.14.2 Alternative 2 – Modified Tinian Alternative

4.14.2.1 Construction Phase

4.14.2.1.1 North Option

Population Characteristics. Short-term, moderate, adverse impacts on the population of Tinian would result from construction of Alternative 2. Construction would be phased over three years, and it is assumed that 750 workers would be the peak number of workers required for construction. An addition of 750 people to Tinian would increase the 2010 population by 23.9 percent, which would represent a moderate increase to the local population. However, it is assumed that the average number of construction workers would generally be less than 750 people during non-peak construction periods. Therefore, increases of the Tinian population of up to approximately 24 percent would be experienced during construction, but this increase would be sustained for a limited time. There is precedent for large, temporary population increases on Tinian as approximately 1,800 mostly foreign workers spent 18 months on the island during construction of the Tinian Dynasty Hotel and Casino in the late 1990s (DON 2010d).

Due to the small population of Tinian and an even smaller quantity of construction workers (approximately 79 in 2010), a majority of the workers would be from off-island. While the specific source of construction workers is unknown, it is assumed that most workers would be from the CNMI, and Guam and the Federated States of Micronesia. It is not known how federalization of CNMI immigration affected the availability of foreign construction workers. It should be noted that CW-1 permit program for nonimmigrant transitional foreign workers is being phased out by the end of 2019. Therefore, foreign workers holding CW-1 permits would need to obtain nonimmigrant or immigrant status to stay in the CNMI. Therefore, it is likely that the majority of construction workers would be from CNMI, but workers from outside of the CNMI would be required during peak work periods and for some specialty tasks.

Housing. Short-term, moderate, adverse impacts on housing could occur during the Construction Phase of Alternative 2. It is assumed that 750 workers would be the peak number of workers required for construction.

Because a majority of the construction workers would be from outside of Tinian, temporary housing would need to be secured for most workers, which could be up to 750 people. Local workers from Tinian could return to their residence at the end of the day; however, workers from Guam, other CNMI islands, and the Federated States of Micronesia would need housing. Workers from Saipan and Rota might be able to commute to Tinian daily; however if this is not feasible they would also need to be housed on Tinian. Depending on the quantity of workers requiring housing, it is assumed that all workers could be housed at the Tinian Dynasty Hotel and Casino or other hotel on Tinian in double occupancy rooms. If there is not sufficient housing stock to house all proposed workers needed to construct Alternative 2, the impact on housing could be major. The ability of the Tinian hotel market to provide the necessary amount of hotel rooms for sustained periods of time would decrease the longer construction lasts and the longer the peak level of hotel rooms was needed. To minimize impacts, prior to construction, the construction contractor would coordinate with the Tinian Dynasty Hotel and Casino or other hotel to secure the required number of hotel rooms.

Economic Characteristics. Short-term, minor to moderate, direct and indirect, adverse and short-term, moderate, direct and indirect, beneficial impacts on economies of Tinian and the CNMI would occur from construction of Alternative 2.

No adverse impacts on the local economy due temporary disruption of airport services at Tinian International Airport would be expected from construction. Because Tinian International Airport currently only services commuter aircraft operations, there would be no need to close the runway and construction work could occur simultaneously with existing aircraft operations. When feasible, all construction that would disrupt portions of Tinian International Airport would occur during normal runway closing hours and non-peak hours to impact the least amount of flights and Tinian International Airport customers. All construction, the proposed work schedules, and other conditions of construction should be agreed to by the FAA, CPA, and affected commercial airlines and identified in the Safety Management Plan. Impacts could be minimized under agreement with the FAA, CPA, and commercial airlines and identified in the Safety Management Plan. The plan would identify a mutually agreeable construction schedule to minimize disruptions at Tinian International Airport.

Construction of Alternative 2 could result in long-term, minor to moderate, adverse economic impacts on local farmers and ranchers that would be displaced. While the CPA owns some north of Tinian International Airport on which construction would occur, additional acres of LBA land would be required. This LBA land is currently used for cattle grazing, and agriculture/grazing leases and permits might need to be terminated. This permit revocation and the displacement of ranches would create an economic hardship on the affected ranchers. This impact could be minimized by providing the affected ranchers with grazing permits for comparable locations elsewhere in the LBA. Rerouting of 8th Avenue could also result in delays for delivery trucks and persons traveling north to visit cultural and historic sites, but this would not result in an adverse impact on the local economy. The rerouted portion of 8th Avenue would be constructed prior to closing the existing route.

Installation of the bulk fuel tanks at the Port of Tinian would not disrupt any port operations. Thus, there would be no adverse economic impact from construction at the seaport.

Short-term, moderate, beneficial impacts on the local economy would be expected from construction of Alternative 2. Construction activities would result in increases of employment, purchase of goods and services, and tax revenue. Impacts on economic conditions would occur in Tinian due to the presence of construction workers and in Saipan or Guam where most construction materials would be sourced. The Construction Phase of Alternative 2 would require hiring of up to 750 construction workers for up to three years. The increase in employment resulting from this alternative would result in increased wages paid. Based on a survey of wages and salaries in Tinian, construction and extraction occupations earned an average wage of $7.04 per hour with other specialized, technical, and managerial positions earning more (CNMI Department of Commerce, Central Statistics Division 2015). Therefore, it is assumed that each worker would be paid at least $281.60 per week. Increased wages would in turn increase government revenue from employment taxes (wage and salary tax [Chapter 2 tax] and NMTIT).

Construction at Tinian International Airport and the Port of Tinian would increase demand for and purchase of local and regional supplies, materials, and services. Most supplies, such as construction supplies and materials (e.g., concrete and structural fill), would need to be purchased in Saipan or Guam and shipped to Tinian. However, some supplies including food, water, and fuel could be purchased from local businesses. Local contractors would provide services such as construction equipment/vehicle maintenance; bus transportation of workers; and disposal of solid, liquid, and hazardous wastes from work sites. In addition, the need for temporary housing would require renting many rooms at the Tinian Dynasty Hotel and Casino or other hotel.

The increase of up to 750 additional people to Tinian in the form of construction workers could also create a short-term, moderate, beneficial impact on the local economy by increasing local business sales volume and spending on tourist activities. Local construction workers from the CNMI might be more inclined to buy products and services in the local economy when they are earning a steady income. However, it is likely that expenditures by foreign construction workers would be minimal as foreign workers send much of their incomes back to their home countries through remittances (U.S. GAO 2000). Based on the volume of increased sales, there could be secondary increases in employment and income generated from local businesses.

Other potential income for the CNMI Treasury would be realized from the BGRT levied on businesses' gross revenues sourced within the CNMI and the corporate NMTIT. Additional tax revenues from fuel, beverage container, alcoholic beverage, and hotel occupancy taxes could also be realized.

Public Services. Short-term, moderate, adverse impacts on public services could result from increased demand placed on local health/medical, law enforcement, and firefighting services from the influx of new construction workers to Tinian. The demand on these services created by the addition of up to 750 people, or a 23.9 percent increase above the 2010 population, would be moderate. However, it is assumed that the average number of construction workers would generally be lower and would include some existing Tinian residents. It is assumed that 750 workers would be the peak number of workers for construction. Therefore, Tinian would need to accommodate the increased demands for public services associated with a 23.9 percent population increase for the limited time.

Due to the small scale of the Tinian Health Center, it would not be able to manage the increased demand adequately. In order to minimize the impacts on the Tinian Health Center, the construction contractor might be required to bring additional medical personnel to Tinian during peak construction work periods. Similarly, the DPS would experience increased demands for law enforcement and firefighting services. While there is precedent for continuing to provide adequate police and firefighting services during periods when the island's population experiences large increases (i.e., during construction of the Tinian Dynasty Hotel and Casino), it is likely that a small number of contracted civilian security and fire personnel might be required to offset the increased demand during construction of Alternative 2. Appropriate levels of security and fire services at the construction work sites would be coordinated with DPS and the CPA's police and ARFF.

The magnitude of the impact on public services is based on the largest population increase and not necessarily the duration over which these increases would need to be sustained. Therefore, the impacts on public services would be moderate during construction of Alternative 2.

Sociocultural Issues. Short-term, minor, adverse sociocultural impacts could occur during construction of Alternative 2. Some construction activities at Tinian International Airport would occur on public land managed by the CPA and leased to the USAF; however, some construction would occur on land within the LBA, and require the termination of agriculture/grazing leases and permits in the LBA west and north of Tinian International Airport. This impact of removing land from current and future use by Chamorros and Carolinians and other Tinian residents could be minimized by providing the affected ranchers comparable leases elsewhere in the LBA.

At the Port of Tinian, construction would occur on CPA land leased by the USAF. Therefore, no land would be acquired and no land ownership would be transferred during construction of Alternative 2.

While construction would bring up to 750 people to Tinian during peak work periods, it is likely that a majority of these workers would be from the CNMI and respectful of local culture and customs. Therefore, it is unlikely that there would be any significant conflicts with local Tinian residents. However, there are historical reports of conflicts between construction workers and local residents during construction of the Tinian Dynasty Hotel and Casino (DON 2010d).

These conflicts could be minimized by contracting additional security personnel to supplement the existing law enforcement provided by the DPS.

Environmental Justice. Disproportionately high and adverse environmental justice impacts would not be expected during construction of Alternative 2. Short-term, minor to moderate, adverse environmental justice impacts could occur during construction of Alternative 2 due to moderately increased population that could result in housing shortage and increased demands on health care/medical, law enforcement, and firefighting services. Approximately 98 percent of the population of Tinian is considered a minority, and 44 percent of the population is low-income. Tinian (District 6) has a disproportionately high minority population. Possible adverse impacts from construction activities include increased traffic and noise levels, decreased air quality, and increased population. During peak work periods, 750 workers would be moved to Tinian resulting in a 23.9 percent increase of population. This level of population increase would, in turn, increase demands on health care/medical, law enforcement, and firefighting services. A potential increase in demand of medical services at the Tinian Health Center of approximately 24 percent might not be manageable and could decrease the quality of service at the health care center, which could impact minority populations. Increases in demand for these services could be minimized by requiring the construction contractor to hire additional medical, security, and firefighting personnel to supplement the existing staff during peak construction periods. Therefore, the impact on minority populations would be less than significant.

4.14.2.1.2 South Option

Population Characteristics. Under Alternative 2 South Option, construction would be similar to that described under the North Option, except fewer workers would be required (500 workers at peak construction periods) and the duration of construction would be shorter. An increase of 500 construction workers would represent a 15.9 percent increase of the population of Tinian. Therefore, short-term, minor to moderate, adverse impacts on the population of Tinian would be expected during the Construction Phase.

Housing. Under Alternative 2 South Option, construction would be similar to that described under the North Option, except fewer workers would be required (500 workers at peak construction periods) and the duration would be shorter. However, short-term, moderate, adverse impacts on housing would still be expected during the Construction Phase.

Economic Characteristics. Under Alternative 2 South Option, construction would be similar to that described under the North Option, except fewer workers would be required (500 workers at peak construction periods), construction duration would be shorter, and the termination of leases or permits in the LBA land would not be required. Therefore, short-term, moderate, direct and indirect, beneficial impacts on the economies of Tinian would be expected during the Construction Phase. No adverse impacts would be expected.

Public Services. Under Alternative 2 South Option, construction would be similar to that described under the North Option, except fewer workers would be required (500 workers at peak construction periods) and construction duration would be shorter. Therefore, short-term, minor to moderate, adverse impacts on public services would be expected during the Construction Phase.

Sociocultural Issues. Under Alternative 2 South Option, construction would be similar to that described under the North Option, except fewer workers would be required (500 workers at peak construction periods), construction duration would be shorter, and the termination of leases or permits in the LBA land would not be required. Therefore, short-term, negligible to minor, adverse sociocultural impacts would be expected during the Construction Phase.

Environmental Justice. Under Alternative 2 South Option, construction would be similar to that described under the North Option, except fewer workers would be required (500 workers at peak construction periods), construction duration would be shorter, and the termination of leases or permits in the LBA land would not be required. Therefore, short-term, minor to moderate, adverse environmental justice impacts on minority populations could occur during the Construction Phase.

4.14.2.2 Implementation Phase - North and South Options

Population Characteristics. Long-term, minor, adverse impacts on Tinian's population would occur under the Alternative 2 Implementation Phase. Up to 265 personnel would be on Tinian for up to 8 weeks per year for proposed military exercises. This quantity of personnel represents a population increase of 8.5 percent. Because the annual exercises would not occur during a continuous 8-week period, the population increases would be spread throughout the year, likely in 1- to 3-week increments. Therefore, implementation of Alternative 2 would cause temporary, intermittent increases in Tinian's population throughout each year.

No permanent population increases would occur during implementation of Alternative 2. One or two security guards might be hired for the bulk fuel storage/operational fuel tanks area, maintenance facility, and other materials stored at the project area when no exercises are occurring. These personnel would be hired from a local company and would be Tinian residents. During exercises, additional security would be required for personnel and aircraft at Tinian International Airport, but this would be supplied by USAF security forces.

Housing. Long-term, minor, adverse impacts on housing could occur during implementation of Alternative 2. Up to 265 personnel would require housing for several 1- to 3-week periods (not to exceed a total of 8 weeks) per year. These personnel would be housed in local hotels, most likely Tinian Dynasty Hotel and the Fleming Hotel. Assuming a supply of at least 700 hotel rooms on Tinian, there should be sufficient supply to house personnel, especially if double occupancy rooms are used. The USAF would also coordinate with hotels to secure the required number of hotel rooms prior to exercises to avoid supply issues.

Economic Characteristics. Long-term, negligible, direct, adverse impacts and long-term, negligible to minor, direct and indirect, beneficial impacts on the CNMI and Tinian economy would occur from implementation of the Alternative 2 North and South Options. Long-term, negligible to moderate, direct, adverse impacts on the local economy would occur during implementation of the Alternative 2 North Option.

Long-term, negligible, adverse impacts on the local economy could result from conducting military exercises under Alternative 2 at Tinian International Airport. Exercises, which would occur for up to 8 weeks every year, might cause temporary intermittent disruption of airport operations. These disruptions would be minimized by coordination between the USAF and

Tinian International Airport to schedule exercises during non-peak airport operating hours (i.e., nighttime hours and between peak morning, afternoon, and evening hours). All implementation activities, including military exercise schedules, would be agreed to by the FAA, CPA, and affected commercial airlines and identified in the Safety Management Plan. While potential disruptions are unlikely to require flight cancellations or decreased flight volume, they could result in flight delays and other nuisance problems. Nuisance issues could include traffic congestion and time delays due to heightened security.

The Alternative 2 North Option could result in a long-term, minor to moderate, adverse impact on the local economy due to the displacement of local farmers and ranchers. Additional acres of LBA land currently used for cattle grazing under agriculture/grazing permits and leases would be required for road rerouting. This impact could be minimized by providing the affected ranchers leases elsewhere in the LBA. If the South Option is selected, these adverse impacts would not occur.

Siting of the bulk fuel tanks at the Port of Tinian would not disrupt any port operations; thus, there would be no adverse economic impact from implementation of Alternative 2 at the seaport.

Long-term, minor, beneficial impacts on the local economy would be expected from implementation of Alternative 2. Impacts on economic conditions would be concentrated in Tinian due to use of Tinian International Airport for military exercises and to the presence of up to 265 additional military personnel. Conducting intermittent exercises could result in increased purchase of goods and services. Buses to transport personnel to and from Tinian International Airport and hotels would be leased from local businesses. Food, fuel, and other sustainment supplies would be purchased from local distributors. Additionally, the USAF would pay to lease land from the CPA for the proposed infrastructure; thus, the CPA would realize long-term annual revenue increases. Under a mutual use agreement with the CPA, the USAF could work with the CPA to address costs for ongoing maintenance of the proposed infrastructure and additional costs for TSA security program requirements.

Minimal permanent jobs would be directly created due to implementation of Alternative 2. One or two security guards would be hired to watch the proposed infrastructure at Tinian International Airport when exercises do not occur. The increase of employment resulting from this alternative would result in negligible increased wages paid. Based on a survey of wages and salaries in Tinian, the median wage for protective service was $7.88 per hour (CNMI Department of Commerce, Central Statistics Division 2015).

Long-term, minor, beneficial impacts on the local economy could result from increases in tourism spending. Some of the 265 military personnel in Tinian for up to 8 weeks every year could decide to take leave or liberty in Tinian before or after exercises. While the increase in tourism spending from military personnel is unknown, it would likely amount to a noticeable increase over current spending. This increased tourism spending could result in secondary increases in employment and sales of retail products and services. Increased purchases by personnel could also lead to additional tax revenues from fuel, beverage container, alcoholic beverage, and hotel occupancy taxes.

Public Services. Long-term, negligible, adverse impacts on public services could result from increased demand placed on local law enforcement and firefighting services from the presence of up to 265 military personnel in Tinian and the occurrence of military exercises at Tinian International Airport. Medical care would be provided by USAF personnel at the Tinian Health Center under an agreement between the military and Commonwealth Healthcare Corporation. Similar to that discussed in **Section 4.14.2.1.1**, Tinian Health Center might not be able to manage the increased demand for medical services adequately. However, this issue would be minimized during the Implementation Phase because USAF personnel would provide the medical staff and supplies. USAF security personnel would accompany the exercises that occur at Tinian International Airport; therefore, there would be a negligible impact on DPS or CPA law enforcement services. The presence of 265 military personnel and the additional USAF aircraft at Tinian International Airport could increase ARFF requirements. These increased requirements could be satisfied through negotiated agreements between the USAF and the CPA.

Sociocultural Issues. Long-term, negligible, adverse sociocultural issues could occur during implementation of the Alternative 2 North Option. While some existing grazing permits held by Tinian residents within the LBA could need to be terminated in order to construct Alternative 2, including rerouting of 8th Avenue, under the North Option, these affected ranchers would be offered permits in other comparable areas of the LBA. These impacts would not occur under the South Option. No other land that is currently available for use by Chamorros and Carolinians or other Tinian residents would be removed from their use. No land would be acquired and no land ownership would be transferred during implementation of Alternative 2. The presence of up to 265 military personnel would not create any significant conflicts with local residents as their presence would be intermittent and temporary throughout the year.

Environmental Justice. Disproportionately high and adverse impacts could occur on minority and low income populations during implementation of Alternative 2, but would not be expected to be significant. Approximately 98 percent of the population of Tinian is considered a minority, and 44 percent of the population is low income. Possible adverse impacts from implementation of this alternative include increased traffic and adverse economic impacts on ranchers. The Tinian ranchers who could be displaced by the implementation of Alternative 2 would be disproportionately impacted if their grazing rights in the leased land areas end and they are not provided permits in other areas on the island. However, because the Proposed Action is to improve an existing airport, Alternative 2 cannot be moved to another location on the Island of Tinian.

4.14.3 Alternative 3 – Hybrid Modified Alternative

4.14.3.1 Construction Phase

Under the Construction Phase of Alternative 3, socioeconomic and environmental justice impacts would occur on both Saipan and Tinian. Impacts associated with the local economy would occur on both Saipan and Tinian during the Construction Phase. Because these impacts would occur on both islands, the economy of the CNMI would also be affected.

4.14.3.1.1 Saipan

Population Characteristics. Under Alternative 3 on Saipan, construction would be similar to that described under Alternative 1, except fewer workers would be required (250 workers at peak construction periods) and the construction duration would be shorter. Therefore, short-term, negligible, adverse impacts on the population of Saipan would be expected during the Construction Phase.

Housing. Under Alternative 3 on Saipan, construction would be similar to that described under Alternative 1, except fewer workers would be required (250 workers at peak construction periods) and the construction duration would be shorter. Therefore, short-term, negligible, adverse impacts on housing would be expected during the Construction Phase.

Economic Characteristics. Under Alternative 3 on Saipan, construction would be similar to that described under Alternative 1, except fewer workers would be required (250 workers at peak construction periods) and the construction duration would be shorter. Therefore, short-term, minor, direct and indirect, adverse and short-term, negligible to minor, direct and indirect, beneficial impacts on the Saipan economy would still occur during the Construction Phase.

Public Services. Under Alternative 3 on Saipan, construction would be similar to that described under Alternative 1, except fewer workers would be required (250 workers at peak construction periods) and the construction duration would be shorter. Therefore, short-term, negligible, adverse impacts on public services would be expected during the Construction Phase.

Sociocultural Issues. Under Alternative 3 on Saipan, construction would be similar to that described under Alternative 1, except fewer workers would be required (250 workers at peak construction periods) and the duration would be shorter. However, short-term, negligible, adverse sociocultural issues could still occur during the Construction Phase.

Environmental Justice. Under Alternative 3 on Saipan, construction would be similar to that described under Alternative 1, except fewer workers would be required (250 workers at peak construction periods) and the duration would be shorter. However, the minority population near Saipan International Airport could still be disproportionately affected by noise during the Construction Phase. However, this impact would be short-term and intermittent, and less than significant.

4.14.3.1.2 Tinian

4.14.3.1.2.1 NORTH OPTION

Population Characteristics. Under the Alternative 3 Tinian North Option, construction would be similar to that described under the Alternative 2 North Option. Therefore, short-term, moderate, adverse impacts on the population of Tinian would be expected during the Construction Phase.

Housing. Under the Alternative 3 Tinian North Option, construction would be similar to that described under the Alternative 2 North Option. Therefore, short-term, moderate, adverse impacts on housing would be expected during the Construction Phase.

Economic Characteristics. Under the Alternative 3 on Tinian North Option, construction would be similar to that described under the Alternative 2 North Option. Therefore, short-term, minor to moderate, direct and indirect, adverse and short-term, moderate, direct and indirect, beneficial impacts on economies of Tinian and the CNMI would be expected during the Construction Phase.

Public Services. Under the Alternative 3 on Tinian North Option, construction would be similar to that described under the Alternative 2 North Option. Therefore, short-term, moderate, adverse impacts on public services would be expected during the Construction Phase.

Sociocultural Issues. Under the Alternative 3 on Tinian North Option, construction would be similar to that described under the Alternative 2 North Option. Therefore, short-term, minor, adverse sociocultural impacts could be expected during the Construction Phase.

Environmental Justice. Under the Alternative 3 on Tinian North Option, construction would be similar to that described under the Alternative 2 North Option. Therefore, short-term, minor to moderate, adverse environmental justice impacts could be expected during the Construction Phase. However, these impacts would not be expected to be disproportionately high.

4.14.3.1.2.2 SOUTH OPTION

Population Characteristics. Under the Alternative 3 on Tinian South Option, construction would be similar to that described under the Alternative 2 South Option, except the construction duration would be shorter. However, short-term, minor to moderate, adverse impacts on the population of Tinian would still be expected during the Construction Phase.

Housing. Under the Alternative 3 on Tinian South Option, construction would be similar to that described under the Alternative 2 South Option, except the construction duration would be shorter. However, short-term, moderate, adverse impacts on housing would still be expected during the Construction Phase.

Economic Characteristics. Under the Alternative 3 on Tinian South Option, construction would be similar to that described under the Alternative 2 South Option, except the construction duration would be shorter. However, short-term, moderate, direct and indirect, beneficial impacts on the economies of Tinian would still be expected during the Construction Phase.

Public Services. Under the Alternative 3 on Tinian South Option, construction would be similar to that described under the Alternative 2 South Option, except the construction duration would be shorter. However, short-term, minor to moderate, adverse impacts on public services would still be expected during the Construction Phase.

Sociocultural Issues. Under the Alternative 3 on Tinian South Option, construction would be similar to that described under the Alternative 2 South Option, except the construction duration would be shorter. However, short-term, negligible to minor, adverse sociocultural impacts would still be expected during the Construction Phase.

Environmental Justice. Under the Alternative 3 on Tinian South Option, construction would be similar to that described under the Alternative 2 South Option, except the construction duration would be shorter. However, short-term, minor to moderate, adverse environmental justice impacts would still be expected during the Construction Phase.

4.14.3.2 Implementation Phase

Under the Implementation Phase of Alternative 3, socioeconomic and environmental justice impacts would occur on both Saipan and Tinian. Impacts associated with the local economy would occur on both Saipan and Tinian during the Implementation Phase. Because these impacts would occur on both islands, the economy of the CNMI could also be affected.

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on the economy of CNMI would be similar to those described under Alternative 3.

4.14.3.2.1 Saipan

Population Characteristics. Under Alternative 3 on Saipan, the same number of personnel would be present on Saipan for the same duration of aircraft operations as described under Alternative 1. Therefore, impacts during the Implementation Phase would be the same, and long-term, negligible, adverse impacts on Saipan's population would be expected.

Housing. Under Alternative 3 on Saipan, the same number of personnel would be present on Saipan for the same duration of aircraft operations as described under Alternative 1. Therefore, impacts during the Implementation Phase would be the same, and long-term, negligible to minor, adverse impacts on housing would be expected.

Economic Characteristics. Under Alternative 3 on Saipan, the same number of personnel would be present on Saipan for the same duration of aircraft operations as described under Alternative 1. Therefore, impacts during the Implementation Phase would be the same and long-term, negligible to minor, direct, adverse and long-term, negligible to minor, direct and indirect, beneficial impacts on the CNMI and Saipan economy would be expected.

Public Services. Under Alternative 3 on Saipan, the same number of personnel would be present on Saipan for the same duration of aircraft operations as described under Alternative 1. Therefore, impacts during the Implementation Phase would be the same, and long-term, negligible to minor, adverse impacts on public services would be expected.

Sociocultural Issues. Under Alternative 3 on Saipan, the same number of personnel would be present on Saipan for the same number and duration of aircraft operations as described under Alternative 1. However, less land designated as "Revenue Support" outside of the Saipan International Airport fence would be used; therefore, more of this land could be used by Chamorros and Carolinians and other CNMI residents in the future. Impacts during the Implementation Phase would be the same, and long-term, minor, adverse sociocultural issues could occur.

Environmental Justice. Under Alternative 3 on Saipan, the same number and duration of aircraft operations as described under Alternative 1 would occur. Therefore, impacts during the Implementation Phase would be the same resulting in possible disproportionately high and adverse impacts on minority and low-income populations from increased noise levels. These impacts would not be significant.

4.14.3.2.2 Tinian North and South Options

Population Characteristics. Under Alternative 3 on Tinian, the same number of personnel would be present on Tinian for the same duration of aircraft operations as described under Alternative 2. Therefore, impacts during the Implementation Phase would be the same and long-term, minor, adverse impacts on Tinian's population would be expected.

Housing. Under Alternative 3 on Tinian, the same number of personnel would be present on Tinian for the same duration of aircraft operations as described under Alternative 2. Therefore, impacts during the Implementation Phase would be the same, and long-term, minor, adverse impacts on housing could occur.

Economic Characteristics. Under Alternative 3 on Tinian, the same number of personnel would be present on Tinian for the same duration of aircraft operations as described under Alternative 2. Therefore, the same long-term, negligible, adverse impacts and long-term, negligible to minor, direct and indirect, beneficial impacts on the CNMI and Tinian economy would be expected to occur during the Implementation Phase. Under the North Option, long-term, minor to moderate, direct, adverse impacts on the local economy could occur due to the displacement of local farmers and ranchers from the LBA. This impact could be minimized by providing the affected ranchers leases elsewhere in the LBA. If the South Option is selected, these adverse impacts would not occur.

Public Services. Under Alternative 3 on Tinian, the same number of personnel would be present on Tinian for the same duration of aircraft operations as described under Alternative 2. Therefore, impacts during the Implementation Phase would be the same, and long-term, negligible, adverse impacts on public services could occur.

Sociocultural Issues. Under Alternative 3 on Tinian, the same number of personnel would be present on Tinian for the same number and duration of aircraft operations as described under Alternative 2. Therefore, long-term, negligible, adverse sociocultural issues could occur during implementation of the Alternative 3 on Tinian North Option due to the possible termination of existing grazing permits held by Tinian residents within the LBA. These affected ranchers would be offered permits in other comparable areas of the LBA. These impacts would not occur under the Alternative 3 on Tinian South Option.

Environmental Justice. Under Alternative 3 on Tinian, the same number and duration of aircraft operations as described under Alternative 2 would occur. Therefore, possible adverse impacts on minority and low-income populations from increased traffic and noise levels could occur during the Implementation Phase of both Options, and from adverse impacts on ranchers under the North Option. These impacts would not be significant.

4.14.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Section 3.14.3** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with *36th Wing Instruction 13-204, Airfield Operations Instructions*, planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on socioeconomics or environmental justice would be expected as a result of the No Action Alternative. Socioeconomics within the project areas would remain unchanged. The No Action Alternative would result in a continuation of existing conditions.

4.15 Human Health and Safety

Any increase in safety risks would be considered an adverse impact on health and safety. Impacts are assessed to determine if a proposed action would provide any of the following results:

- Substantially increase risks associated with the safety of construction personnel, contractors, military personnel, or the local community.
- Substantially hinder the ability to respond to an emergency.
- Introduce a new health or safety risk for which the installation is not prepared or does not have adequate management and response plans in place.

4.15.1 Alternative 1 – Modified Saipan Alternative

4.15.1.1 Construction Phase

Contractor Health and Safety. Short-term, negligible to minor, adverse impacts on health and safety could occur during the proposed construction activities. Construction poses an increased risk of construction-related accidents, but this level of risk would be managed by adherence to established Federal and CNMI safety regulations. Workers would be required to wear protective gear such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction equipment and associated trucks transporting material to and from the project sites could be directed to roads and streets that have a smaller volume of traffic. Contractors would be required to establish and maintain health and safety programs for their employees.

Military Health and Safety. No health and safety impacts on military personnel would occur because they would not be involved with the construction, beyond some oversight visits.

Public Health and Safety. No health and safety impacts on the public would be expected under Alternative 1. As previously noted, construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction would be coordinated with Saipan International Airport personnel to ensure the ability of the ARFF unit to respond to emergencies.

Airfield Safety. Short-term, minor, adverse impacts on airfield safety could occur during construction activities. All construction activities would be coordinated with Saipan International Airport personnel to prevent airfield obstructions and safety hazards. Some construction could be scheduled to avoid existing aircraft operations.

The proposed airfield facilities would be constructed in accordance with UFC 3-260-01, *Airfield and Heliport Planning and Design,* and all DOD, USAF, and FAA criteria, as applicable, including FAA Advisory Circular 150/5300-13A.

Refer to **Section 4.3** for information on safety impacts from the additional aircraft operations at Saipan International Airport associated with Alternative 1. Refer to **Section 4.6** for information regarding BASH at Saipan International Airport.

4.15.1.2 Implementation Phase

Contractor Health and Safety. Long-term, negligible, adverse impacts on contractor health and safety could occur during implementation of Alternative 1. The primary contractor activities would involve transporting and handling Jet A1 fuel for aircraft operations. The risks associated with these activities would be managed by mandatory training and adherence to established Federal and CNMI safety regulations. Workers would be required to wear protective gear such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Fuel vehicles would use an established, safe route to transport the fuel. Contractors would be required to establish, maintain, and comply with health and safety programs for their employees.

Military Health and Safety. Long-term, minor, beneficial impacts on military health and safety would be expected due to improved and expanded facilities for divert operations, joint exercises, and training for humanitarian/disaster relief activities. These activities already occur, but the improved and expanded facilities specifically designed for these activities would improve safety.

Public Health and Safety. Long-term, negligible, adverse impacts on public health and safety would be expected under the Implementation Phase of Alternative 1. Based on two operations/aircraft/day for 8 weeks/year, Alternative 1 would add approximately 720 aircraft operations per year, which would be a 1 percent increase above the existing number of air operations at Saipan International Airport. This increase in air operations would have a negligible effect on the ability of the ARFF unit to respond to aircraft emergencies.

Airfield Safety. Long-term, minor, beneficial impacts on airfield safety would be expected under the Implementation Phase of Alternative 1. Additional parking apron space would provide a safer airfield environment. Refer to **Section 4.3** for information on safety impacts from the additional aircraft operations at Saipan International Airport. Refer to **Section 4.6** for information regarding BASH at Saipan International Airport.

4.15.2 Alternative 2 – Modified Tinian Alternative

4.15.2.1 Construction Phase

4.15.2.1.1 North Option

Contractor Health and Safety. Short-term, negligible to minor, adverse impacts on health and safety could occur during construction activities. Construction poses an increased risk of construction-related accidents, but this level of risk would be managed by adherence to established Federal and CNMI safety regulations. Workers would be required to wear protective gear such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction equipment and associated trucks transporting material to and from the project sites could be directed to roads and streets that have a smaller volume of traffic. Contractors would be required to establish and maintain health and safety programs for their employees.

Military Health and Safety. No health and safety impacts on military personnel would occur because they would not be involved with the construction, beyond some oversight visits.

Public Health and Safety. No health and safety impacts on the public would be expected under Alternative 2 North Option. As previously noted, construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction would be coordinated with Tinian International Airport personnel to ensure the ability of the ARFF unit to respond to emergencies.

Airfield Safety. Short-term, minor, adverse impacts on airfield safety could occur during construction activities. All construction activities would be coordinated with Tinian International Airport personnel to prevent airfield obstructions and safety hazards. Some construction could be scheduled to avoid existing aircraft operations.

The proposed airfield facilities would be constructed in accordance with UFC 3-260-01, *Airfield and Heliport Planning and Design,* and all DOD, USAF, and FAA criteria, as applicable, including FAA Advisory Circular 150/5300-13A.DOD, USAF, and FAA criteria, as applicable.

Refer to **Section 4.3** for information on safety impacts from the additional aircraft operations at Tinian International Airport. Refer to **Section 4.6** for information regarding BASH at Tinian International Airport.

4.15.2.1.2 South Option

Contractor Health and Safety. Under Alternative 2 South Option, the construction footprint would be less than that described under Alternative 2 North Option in **Section 4.15.2.1.1**. Therefore, negligible impacts on contractor health and safety during the Construction Phase would be expected.

Military Health and Safety. No health and safety impacts on military personnel would occur because they would not be involved with the construction, beyond some oversight visits.

Public Health and Safety. No health and safety impacts on the public would be expected under Alternative 2 South Option. As previously noted, construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction would be coordinated with Tinian International Airport personnel to ensure the ability of the ARFF unit to respond to emergencies.

Airfield Safety. Under Alternative 2 South Option, the construction footprint would be less than that described under the Alternative 2 North Option in **Section 4.15.2.1.1**. Therefore, negligible to minor impacts on airfield safety during the Construction Phase would be expected.

The proposed airfield facilities would be constructed in accordance with UFC 3-260-01, *Airfield and Heliport Planning and Design,* and all DOD, USAF, and FAA criteria, as applicable, including FAA Advisory Circular 150/5300-13A.DOD, USAF, and FAA criteria, as applicable.

Refer to **Section 4.3** for information on safety impacts from the additional aircraft operations at Tinian International Airport. Refer to **Section 4.6** for information regarding BASH at Tinian International Airport.

4.15.2.2 Implementation Phase - North and South Options

Contractor Health and Safety. Long-term, negligible, adverse impacts on contractor health and safety could occur during implementation of Alternative 2. The primary contractor activities would involve transporting and handling Jet A1 fuel for aircraft operations. The risks associated with these activities would be managed by mandatory training and adherence to established Federal and CNMI safety regulations. Workers would be required to wear protective gear such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Fuel vehicles would use an established, safe route to transport the fuel. Contractors would be required to establish, maintain, and comply with health and safety programs for their employees.

Military Health and Safety. Long-term, minor, beneficial impacts on military health and safety would be expected due to improved and expanded facilities for divert operations, joint exercises, and training for humanitarian/disaster relief activities. These activities already occur, but the improved and expanded facilities specifically designed for these activities would improve safety.

Public Health and Safety. Long-term, minor, adverse impacts on public health and safety would be expected under the Implementation Phase of Alternative 2. Based on two operations/aircraft/day for 8 weeks/year, Alternative 2 would add approximately 720 aircraft operations per year, which would be a 5.5 percent increase above the existing number of air operations at Tinian International Airport. This increase in air operations would have a minor effect on the ability of the ARFF unit to respond to aircraft emergencies.

Airfield Safety. Long-term, minor, beneficial impacts on airfield safety would be expected under the Implementation Phase of Alternative 2. Additional parking apron space would provide a safer airfield environment.

Refer to **Section 4.3** for information on safety impacts from the additional aircraft operations at Tinian International Airport. Refer to **Section 4.6** for information regarding BASH at Tinian International Airport.

4.15.3 Alternative 3 – Hybrid Modified Alternative

4.15.3.1 Construction Phase

4.15.3.1.1 Saipan

Contractor Health and Safety. Under Alternative 3 on Saipan, the construction footprint would be less than that described under Alternative 1 in **Section 4.15.1**. Therefore, negligible to minor impacts on contractor health and safety during the Construction Phase on Saipan would be expected.

Military Health and Safety. No health and safety impacts on military personnel on Saipan would occur because they would not be involved with the construction, beyond some oversight visits.

Public Health and Safety. No health and safety impacts on the public would be expected under Alternative 3 on Saipan. As previously noted, construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction would be coordinated with Saipan International Airport personnel to ensure the ability of the ARFF unit to respond to emergencies.

Airfield Safety. Under Alternative 3 on Saipan, the construction footprint would be less than that described under Alternative 1 in **Section 4.15.1**. Therefore, negligible to minor impacts on airfield safety during the Construction Phase on Saipan would be expected because there would be less construction occurring at Saipan International Airport.

4.15.3.1.2 Tinian

4.15.3.1.2.1 NORTH OPTION

Contractor Health and Safety. Under Alternative 3 North Option, the construction footprint would be less than that described under Alternative 2 in **Section 4.15.2**. Therefore, negligible to minor impacts on contractor health and safety during the Construction Phase would be expected.

Military Health and Safety. No health and safety impacts on military personnel would occur because they would not be involved with the construction, beyond some oversight visits.

Public Health and Safety. No health and safety impacts on the public would be expected under Alternative 3 North Option. As previously noted, construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction would be coordinated with Tinian International Airport personnel to ensure the ability of the ARFF unit to respond to emergencies.

Airfield Safety. Short-term, minor, adverse impacts on airfield safety could occur during construction activities. All construction activities would be coordinated with Tinian International

Airport personnel to prevent airfield obstructions and safety hazards. Some construction could be scheduled to avoid existing aircraft operations.

The proposed airfield facilities would be constructed in accordance with UFC 3-260-01, *Airfield and Heliport Planning and Design,* and all DOD, USAF, and FAA criteria, as applicable, including FAA Advisory Circular 150/5300-13A.DOD, USAF, and FAA criteria, as applicable.

Refer to **Section 4.3** for information on safety impacts from the additional aircraft operations at Tinian International Airport. Refer to **Section 4.6** for information regarding BASH at Tinian International Airport.

4.15.3.1.2.2 SOUTH OPTION

Contractor Health and Safety. Under Alternative 3 South Option, the construction footprint would be less than that described under Alternative 2 and Alternative 3 North Option in **Section 4.15.2** and **Section 4.15.3.1.2.1**, respectively. Therefore, negligible impacts on contractor health and safety during the Construction Phase would be expected.

Military Health and Safety. No health and safety impacts on military personnel would occur because they would not be involved with the construction, beyond some oversight visits.

Public Health and Safety. No health and safety impacts on the public would be expected under Alternative 3 South Option. As previously noted, construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction would be coordinated with Tinian International Airport personnel to ensure the ability of the ARFF unit to respond to emergencies.

Airfield Safety. Under Alternative 3 South Option, the construction footprint would be less than that described under Alternative 3 North Option in **Section 4.15.3.1.2.1**. Therefore, negligible to minor impacts on airfield safety during the Construction Phase would be expected.

The proposed airfield facilities would be constructed in accordance with UFC 3-260-01, *Airfield and Heliport Planning and Design,* and all DOD, USAF, and FAA criteria, as applicable, including FAA Advisory Circular 150/5300-13A.DOD, USAF, and FAA criteria, as applicable.

Refer to **Section 4.3** for information on safety impacts from the additional aircraft operations at Tinian International Airport. Refer to **Section 4.6** for information regarding BASH at T International Airport.

4.15.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.15.3.2.1 Saipan

Contractor Health and Safety. Under Alternative 3 at Saipan, the same number of aircraft operations could occur as described under Alternative 1. Therefore, impacts during the Implementation Phase would be the same, and negligible impacts on noise would be expected.

Military Health and Safety. Long-term, minor, beneficial impacts on military health and safety would be expected due to improved and expanded facilities for divert operations, joint exercises, and training for humanitarian/disaster relief activities. These activities already occur, but the improved and expanded facilities specifically designed for these activities would improve safety.

Public Health and Safety. Long-term, negligible, adverse impacts on public health and safety would be expected under the Implementation Phase of Alternative 3. Based on two operations/aircraft/day for 8 weeks/year, Alternative 3 would add approximately 720 aircraft operations per year, which would be a 1 percent increase above the existing number of air operations at Saipan International Airport. This increase in air operations would have a negligible effect on the ability of the Aircraft Rescue and Fire Fighting unit to respond to aircraft emergencies.

Airfield Safety. Long-term, minor, beneficial impacts on airfield safety would be expected under the Implementation Phase of Alternative 3. Additional parking apron space would provide a safer airfield environment. Refer to **Section 4.3** for information on safety impacts from the additional aircraft operations at Saipan International Airport. Refer to **Section 4.6** for information regarding BASH at Saipan International Airport.

4.15.3.2.2 Tinian North and South Options

Contractor Health and Safety. Under Alternative 3 on Tinian, the same number of aircraft operations could occur as described under Alternative 2. Therefore, impacts during the Implementation Phase would be the same and minor impacts on noise would be expected.

Military Health and Safety. Long-term, minor, beneficial impacts on military health and safety would be expected due to improved and expanded facilities for divert operations, joint exercises, and training for humanitarian/disaster relief activities. These activities already occur, but the improved and expanded facilities specifically designed for these activities would improve safety.

Public Health and Safety. Under Alternative 3 on Tinian, the same number of aircraft operations could occur as described under Alternative 2. Therefore, impacts during the Implementation Phase would be the same, and negligible impacts on noise would be expected.

Airfield Safety. Long-term, minor, beneficial impacts on airfield safety would be expected under the Implementation Phase of Alternative 3 on Tinian. Additional parking apron space would provide a safer airfield environment.

4.15.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Sections 3.15** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with *36th Wing Instruction 13-204, Airfield Operations Instructions*, planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on the existing health and safety environment would be expected as a result of the No Action Alternative. Existing health and safety conditions on Saipan and Tinian would not increase due to construction traffic, planned military exercises, and support personnel traffic. The No Action Alternative would result in a continuation of existing conditions.

4.16 Mitigation Measures

The Proposed Action, under Alternative 1, Alternative 2, and Alternative 3, has the potential to result in adverse environmental impacts as described in **Sections 4.1** through **4.15**.

Mitigations would be implemented to minimize, avoid, or compensate for potential impacts on specific resource areas. Mitigations include specific management actions and BMPs required or recommended by regulation or USAF policy for a particular environmental resource. In accordance with CEQ regulations, mitigation measures are also considered for adverse environmental impacts and are the result of the USAF's commitments made through consultations and subsequent agreements. Mitigations would be implemented and managed as required for a particular impacted resource. These resource-specific mitigations are described by alternative in **Sections 4.16.1, 4.16.2,** and **4.16.3.**

4.16.1 Alternative 1 – Modified Saipan Alternative

Sections 4.16.1.1.1 and 4.16.1.1.2 provide mitigation measures that are a result of the USAF's commitments made through consultations and subsequent agreements.

4.16.1.1.1 Terrestrial Biological Resources

Mitigation measures provided for terrestrial biological resources on Saipan are those described in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* issued in 2012 (USAF 2012). The *Biological Opinion for Divert Activities and Exercises* included the construction of an east parking apron and fighter jet aircraft operations as part of the proposed action and therefore mitigation measures were also included related to these elements. However, the east parking apron and fighter jet aircraft operations are no longer included in the Proposed Action analyzed in this EIS and related mitigation measures listed below are no longer applicable in the context of this EIS.

The following mitigation measures would be implemented during both the Construction and Implementation Phase of Alternative 1, as described in the *Biological Opinion for Divert Activities and Exercises* (USAF 2012):

- To the extent practicable, consistent with national security and contingency requirements, and military safety and security requirements, the USAF will notify USFWS on an annual basis of upcoming Divert training events at Saipan International Airport including timing and description of the joint military exercises.
- The USAF will submit annual reports to USFWS on the first of December of each year beginning in 2014. The purpose of the annual report is to discuss successes and failure of all avoidance, minimization, and conservation measures, and terms and conditions listed in the BO in relation to the anticipated and observed impacts and incidental take. The report will include details regarding invasive species control and interdiction including which cargo/flights were inspected or non-inspected, potential level of risk associated with each cargo/flight type, and where the cargo/flights originated from for training related actions only. The reports should include explanations if specific inspections were missed and document all snake detections or other high risk incidents and the method used for the detection for training related actions only. The report will also include the number of brown treesnake kills during training actions. The annual report will also include a description of all actions that occurred at Saipan International Airport related to Divert (including humanitarian operations, flight diversions, and joint military exercises).
- The USAF will convene an annual coordination meeting or conference call prior to 28 February of each year, starting in 2015, to discuss findings within the compliance report and adapt avoidance, minimization, and conservation measures to further reduce incidental take. (Note: On December 19, 2014, the USAF provided notice to the USFWS that, given delays to the implementation of the proposed action described in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI*, the first annual coordination meeting would be deferred until 2016, or as determined in future consultation with the USFWS (Rounds 2014).)
- The USFWS has included in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* (**Appendix B)** a non-binding conservation measure that the USAF should implement rat and/or cat control at nightingale reed-warbler territories, and monitor nightingale reed-warbler nest success, to determine how predator control affects breeding success.

With respect to invasive species management, including brown treesnake interdiction and control, the USAF would implement the following mitigation measures during the Construction and Implementation Phase of Alternative 1, as described in the *Biological Opinion for Divert Activities and Exercises* (USAF 2012):

Brown Treesnake Interdiction and Control

- Per P.L. 110-417, [Division A], title III, Section 316, October 14, 2008, 122 Statute 4356 and per DoD Defense Transportation Regulations, Chapter 505 protocols, the USAF, with support from Joint Region Marianas (JRM), commits to implementing 100 percent inspection of all outgoing cargo and aircraft that are leaving from Guam associated with the Divert project. Inspections will be performed with trained quarantine officers and dog detection teams, which could be supplemented by other pest control expertise (with appropriate U.S. Department of Agriculture-Wildlife Services (USDA-WS) brown treesnake detection training and oversight) to meet 100 percent inspection goals for training activities, as required by Commander Naval Forces Marianas (COMNAVMAR) Instruction 5090.10A and 36 Wing Instruction 32-7004. As a stakeholder, the USFWS will have input on the USAF protocols for implementing brown treesnake interdiction and control strategies. The USAF will work cooperatively with JRM, USFWS, and USDA-WS to seek information in development of protocols for implementation of interdiction and control methods aimed at controlling brown treesnake as related to Divert training activities. On an as needed basis, the USFWS, USDA-WS, and USAF may request meetings to discuss interdiction and control method protocols as related to Divert military exercises.

- In the event military units, vehicles, and equipment accidentally leave Guam without inspection, as soon as possible, the USAF will notify: (1) USDA-WS and (2) the point of destination port or airport authorities and work with the destination port to resolve the issue. Urgency of notification is a priority so that rapid response or other actions can be implemented to reduce risk.
- In addition, the USAF will route inbound personnel and cargo for tactical approach exercises or humanitarian operations (that require an uninterrupted flow of events) directly to CNMI training locations to avoid Guam seaports and airfields. If Guam cannot be avoided, the USAF, in cooperation with USDA-WS and the USFWS, shall identify, and USAF will implement appropriate interdiction methods that may include redundant inspections (see 1c) or other interdiction methods as agreed to by the USFWS, USDA-WS, USAF and JRM. Additionally, tactical approach exercises will involve only cargo equipment that has not originated from areas containing a brown treesnake population or will be 100 percent inspected by certified brown treesnake canine programs. If the USDA-WS develops performance standards for this activity, the USAF will adopt those standards, provided they are compatible with military mission.
- The USAF is committed to implementing 100% redundant inspections after discussions with appropriate stakeholders. Redundant inspections include inspections on Guam and at the receiving jurisdiction for administrative and logistical movements that do not require a tactical approach to complete the training requirements. It is anticipated that redundant inspections to the extent possible would utilize existing quarantine and inspection protocols at receiving ports, but in the event that there is inadequate inspection coverage the USAF will coordinate with the USDA-WS to provide additional canine inspection teams that will augment quarantine and inspection protocols at the receiving ports. Appropriate stakeholders include, but are not limited to: the USFWS to ensure the inspections are adequate to reduce risks to trust resources, USDA-WS, receiving jurisdictions and their supporting agencies with expertise in invasive species control, and other inspection authorities as needed to ensure inspection methods are current and revised as new techniques, technology, or data become available.

- The USAF will also establish snake-free quarantine areas (barriers) for cargo traveling from Guam to CNMI and other brown treesnake-free areas. These barriers will be subject to: (1) multiple day and night searches with appropriately trained interdiction canine teams that meet performance standards under 1b; (2) snake trapping; and (3) visual inspection for snakes. In lieu of permanent barriers, temporary barriers may be preferable to permanent exclosures because of the variable sizes needed to handle different cargo amounts for the various training activities. The USAF will produce standard operating procedures for temporary barrier construction and use within two years of the issuance of this Biological Opinion. Standard operating procedures will ensure that temporary barriers will be constructed and maintained in a manner that assures the efficacy of the barrier and that staff maintaining and constructing the temporary barriers will receive training related to this activity prior to construction. The construction and maintenance of temporary barriers utilized for cargo traveling from Guam to CNMI and other brown treesnake-free areas must be approved by the USFWS prior to use. During the Construction Phase of this project, the existing permanent snake-free quarantine area at the Saipan seaport should be utilized for surface cargo following relevant CNMI and DoD regulations. Standard operating procedures will be developed in cooperation with the USFWS, U.S. Geological Survey, Fort Collins Science Center, Invasive Species Science Branch, and the USDA-WS to ensure risk to trust resources is adequately minimized. If risks are not adequately minimized, additional recommendations will be provided for incorporation into the protocols until the USAF and USFWS mutually agree the risk has been minimized. The USFWS, USAF, and other appropriate parties will meet, if necessary, to resolve concerns such that the protocols ensure risk is adequately minimized.
- The USAF, in conjunction with the USFWS and JRM, will develop procedures and protocols specific to Divert training events that will support a rapid response action in the event of a brown treesnake sighting resulting from Divert activities. Divert activities and exercises will be varied in the number of aircraft and personnel, and each event will have differing logistics support capabilities depending on the nature of the event. The type and amount of logistic support will be agreed to prior to each major event. Logistic support will include consideration of both in-kind assistance through air transport, shared billeting, security detail, food, materials, and ground transportation, and financial compensation for agreed-to response actions that could not be supported by in-kind assistance, including compensation for performance of services to support the deployment and execution of rapid response search teams.
- The USAF, working in collaboration with the USFWS and USDA-WS, will decide how best to implement the Brown Treesnake Control Plan (BTS TWG 2009, 37 pp.) relevant to Divert activities. The USAF and USFWS must mutually agree on the Brown Treesnake Control Plan implementation.
- The USAF will provide invasive species awareness training for all military and contractor personnel prior to all training activities. This would include a mandatory viewing of a brown treesnake educational video, distribution of pocket guides with brown treesnake information and personal inspection guidelines to be carried at all times, and assurance

that brown treesnake awareness extends from the chain of command to the individual military service member

- Due to limited availability of inspectors, trained dogs, and quarantine facilities and equipment on Guam and the CNMI, the USAF will coordinate closely with the USFWS, U.S. Department of Agriculture, CNMI Department of Land and Natural Resources, and Joint Region Marianas staff responsible for managing their brown treesnake program, on planning for training activities on Saipan. The USAF, along with cooperating agencies, will identify the inspection and interdiction requirements for the Divert training, including the number of trained quarantine officers and dog detection teams required. The USAF will coordinate and consult with the USFWS on the inspection and interdiction requirements identified by the USAF, and the USFWS must concur with these requirements prior to the implementation of the exercise or training activity. The USAF, along with the cooperating agencies, will develop plans to ensure that inspection personnel are available and that all requirements can be met, and will identify the support that the USAF will need to provide for the inspections. Planning for training exercises generally begins months prior to implementation of an exercise, and planning for complex training that would require a substantial number of inspectors, quarantine areas, or other personnel or equipment for control and interdiction generally begins more than a year in advance. If adequate resources, such as trained inspectors and dog teams, are not available during training activities, training will not occur until resources are available.

PREVENTION OF INVASIVE SPECIES INTRODUCTIONS AND SPREAD

- All personnel involved in Divert training will adhere to COMNAVMAR Instruction 5090.10A and 36 Wing Instruction 32-7004 and the 2005 Brown Treesnake Control and Interdiction Plan, which calls for individual troops to conduct self-inspections to avoid potential transport of brown treesnakes. Troops will inspect all personal gear and clothing (e.g., boots, bags, weapons, pants), hand-carried equipment and supplies and tent canvas. The intent of this measure is to minimize the potential risks and subsequent effects associated with transport of troops and personnel from Guam to the CNMI and other areas that do not have brown treesnakes.
- In addition to self-inspections, each training action will undergo a pathway risk analysis as a tool to improve programmatic efficiency while preventing the spread and introduction of invasive species. Actions at risk of transporting invasive species will have prevention tasks identified and implemented to reduce risk. Methods employed such as HACCP planning development and implementation by the USAF may be utilized to conduct pathway analysis. Pathway risk analysis must be completed prior to each training action being implemented.
- The USAF is a participating agency in the development of the Micronesia Biosecurity Plan. The Micronesia Biosecurity Plan is intended to coordinate and integrate inter-agency invasive species management efforts such as control, interdiction, eradication,

and research. Once completed, any portions of the Micronesia Biosecurity Plan[4] determined to be applicable to Divert construction and training activities, will be implemented when such procedures do not unduly interfere with military training. The USAF will continue to work cooperatively with the USFWS and U.S. Department of Agriculture in development of protocols for implementation of interdiction and control methods in accordance with recommendations contained in the Micronesian Biosecurity Plan identified as being tied to USAF actions.

The following mitigation measures would be implemented during the Construction Phase of Alternative 1, as described in the *Biological Opinion for Divert Activities and Exercises* (USAF 2012):

- The USAF will purchase one credit in the Saipan Upland Mitigation Bank prior to any construction of the east parking apron[5] if that apron is to be constructed. If a credit for Territory Six has already been purchased for implementation actions (fighter aircraft flights) then a credit for Territory Six will not need to be purchased a second time. In accordance with the Nightingale Reed-Warbler Programmatic Consultation and Saipan Upland Mitigation Bank Agreement and Addendum, the agreed-upon credit purchase will be as follows:
- Prior to the start of any vegetation clearing or earth-moving activities at the East Parking Apron[6], the USAF shall purchase one credit at the Saipan Upland Mitigation Bank, which is intended to provide 1.75 nightingale reed-warbler territories within the Bank boundary.
- Upon written notification that the credit has been purchased (i.e., the CNMI government has received and deposited the funds required to purchase the credit, within the Commonwealth Mitigation Bank Revolving Fund authorized under CNMI P.L. 10-84 and a receipt is sent to the USFWS documenting the deposit), the USFWS will provide a letter to the USAF indicating that the credit purchase obligation has been fulfilled and on-site project activities may begin as outlined within the project description above and the remainder of the conservation measures listed below.
- Clearing of vegetation at the east parking[7] apron will only occur between October through December or April through June, when nightingale reed-warbler nesting activity is not at its peak.
- The USAF will not locate a laydown yard or other temporary construction facilities in nightingale reed-warbler habitat or within a 50-meter buffer zone around reed-warbler territories.

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[4] Since completion of the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI*, the Micronesia Biosecurity Plan has been renamed to the Regional Biosecurity Plan for Micronesia and Hawaiʻi.
[5] Note: An east parking apron was included in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* issued in 2012. However, the east parkin apron is no longer included in the Proposed Action analyzed in this EIS.
[6] See Footnote 5 regarding the east parking apron.
[7] See Footnote 5 regarding the east parking apron.

- When possible, the use of very noisy (greater than 60 decibels A-weighted (dBA)) heavy machinery should be limited to the non-active or non-peak breeding seasons or temporary noise barriers or buffer zones should be installed to protect nightingale reed-warblers using buffer zones or areas of connectivity.
- Adequate plastic construction fencing will be placed and maintained around any habitat that is to be avoided (including buffer areas and adjacent parcels) to prevent impacts to habitat from construction equipment and personnel.
- All on-site construction personnel will receive instructions regarding the presence of listed species and the importance of avoiding and minimizing impacts to these species and their habitat.
- All on-site personnel will receive instruction regarding the brown treesnake *(Boiga irregularis)* and what to do immediately in case of a sighting.
- The USAF will ensure that no unauthorized take of nightingale reed-warbler or destruction of their habitat occurs. The USAF will have the authority to stop all activities that may result in such take or destruction until appropriate corrective measures have been completed.
- The USAF will report immediately any unauthorized impacts to the USFWS and CNMI DFW.
- A litter-control program will be implemented during construction. All tools, gear, and construction scrap will be removed upon completion of work in order to prevent the attraction of non-native pests (e.g., rats). All workers will ensure their food scraps, paper wrappers, food containers, cans, bottles, and other trash from the project area are deposited in covered or closed trash containers. The trash containers shall be removed from the project area and disposed of off-site at an approved landfill at the end of each working day.
- A brief summary report will be provided to the USFWS within 30 days of construction implementation to document implementation of any fencing, buffer zones, and minimization measures.
- The USAF will be responsible for oversight of avoidance, minimization, and mitigation implementation by the construction contractors for projects associated with the proposed Divert activities.
- The USAF will be responsible for oversight of training, review, and guidance on Hazard Analysis and Critical Control Point (HACCP) plan development, implementation and revision during the Construction Phase of the project. The HACCP plans will incorporate measures to ensure invasive species, including the brown treesnake, are not transported to the CNMI from Guam via project vehicles, materials and equipment. The USAF will be responsible for assuring that any HACCP plans are implemented by construction contractors to prevent the inadvertent movement of non-native, invasive species from other locations to the project site. The USAF will coordinate development of HACCP plans with the USFWS, including, but not limited to, annual meetings and reports, to

ensure the actions to eliminate or reduce risk are sufficient and on-going during construction activities.

- The USAF is a participating agency in the development of the Micronesia Biosecurity Plan[8]. The Micronesia Biosecurity Plan is intended to coordinate and integrate inter-agency invasive species management efforts such as control, interdiction, eradication, and research. Once completed, any portions of the Micronesia Biosecurity Plan determined to be applicable to Divert construction and training activities, will be implemented when such procedures do not unduly interfere with military training. The USAF will continue to work cooperatively with the USFWS and U.S. Department of Agriculture in development of protocols for implementation of interdiction and control methods in accordance with recommendations contained in the Micronesian Biosecurity Plan identified as being tied to USAF actions.

The following mitigation measures would be implemented during the Implementation Phase of Alternative 1, as described in the Biological Opinion for Divert Activities and Exercises (USAF 2012):

- To offset impacts from noise disturbance and habitat degradation resulting from the use of jet aircraft[9] during implementation of joint military exercises as proposed in the Divert EIS, the USAF will purchase seventeen credits in the Saipan Upland Mitigation Bank. These credits will be purchased prior to initiation of any proposed Divert exercises out of Saipan International Airport that use fighter-type jet aircraft. It is expected that these proposed Divert exercises will begin in 2016 or 2017. If a credit for Territory Six, which will be cleared for the east parking apron[10], has already been purchased then a credit for Territory Six will not need to be purchased a second time. In accordance with the Nightingale Reed-Warbler Programmatic Consultation and Saipan Upland Mitigation Bank Agreement and Addendum, the agreed-upon credit purchase will be as follows:
    - Prior to the start of proposed Divert exercises out of Saipan International Airport that use fighter-type jet aircraft, the USAF shall purchase seventeen credits at the Saipan Upland Mitigation Bank, which is intended to provide 29.75 nightingale reed-warbler territories within the Bank boundary.
    - Upon written notification that the credit has been purchased (i.e., the CNMI government has received and deposited the funds required to purchase the credit, within the Commonwealth Mitigation Bank Revolving Fund authorized under CNMI P.L. 10-84 and a receipt is sent to the USFWS documenting the deposit), the USFWS will notify the USAF indicating that the credit purchase obligation has been fulfilled and on-site project activities may begin.

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[8] Since completion of the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI*, the Micronesia Biosecurity Plan has been renamed to the Regional Biosecurity Plan for Micronesia and Hawaiʻi.
[9] Note: Fighter jet aircraft operations were included in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* issued in 2012. However, fighter jet aircraft operations are no longer included in the Proposed Action analyzed in this EIS.
[10] See Footnote 5 regarding the east parking apron.

- The USFWS has included in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* (**Appendix B)** a non-binding conservation measure that the USAF should implement a monitoring project, using qualified avian biologists, when joint military exercises begin operating out of Saipan International Airport (anticipated in 2016 or 2017). The monitoring project could occur in habitats experiencing noise above 100 dBA from take-off and landings of fighter jets[11]. The monitoring project could be used to:
  - Determine noise levels in nightingale reed-warbler territories surrounding the airport when fighter jets take-off and land at Saipan International Airport.
  - Determine if take-off and landing of fighter jets from Saipan International Airport cause a behavioral response (i.e., startle, alert, flushing, stress, etc.) in nightingale reed-warblers.
  - Determine the effect of take-off and landing of fighter jets from Saipan International Airport on nightingale reed-warbler breeding success in areas surrounding the airport.
  - Determine population trends and territory fidelity of nightingale reed-warblers surrounding the airport.

4.16.1.1.2 Cultural Resources

Mitigations pertaining to cultural resources will be determined through the Section 106 consultation process. The USAF will complete Section 106 consultation that culminates in an agreement document signed by consulting parties. This process will be completed prior to implementing any actions proposed in the Final EIS.

4.16.1.1.3 Management Actions and BMPs

Table 4.16-1 provides a summary of all mitigations that are considered management actions and BMPs for Alternative 1 by resource area and phase of the Proposed Action.

[11] See Footnote 9 regarding fighter jet aircraft operations.

1 **Table 4.16-1. Summary of Alternative 1 Resource-Specific BMPs and Management Actions**

Resource Area	Construction Phase	Implementation Phase
Noise (Section 4.1)	• Noise generation would last only for the duration of construction activities and could be minimized through measures such as the restriction of these activities to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.), and the use of equipment exhaust mufflers.	• During the Implementation Phase of Alternative 1, the USAF would notify the local government and public in advance of the exercises per existing protocols.
Air Quality (Section 4.2)	• Appropriate fugitive dust-control measures would be employed during construction and demolition activities to suppress emissions. • The CNMI Division of Environmental Quality (DEQ) requires all stationary sources to submit an air quality construction permit prior to commencement of construction activities. PACAF would coordinate with CNMI DEQ to obtain the necessary stationary source permits prior to construction.	• No Implementation Phase BMPs or management actions were identified.
Airspace and Airfield Environment (Section 4.3)	• An alternative civil and commercial divert location would need to be identified during construction activities at Saipan International Airport. • Coordination with CPA and commercial aviation could minimize impacts and timing or movement of construction activities could be adjusted to accommodate the majority of civil and commercial air traffic. • Procedures could be implemented or current aircraft movement procedures could be modified during construction to accommodate aircraft taxiing to and from the runway. • A construction safety plan in accordance with Advisory Circular 150\5370-2F could be prepared to ensure safe construction and recognition of the operational needs of other airport users.	• All fueling and defueling of aircraft would be conducted from fuel systems and fuel trucks approved by the CPA. • Appropriate spill containment and management plans would be implemented in the event of an incidental spill of jet fuel.
Geologic Resources and Soils (Section 4.4)	• Ground-penetrating radar or other subsurface geologic studies could be conducted prior to initiating construction activities to determine if there is the presence of sinkholes, caves, or other karst features beneath the surface. • Erosion-and-sediment-control plans (ESCPs) could be -developed and implemented both during and following site development to contain soil and runoff on site, and reduce potential for adverse effects associated with erosion and sedimentation and transport of sediments in runoff. • Site-specific soil surveys could be conducted in areas requiring excavation of soil to determine the depth of soils and if any engineering limitations exist.	• ESCPs could be developed and implemented both during and following site development to contain soil and runoff on site, and reduce potential for adverse effects associated with erosion and sedimentation and transport of sediments in runoff.

Resource Area	Construction Phase	Implementation Phase
	• Construction BMPs would be implemented and would follow the guidelines provided in Federal and CNMI permitting processes and regulations. BMPs could include silt fencing and sediment traps, applying water to disturbed soil, and revegetating disturbed areas as soon as possible after the disturbance, as appropriate. • A U.S. Environmental Protection Agency (USEPA) Construction General Permit and a CNMI DEQ Noncommercial Earthmoving permit might need to be submitted prior to the start of any construction activities. • Spill Prevention, Control, and Countermeasures (SPCC) plan would be followed to contain any leaks or spills generated from construction vehicles, the fuel hydrant system, or any other operational spills quickly. • Building and other structures would be constructed consistent with building code requirements in the 2012 International Building Code for development in Seismic Zone 3 and to withstand typhoon winds of 155 miles per hour (mph).	
Water Resources (Section 4.5)	• Construction contractors would obtain all necessary construction permits and comply with the guidelines set forth in those permits. • Sediment and erosion controls and storm water management and infiltration BMPs would be used. Additionally, the USAF could incorporate designs to maintain pre-development hydrology. All construction BMPs would follow the guidelines provided in Federal and CNMI permitting processes and regulations (e.g., USEPA Construction General Permit, CNMI DEQ Earthmoving and Erosion Control Regulations and permit), Energy Independence and Security Act (EISA) Section 438, the CNMI DEQ/Guam Environmental Protection Agency (GEPA) Stormwater Management Manual, and the site-specific Storm Water Pollution Prevention Plan (SWPPP) and ESCP. • Storm water directed from the proposed impervious surfaces could require substantial pre-treatment and filtering prior to infiltration to protect the quality of groundwater resources. • Implementation of the SPCC, various applicable Federal and CNMI storm water management, pre-treatment, and filtering requirements. • All construction equipment should be maintained according to the manufacturer's specifications and all fuels and fuels and potentially hazardous materials would be contained and stored properly.	• The USAF would use proper secondary containment and maintain fuel storage and delivery equipment; implement a SPCC; and implement various applicable Federal and CNMI storm water management, pre-treatment, and filtering requirements.

Resource Area	Construction Phase	Implementation Phase
Terrestrial Biological Resources (Section 4.6)	• No Construction Phase BMPs or management actions were identified.	• Implementation of measures to remove or modify features attractive to wildlife would decrease the likelihood of BASH strikes at the airfield. These measures would be discussed with and approved by the CPA and FAA as required.
Marine Biological Resources (Section 4.7)	• DOD policies, compliant with Federal and CNMI regulations, such as use of silt screens as referenced in **Section 4.5**, would be followed to minimize erosion and sedimentation during construction and to manage storm water runoff after construction.	• DOD policies, compliant with Federal and CNMI regulations, such as use of silt screens as referenced in **Section 4.5**, would be followed to minimize erosion and sedimentation during construction and to manage storm water runoff after construction.
Cultural Resources (Section 4.8)	• Management actions pertaining to cultural resources will be determined through the Section 106 consultation process. The USAF will complete Section 106 consultation that culminates in an agreement document signed by consulting parties. This process will be completed prior to implementing any actions proposed in the Final EIS.	• Management actions pertaining to cultural resources will be determined through the Section 106 consultation process. The USAF will complete Section 106 consultation that culminates in an agreement document signed by consulting parties. This process will be completed prior to implementing any actions proposed in the Final EIS.
Recreation (Section 4.9)	• No Construction Phase BMPs or management actions were identified.	• Exercises would be planned in advance with signs posted and notifications published on a regular basis to inform the public in accordance with established Joint Region Marianas procedures.
Land Use and Submerged Land Use (Section 4.10)	• The USAF would obtain the necessary authority or minimum property interest necessary to construct the facilities on public lands and would maintain some of the facilities as common-use facilities for use by the CPA and other airport users. • USAF prepared a CZMA Consistency Determination, and pursuant to 15 CFR Section 930.35 (c), since the CNMI CRMO did not respond to the ND within 60 days, the CNMI CRMO concurrence with the ND was presumed.	• Personnel working at the airport would be required to adhere to OSHA and DOD guidelines
Transportation (Section 4.11)	• Construction activities could begin and end outside of peak travel periods. • Roadways that would be used for construction could be repaired, overlaid, and reinforced as needed to accommodate the additional traffic prior to the start of substantial construction activities. • The majority of worker transport activities could be required to occur outside of peak travel periods.	• Impacts would be lessened during implementation if roads were repaired, overlaid, and reinforced during the Construction Phase.

Resource Area	Construction Phase	Implementation Phase
Hazardous Materials and Waste (Section 4.12)	• All hazardous materials and wastes would be stored and handled in accordance with applicable Federal, CNMI, and USAF hazardous materials management regulations. • Contractors would be responsible for the storage, handling, and disposal of hazardous wastes in accordance with Federal, CNMI, and USAF hazardous waste management regulations. • Contractors would obtain an aboveground storage tank (AST) Permit to Install and an AST Permit to Operate from the CNMI DEQ for all ASTs needed to support construction. All ASTs would be removed following the completion of construction and all contractors would use proper BMPs (e.g., secondary containment, inspections, and spill kits) and adhere to Federal, CNMI, and USAF regulations to prevent releases from the ASTs. • The USAF would obtain the necessary permits for construction at Saipan International Airport and the Port of Saipan, as appropriate. • Prior to conducting any soil-disturbing activities, a visual survey of the areas proposed to be disturbed would be conducted. If environmental contamination is identified, construction site plans would be revised to avoid the contamination areas or remediate them as practicable. If environmental contamination is discovered during construction, the contractor would immediately stop work at the affected area, report the discovery to the USAF, property owner, and CNMI, as necessary, and implement appropriate safety measures. Commencement of field activities would not resume in the affected area until the issue was investigated and resolved. • Prior to conducting any soil-disturbing activities, a visual survey of the proposed disturbance areas would be conducted. If visual asbestos is observed, the applicable sites would be classified as areas with known asbestos-containing soils/materials, and the notification process would be implemented. If exposed asbestos is not observed during the visual survey, construction would move forward as planned. Any ACMs encountered during soil-disturbing activities would be handled in accordance with established Federal, CNMI, and USAF regulations and would be disposed of at an asbestos-permitted landfill.	• Changes in amounts and types of hazardous wastes stored and generated at Saipan International Airport could require Saipan International Airport to reevaluate its RCRA small-quantity generator (SQG) status. • All hazardous materials and wastes would be stored and handled in accordance with applicable Federal, CNMI, and USAF hazardous materials management regulations. • The USAF would obtain necessary permits for wastes at Saipan International Airport and the Port of Saipan, as appropriate. • All petroleum products would be stored in accordance with applicable Federal, CNMI, and USAF management regulations. • The USAF would test facilities that have known radon intrusion issues periodically to verify that no unacceptable radon gas buildup occurs. As appropriate, radon gas removal equipment would be installed at buildings that consistently show indoor radon levels greater than 4 picocuries per liter (pCi/L).

Resource Area	Construction Phase	Implementation Phase
	• To limit the potential for a release of petroleum products, all proposed petroleum product storage and transfer infrastructure, including storage tanks, piping, and hydrants, would be constructed new and in accordance with manufacturer design specifications. • Prior to conducting any soil-disturbing activities, a visual survey of the proposed disturbance areas would be conducted. Should debris containing LBP be discovered during the survey, site preparation, or excavation, work would stop immediately and measures would be taken to secure the area and prevent the release of lead. Debris containing LBP would be removed and disposed of in accordance with applicable Federal and CNMI regulations. • If any potential PCB-containing equipment not labeled PCB-free or missing date-of-manufacture labels requires removal, then this equipment would be removed and handled in accordance with Federal and CNMI hazardous waste regulations. • Radon-resistant construction techniques would be implemented during to limit the potential for radon intrusion during occupancy.	
Infrastructure and Utilities (Section 4.13)	• Minimize overlap between construction activities and commercial flights. • A USEPA Construction General Permit would be needed for any discharge of storm water runoff from construction. The permit requires the development and implementation of a construction-specific SWPPP for construction activities at a site totaling 1 acre or more and where storm water discharges from the construction area enter a Municipal Separate Storm Sewer System (MS4) that leads to natural drainage channels or streams classified as surface waters of the United States. An SWPPP approved by the DEQ would be required and must contain an NPDES permit declaration. In addition, the permit requires that discharges from storm water controls be directed to vegetated areas of the site to increase sediment removal and maximize storm water infiltration wherever feasible. In order to get DEQ approval, the construction activities would need to implement BMPs and meet their location-specific storm water quality and quantity requirements.	• BMPs put in place during construction activities would continue to be implemented and maintained. • The USAF would coordinate with the CUC to ensure the water supply is sufficient. If local regulatory authorities determine the potential for adverse effects on the drinking water or aquifer to occur, the USAF would use other methods (e.g., bottled water, potable desalinization/water purification units) to obtain drinking water. • The USAF would coordinate with CUC to determine how to utilize the wastewater and sewer system in a manner that would not contribute to noncompliance with the NPDES permit requirements.

Resource Area	Construction Phase	Implementation Phase
	• Storm water management controls would be designed and implemented consistent with construction storm water permit requirements and the USAF Engineering Technical Letter (ETL) 03-1: Storm Water Construction Standards to minimize potential adverse impacts on surface waters associated with the construction of the impervious surfaces. Compliance with ETL 03-1 requires implementation of BMPs to reduce site storm water discharges and pollutant loadings to preconstruction levels or better. A storm water-control site plan would be required and must contain an NPDES permit declaration. • Low-impact development strategies would be considered to the extent possible to comply with EISA Section 438 such as the construction of grass swales or infiltration ditches; drywells installed at all air conditioning units to prevent muddy and unsafe working conditions near tents; and installing rain barrels, a cistern, or other collection devices to capture rainwater for recycling. • The new facilities would be designed to achieve Leadership in Energy and Environmental Design (LEED) Silver certification.	
Socioeconomic and Environmental Justice (Section 4.14)	• Construction contractors would coordinate with local hotels to secure the required number of hotel rooms prior to construction. • All construction activities, the proposed work schedules, and other conditions of construction could be agreed to by the FAA, CPA, and affected commercial airlines and identified in the Safety Management Plan. • Appropriate levels of security and firefighting services at the construction work sites would be coordinated with Department of Public Safety (DPS) and the CPA's police and Airport Rescue and Firefighting (ARFF).	• USAF would coordinate with CPA and airport personnel to schedule exercises during non-peak airport operating hours (i.e., nighttime hours and between peak morning, afternoon, and evening hours). All implementation activities, including military exercise schedules, would be agreed to by the FAA, CPA, and affected commercial airlines and identified in the Safety Management Plan. • Under a mutual use agreement with the CPA, the USAF would also address costs for ongoing maintenance of the proposed infrastructure and additional costs for TSA security program requirements. • Appropriate levels of security and firefighting during exercises would be coordinated with DPS and the CPA's police and ARFF. • The USAF would coordinate with local hotels to secure the required number of hotel rooms prior to exercises.

Resource Area	Construction Phase	Implementation Phase
Human Health and Safety (Section 4.15)	• All construction activities would occur in adherence to established Federal and CNMI safety regulations. Workers would be required to wear protective gear such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction equipment and associated trucks transporting material to and from the project sites could be directed to roads and streets that have a smaller volume of traffic. Contractors would be required to establish and maintain health and safety programs for their employees • Construction areas would be fenced and appropriately marked with signs to prevent trespassing. • The proposed airfield facilities would be constructed in accordance with Unified Facilities Criteria (UFC) 3-260-01, *Airfield and Heliport Planning and Design,* and all DOD, USAF, and FAA criteria, as applicable, including FAA Advisory Circular 150/5300-13A.DOD, USAF, and FAA criteria, as applicable. • Construction activities would be coordinated with airport personnel to ensure the ability of the ARFF unit to respond to emergencies and to prevent airfield obstructions and safety hazards.	• Contractors would be required to attend mandatory training and adhere to established Federal and CNMI safety regulations. Workers would be required to wear protective gear such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. • Fuel vehicles would use an established, safe route to transport the fuel. • Security measures such as posted signs and locked and secured gates would be implemented as the USAF deems appropriate.

4.16.2 Alternative 2 – Modified Tinian Alternative

Sections 4.16.1.1.1 and 4.16.1.1.2 provide mitigation measures that are a result of the USAF's commitments made through consultations and subsequent agreements.

4.16.2.1.1 Terrestrial Biological Resources

With respect to invasive species management, the USAF would implement the following mitigation measures under Alternative 2, as described in the *Biological Opinion for Divert Activities and Exercises* (USAF 2012):

BROWN TREESNAKE INTERDICTION AND CONTROL

- Per P.L. 110-417, [Division A], title III, Section 316, October 14, 2008, 122 Statute 4356 and per DoD Defense Transportation Regulations, Chapter 505 protocols, the USAF, with support from JRM, commits to implementing 100 percent inspection of all outgoing cargo and aircraft that are leaving from Guam associated with the Divert project. Inspections will be performed with trained quarantine officers and dog detection teams, which could be supplemented by other pest control expertise (with appropriate USDA-WS brown treesnake detection training and oversight) to meet 100 percent inspection goals for training activities, as required by COMNAVMAR Instruction 5090.10A and 36 Wing Instruction 32-7004. As a stakeholder, the USFWS will have input on the USAF protocols for implementing brown treesnake interdiction and control strategies. The USAF will work cooperatively with JRM, USFWS, and USDA-WS to seek information in development of protocols for implementation of interdiction and control methods aimed at controlling brown treesnake as related to Divert training activities. On an as needed basis, the USFWS, USDA-WS, and USAF may request meetings to discuss interdiction and control method protocols as related to Divert military exercises.
    - In the event military units, vehicles, and equipment accidentally leave Guam without inspection, as soon as possible, the USAF will notify: (1) USDA-WS and (2) the point of destination port or airport authorities and work with the destination port to resolve the issue. Urgency of notification is a priority so that rapid response or other actions can be implemented to reduce risk.
    - In addition, the USAF will route inbound personnel and cargo for tactical approach exercises or humanitarian operations (that require an uninterrupted flow of events) directly to CNMI training locations to avoid Guam seaports and airfields. If Guam cannot be avoided, the USAF, in cooperation with USDA-WS and the USFWS, shall identify, and USAF will implement appropriate interdiction methods that may include redundant inspections (see 1c) or other interdiction methods as agreed to by the USFWS, USDA-WS, USAF and JRM. Additionally, tactical approach exercises will involve only cargo equipment that has not originated from areas containing a brown treesnake population or will be 100 percent inspected by certified brown treesnake canine programs. If the USDA-WS develops performance standards for this activity, the USAF will adopt those standards, provided they are compatible with military mission.

- The USAF is committed to implementing 100% redundant inspections after discussions with appropriate stakeholders. Redundant inspections include inspections on Guam and at the receiving jurisdiction for administrative and logistical movements that do not require a tactical approach to complete the training requirements. It is anticipated that redundant inspections to the extent possible would utilize existing quarantine and inspection protocols at receiving ports, but in the event that there is inadequate inspection coverage the USAF will coordinate with the USDA-WS to provide additional canine inspection teams that will augment quarantine and inspection protocols at the receiving ports. Appropriate stakeholders include, but are not limited to: USFWS to ensure the inspections are adequate to reduce risks to trust resources, USDA-WS, receiving jurisdictions and supporting agencies with expertise in invasive species control, and other inspection authorities as needed to ensure inspection methods are current and revised as new techniques, technology, or data become available.

- The USAF will also establish snake-free quarantine areas (barriers) for cargo traveling from Guam to CNMI and other brown treesnake-free areas. These barriers will be subject to: (1) multiple day and night searches with appropriately trained interdiction canine teams that meet performance standards under 1b; (2) snake trapping; and (3) visual inspection for snakes. In lieu of permanent barriers, temporary barriers may be preferable to permanent exclosures because of the variable sizes needed to handle different cargo amounts for the various training activities. The USAF will produce standard operating procedures for temporary barrier construction and use within two years of the issuance of this Biological Opinion. Standard operating procedures will ensure that temporary barriers will be constructed and maintained in a manner that assures the efficacy of the barrier and that staff maintaining and constructing the temporary barriers will receive training related to this activity prior to construction. The construction and maintenance of temporary barriers utilized for cargo traveling from Guam to CNMI and other brown treesnake-free areas must be approved by the USFWS prior to use. During the construction phase of this project, the existing permanent snake-free quarantine area at the Saipan seaport should be utilized for surface cargo following relevant CNMI and DoD regulations. Standard operating procedures will be developed in cooperation with the USFWS, U.S. Geological Survey, Fort Collins Science Center, Invasive Species Science Branch, and the USDA-WS to ensure risk to trust resources is adequately minimized. If risks are not adequately minimized, additional recommendations will be provided for incorporation into the protocols until the USAF and USFWS mutually agree the risk has been minimized. The USFWS, USAF, and other appropriate parties will meet, if necessary, to resolve concerns such that the protocols ensure risk is adequately minimized.

- The USAF, in conjunction with the USFWS and JRM, will develop procedures and protocols specific to Divert training events that will support a rapid response action in the event of a brown treesnake sighting resulting from Divert activities. Divert activities and exercises will be varied in the number of aircraft and personnel, and each event will have differing logistics support capabilities depending on the nature of the event. The type and amount of logistic support will be agreed to prior to each major event. Logistic support will include consideration of both in-kind assistance through air transport, shared billeting, security detail, food, materials, and ground transportation, and financial compensation for agreed-to response actions that could not be supported by in-kind assistance, including compensation for performance of services to support the deployment and execution of rapid response search teams.

- The USAF, working in collaboration with the USFWS and USDA-WS, will decide how best to implement the Brown Treesnake Control Plan (BTS TWG 2009, 37 pp.) relevant to Divert activities. The USAF and USFWS must mutually agree on the Brown Treesnake Control Plan implementation.
- The USAF will provide invasive species awareness training for all military and contractor personnel prior to all training activities. This would include a mandatory viewing of a brown treesnake educational video, distribution of pocket guides with brown treesnake information and personal inspection guidelines to be carried at all times, and assurance that brown treesnake awareness extends from the chain of command to the individual military service member
- Due to limited availability of inspectors, trained dogs, and quarantine facilities and equipment on Guam and the CNMI, the USAF will coordinate closely with the USFWS, U.S. Department of Agriculture, CNMI Department of Land and Natural Resources, and Joint Region Marianas staff responsible for managing their brown treesnake program, on planning for training activities on Saipan. The USAF, along with cooperating agencies, will identify the inspection and interdiction requirements for the Divert training, including the number of trained quarantine officers and dog detection teams required. The USAF will coordinate and consult with the USFWS on the inspection and interdiction requirements identified by the USAF, and the USFWS must concur with these requirements prior to the implementation of the exercise or training activity. The USAF, along with the cooperating agencies, will develop plans to ensure that inspection personnel are available and that all requirements can be met, and will identify the support that the USAF will need to provide for the inspections. Planning for training exercises generally begins months prior to implementation of an exercise, and planning for complex training that would require a substantial number of inspectors, quarantine areas, or other personnel or equipment for control and interdiction generally begins more than a year in advance. If adequate resources, such as trained inspectors and dog teams, are not available during training activities, training will not occur until resources are available.

Prevention of Invasive Species Introductions and Spread

- The USAF will be responsible for oversight of avoidance, minimization, and mitigation implementation by the construction contractors for projects associated with the proposed Divert activities. In addition, the USAF will be responsible for oversight of training, review, and guidance on HACCP plan development, implementation and revision during the construction phase of the project. The HACCP plans will incorporate measures to ensure invasive species, including the brown treesnake, are not transported to the CNMI from Guam via project vehicles, materials and equipment. The USAF will be responsible for assuring that any HACCP plans are implemented by construction contractors to prevent the inadvertent movement of non-native, invasive species from other locations to the project site. The USAF will coordinate development of HACCP plans with the Service, including, but not limited to, annual meetings and reports to ensure the actions to eliminate or reduce risk are sufficient and on-going during construction activities.

- All personnel involved in Divert training will adhere to COMNAVMAR Instruction 5090.10A and 36 Wing Instruction 32-7004 and the 2005 Brown Treesnake Control and Interdiction Plan, which calls for individual troops to conduct self-inspections to avoid potential transport of brown treesnakes. Troops will inspect all personal gear and clothing (e.g., boots, bags, weapons, pants), hand-carried equipment and supplies and tent canvas. The intent of this measure is to minimize the potential risks and subsequent effects associated with transport of troops and personnel from Guam to the CNMI and other areas that do not have brown treesnakes.
- In addition to self-inspections, each training action will undergo a pathway risk analysis as a tool to improve programmatic efficiency while preventing the spread and introduction of invasive species. Actions at risk of transporting invasive species will have prevention tasks identified and implemented to reduce risk. Methods employed such as HACCP planning development and implementation by the USAF may be utilized to conduct pathway analysis. Pathway risk analysis must be completed prior to each training action being implemented.
- The USAF is a participating agency in the development of the Micronesia Biosecurity Plan. The Micronesia Biosecurity Plan is intended to coordinate and integrate inter-agency invasive species management efforts such as control, interdiction, eradication, and research. Once completed, any portions of the Micronesia Biosecurity Plan determined to be applicable to Divert construction and training activities, will be implemented when such procedures do not unduly interfere with military training. The USAF will continue to work cooperatively with the USFWS and U.S. Department of Agriculture in development of protocols for implementation of interdiction and control methods in accordance with recommendations contained in the Micronesian Biosecurity Plan identified as being tied to USAF actions.

4.16.2.1.2 Cultural Resources

Mitigations and management actions pertaining to cultural resources will be determined through the Section 106 consultation process. The USAF will complete Section 106 consultation that culminates in an agreement document signed by consulting parties. This process will be completed prior to implementing any actions proposed in the Final EIS.

4.16.2.1.3 Management Actions and BMPs

Table 4.16-2 provides a summary of all mitigations that are considered management actions and BMPs for Alternative 2 by resource area and phase of the Proposed Action.

4.16.3 Alternative 3 – Hybrid Modified Alternative

Under Alternative 3, the USAF would implement all mitigations, management actions, and BMPs on Saipan and Tinian identified in **Sections 4.16.1** and **4.16.2,** respectively, as applicable.

1 **Table 4.16-2. Summary of Alternative 2 Resource-Specific BMPs and Management Actions**

Resource Area	Construction Phase	Implementation Phase
Noise (Section 4.1)	• Noise generation would last only for the duration of construction activities and could be minimized through measures such as the restriction of these activities to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.), and the use of equipment exhaust mufflers.	• During the Implementation Phase of Alternative 2, the USAF would notify the local government and public in advance of the exercises per existing protocols.
Air Quality (Section 4.2)	• Appropriate fugitive dust-control measures would be employed during construction and demolition activities to suppress emissions. • The CNMI Division of Environmental Quality (DEQ) requires all stationary sources to submit an air quality construction permit prior to commencement of construction activities. PACAF would coordinate with CNMI DEQ to obtain the necessary stationary source permits prior to construction.	• No Implementation Phase BMPs or management actions were identified.
Airspace and Airfield Environment (Section 4.3)	• Modification to approach procedures would be required to minimize impacts during construction. A temporary displaced threshold and appropriate runway markings could limit the overall runway for use during construction. • Coordination with CPA and commercial aviation could minimize impacts and timing or movement of construction activities could be adjusted to accommodate the majority of civil and commercial air traffic. • Procedures could be implemented or current aircraft movement procedures could be modified during construction to accommodate aircraft taxiing to and from the runway. • A construction safety plan in accordance with Advisory Circular 150\5370-2F could be prepared to ensure safe construction and recognition of the operational needs of other airport users.	• All fueling and defueling of aircraft would be conducted from fuel systems and fuel trucks approved by the CPA. • Appropriate spill containment and management plans would be implemented in the event of an incidental spill of jet fuel.

Resource Area	Construction Phase	Implementation Phase
Geologic Resources and Soils (Section 4.4)	• Ground-penetrating radar or other subsurface geologic studies could be conducted prior to initiating construction activities to determine if there is the presence of sinkholes, caves, or other karst features beneath the surface. • Erosion-and-sediment-control plans (ESCPs) could be -developed and implemented both during and following site development to contain soil and runoff on site, and reduce potential for adverse effects associated with erosion and sedimentation and transport of sediments in runoff. • Site-specific soil surveys could be conducted in areas requiring excavation of soil to determine the depth of soils and if any engineering limitations exist. • Construction BMPs would be implemented and would follow the guidelines provided in Federal and CNMI permitting processes and regulations. BMPs could include silt fencing and sediment traps, applying water to disturbed soil, and revegetating disturbed areas as soon as possible after the disturbance, as appropriate. • A U.S. Environmental Protection Agency (USEPA) Construction General Permit and a CNMI DEQ Noncommercial Earthmoving permit might need to be submitted prior to the start of any construction activities. • Spill Prevention, Control, and Countermeasures (SPCC) plan would be followed to contain any leaks or spills generated from construction vehicles, the fuel hydrant system, or any other operational spills quickly. • Building and other structures would be constructed consistent with building code requirements in the 2012 International Building Code for development in Seismic Zone 3 and to withstand typhoon winds of 155 miles per hour (mph).	• ESCPs could be developed and implemented both during and following site development to contain soil and runoff on site, and reduce potential for adverse effects associated with erosion and sedimentation and transport of sediments in runoff.

Resource Area	Construction Phase	Implementation Phase
Water Resources (Section 4.5)	• Construction contractors would obtain all necessary construction permits and comply with the guidelines set forth in those permits. • Sediment and erosion controls and storm water management and infiltration BMPs would be used. Additionally, the USAF could incorporate designs to maintain pre-development hydrology. All construction BMPs would follow the guidelines provided in Federal and CNMI permitting processes and regulations (e.g., USEPA Construction General Permit, CNMI DEQ Earthmoving and Erosion Control Regulations and permit), Energy Independence and Security Act (EISA) Section 438, the CNMI DEQ/Guam Environmental Protection Agency (GEPA) Stormwater Management Manual, and the site-specific Storm Water Pollution Prevention Plan (SWPPP) and ESCP. • Storm water directed from the proposed impervious surfaces could require substantial pre-treatment and filtering prior to infiltration to protect the quality of groundwater resources. • Implementation of the SPCC, various applicable Federal and CNMI storm water management, pre-treatment, and filtering requirements. • All construction equipment should be maintained according to the manufacturer's specifications and all fuels and fuels and potentially hazardous materials would be contained and stored properly.	• The USAF would use proper secondary containment and maintain fuel storage and delivery equipment; implement a SPCC; and implement various applicable Federal and CNMI storm water management, pre-treatment, and filtering requirements.
Terrestrial Biological Resources (Section 4.6)	• No Construction Phase BMPs or management actions were identified.	• Implementation of measures to remove or modify features attractive to wildlife would decrease the likelihood of BASH strikes at the airfield. These measures would be discussed with and approved by the CPA and FAA as required.
Marine Biological Resources (Section 4.7)	• DOD policies, compliant with Federal and CNMI regulations, such as use of silt screens as referenced in **Section 4.5**, would be followed to minimize erosion and sedimentation during construction and to manage storm water runoff after construction.	• No Implementation Phase BMPs or management actions were identified.

Resource Area	Construction Phase	Implementation Phase
Cultural Resources (Section 4.8)	• Mitigations and management actions pertaining to cultural resources will be determined through the Section 106 consultation process. The USAF will complete Section 106 consultation that culminates in an agreement document signed by consulting parties. This process will be completed prior to implementing any actions proposed in the Final EIS.	• Mitigations and management actions pertaining to cultural resources will be determined through the Section 106 consultation process. The USAF will complete Section 106 consultation that culminates in an agreement document signed by consulting parties. This process will be completed prior to implementing any actions proposed in the Final EIS.
Recreation (Section 4.9)	• No Construction Phase BMPs or management actions were identified.	• Exercises would be planned in advance with signs posted and notifications published on a regular basis to inform the public in accordance with established Joint Region Marianas procedures.
Land Use and Submerged Land Use (Section 4.10)	• The USAF would obtain the necessary authority or minimum property interest necessary to construct the facilities on public lands and would maintain some of the facilities as common-use facilities for use by the CPA and other airport users. • USAF prepared a CZMA Consistency Determination, and pursuant to 15 CFR Section 930.35 (c), since the CNMI CRMO did not respond to the ND within 60 days, the CNMI CRMO concurrence with the ND was presumed. • The USAF would prepare a CRM permit for construction at the Port of Tinian and potential BMPs identified in the permit would be implemented.	• Personnel working at the airport would be required to adhere to OSHA and DOD guidelines
Transportation (Section 4.11)	• Construction activities could begin and end outside of peak travel periods. • Roadways that would be used for construction could be repaired, overlaid, and reinforced as needed to accommodate the additional traffic prior to the start of substantial construction activities. • The majority of worker transport activities could be required to occur outside of peak travel periods.	• Impacts would be lessened during implementation if roads were repaired, overlaid, and reinforced during the Construction Phase.

Resource Area	Construction Phase	Implementation Phase
Hazardous Materials and Waste (Section 4.12)	• All hazardous materials and wastes would be stored and handled in accordance with applicable Federal, CNMI, and USAF hazardous materials management regulations. • Contractors would be responsible for the storage, handling, and disposal of hazardous wastes in accordance with Federal, CNMI, and USAF hazardous waste management regulations. • Contractors would obtain an aboveground storage tank (AST) Permit to Install and an AST Permit to Operate from the CNMI DEQ for all ASTs needed to support construction. All ASTs would be removed following the completion of construction and all contractors would use proper BMPs (e.g., secondary containment, inspections, and spill kits) and adhere to Federal, CNMI, and USAF regulations to prevent releases from the ASTs. • Prior to conducting any soil-disturbing activities, a visual survey of the areas proposed to be disturbed would be conducted. If environmental contamination is identified, construction site plans would be revised to avoid the contamination areas or remediate them as practicable. If environmental contamination is discovered during construction, the contractor would immediately stop work at the affected area, report the discovery to the USAF, property owner, and CNMI, as necessary, and implement appropriate safety measures. Commencement of field activities would not resume in the affected area until the issue was investigated and resolved.	• All hazardous materials and wastes would be stored and handled in accordance with applicable Federal, CNMI, and USAF hazardous materials management regulations. • All petroleum products would be stored in accordance with applicable Federal, CNMI, and USAF management regulations. • The USAF would test facilities that have known radon intrusion issues periodically to verify that no unacceptable radon gas buildup occurs. As appropriate, radon gas removal equipment would be installed at buildings that consistently show indoor radon levels greater than 4 picocuries per liter (pCi/L). • Changes in amounts and types of hazardous wastes stored and generated at Tinian International Airport could require Tinian International Airport to obtain a RCRA hazardous waste generator permit and be classified as a hazardous waste generator.

Resource Area	Construction Phase	Implementation Phase
Hazardous Materials and Waste (Section 4.12) (continued)	• Prior to conducting any soil-disturbing activities, a visual survey of the proposed disturbance areas would be conducted. If visual asbestos is observed, the applicable sites would be classified as areas with known asbestos-containing soils/materials, and the notification process would be implemented. If exposed asbestos is not observed during the visual survey, construction would move forward as planned. Any ACMs encountered during soil-disturbing activities would be handled in accordance with established Federal, CNMI, and USAF regulations and would be disposed of at an asbestos-permitted landfill. • To limit the potential for a release of petroleum products, all proposed petroleum product storage and transfer infrastructure, including storage tanks, piping, and hydrants, would be constructed new and in accordance with manufacturer design specifications. • Prior to conducting any soil-disturbing activities, a visual survey of the proposed disturbance areas would be conducted. Should debris containing LBP be discovered during the survey, site preparation, or excavation, work would stop immediately and measures would be taken to secure the area and prevent the release of lead. Debris containing LBP would be removed and disposed of in accordance with applicable Federal and CNMI regulations. • If any potential PCB-containing equipment not labeled PCB-free or missing date-of-manufacture labels requires removal, then this equipment would be removed and handled in accordance with Federal and CNMI hazardous waste regulations. • Radon-resistant construction techniques would be implemented during to limit the potential for radon intrusion during occupancy.	

Resource Area	Construction Phase	Implementation Phase
Infrastructure and Utilities (Section 4.13)	• The schedule of construction activities and commercial flights to minimize overlap should be optimized. • A USEPA Construction General Permit would be needed for any discharge of storm water runoff from construction. The permit requires the development and implementation of a construction-specific SWPPP for construction activities at a site totaling 1 acre or more and where storm water discharges from the construction area enter a Municipal Separate Storm Sewer System (MS4) that leads to natural drainage channels or streams classified as surface waters of the United States. An SWPPP approved by the DEQ would be required and must contain an NPDES permit declaration. In addition, the permit requires that discharges from storm water controls be directed to vegetated areas of the site to increase sediment removal and maximize storm water infiltration wherever feasible. In order to get DEQ approval, the construction activities would need to implement BMPs and meet their location-specific storm water quality and quantity requirements. • Storm water management controls would be designed and implemented consistent with construction storm water permit requirements and the USAF Engineering Technical Letter (ETL) 03-1: *Storm Water Construction Standards* to minimize potential adverse impacts on surface waters associated with the construction of the impervious surfaces. Compliance with ETL 03-1 requires implementation of BMPs to reduce site storm water discharges and pollutant loadings to preconstruction levels or better. A storm water-control site plan would be required and must contain an NPDES permit declaration. • Low-impact development strategies would be considered to the extent possible to comply with EISA Section 438 such as the construction of grass swales or infiltration ditches; drywells installed at all air conditioning units to prevent muddy and unsafe working conditions near tents; and installing rain barrels, a cistern, or other collection devices to capture rainwater for recycling. • The new facilities would be designed to achieve Leadership in Energy and Environmental Design (LEED) Silver certification. • An Individual Wastewater Disposal System Permit Application from CNMI DEQ would be obtained for each septic system constructed.	• BMPs put in place during construction activities would continue to be implemented and maintained. • Septic systems would be continuously maintained, as required.

Resource Area	Construction Phase	Implementation Phase
Socioeconomic and Environmental Justice (Section 4.14)	• All construction activities, the proposed work schedules, and other conditions of construction could be agreed to by the FAA, CPA, and affected commercial airlines and identified in the Safety Management Plan. • Appropriate levels of security and firefighting services at the construction work sites would be coordinated with Department of Public Safety (DPS) and the CPA's police and Airport Rescue and Firefighting (ARFF). • The construction contractor could be required to bring additional personnel to Tinian during peak construction work periods. • The USAF could contract additional security personnel to supplement the existing law enforcement provided by the DPS. • The construction contractor could be required to hire additional medical, security, and firefighting personnel to supplement the existing staff during peak construction periods	• USAF would coordinate with CPA and airport personnel to schedule exercises during non-peak airport operating hours (i.e., nighttime hours and between peak morning, afternoon, and evening hours). All implementation activities, including military exercise schedules, would be agreed to by the FAA, CPA, and affected commercial airlines and identified in the Safety Management Plan. • Under a mutual use agreement with the CPA, the USAF would also address costs for ongoing maintenance of the proposed infrastructure and additional costs for TSA security program requirements. • Appropriate levels of security and firefighting during exercises would be coordinated with DPS and the CPA's police and ARFF.
Human Health and Safety (Section 4.15)	• All construction activities would occur in adherence to established Federal and CNMI safety regulations. Workers would be required to wear protective gear such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction equipment and associated trucks transporting material to and from the project sites could be directed to roads and streets that have a smaller volume of traffic. Contractors would be required to establish and maintain health and safety programs for their employees. • Construction areas would be fenced and appropriately marked with signs to prevent trespassing. • The proposed airfield facilities would be constructed in accordance with Unified Facilities Criteria (UFC) 3-260-01, *Airfield and Heliport Planning and Design,* and all DOD, USAF, and FAA criteria, as applicable, including FAA Advisory Circular 150/5300-13A.DOD, USAF, and FAA criteria, as applicable. • Construction activities would be coordinated with airport personnel to ensure the ability of the ARFF unit to respond to emergencies and to prevent airfield obstructions and safety hazards	• Contractors would be required to attend mandatory training and adhere to established Federal and CNMI safety regulations. Workers would be required to wear protective gear such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. • Fuel vehicles would use an established, safe route to transport the fuel. • Security measures such as posted signs and locked and secured gates would be implemented as the USAF deems appropriate.