CHAPTER 15. UTILITIES

15.1 AFFECTED ENVIRONMENT

15.1.1 Definition of Resource

This section includes information related to existing electrical utilities, potable water supplies, wastewater systems, and solid waste facilities in the Commonwealth of the Northern Mariana Islands (CNMI) that could be directly or indirectly impacted by the proposed Marine Corps relocation. The region of influence (ROI) for this resource includes the Department of Defense (DoD) and public utilities on Tinian that could be directly or indirectly impacted by the proposed training activities.

15.1.2 Tinian

15.1.2.1 Power

The ROI for power includes the generation units and transmission lines supporting the existing island wide power system on Tinian.

The existing island-wide power system is owned by Commonwealth Utility Corporation (CUC) and operated by Telesource CNMI Inc. (Telesource). Operations include power generation, transmission, and distribution. The generation facility consists of the following components:

- Four – 2.5 megawatt (MW) diesel generators
- Two – 5 MW diesel generators
- Two exhaust stacks:
  - One 90 foot (ft) (27 meter [m]) tall stack to service the four – 2.5 MW generators
  - One 175 ft (53 m) tall stack to service the two – 5 MW generators
- An above-ground fuel delivery pipeline from Tinian Harbor to a storage tank adjacent to the power plant facility
- Expansion capability for two additional 5 MW diesel generators (including space inside the existing facility and tie-in points to the existing exhaust stack)

Current peak demand on Tinian is less than 5 MW, having been reduced from a prior peak demand of approximately 8.5 MW. The drop in demand is likely attributed to conservation measures from the two main users, the Dynasty Casino and the International Broadcasting Bureau (IBB). With the current configuration of the generation facility, the practical peak capacity is 15 MW, leaving at least one 5 MW generator or two 2.5 MW generators in reserve for maintenance backup during this peak generation.

The existing transmission and distribution system on Tinian includes primary feed lines with capacities of 13.8 kilovolts (kV), with the exception of a small area in the village of San Jose around the high school where a transformer upgrade is being pursued that would enable conversion of this area to a 13.8 kV feed line.

Currently, a primary 13.8 kV feed line runs from the generation facility to the IBB via 8th Avenue. This feed line is above ground except for a portion west of the airport that is buried underground to facilitate the recent runway expansion clear zone. Up to 1 MW of power is available for use from this feed line assuming the IBB draws their maximum anticipated power load.

A separate 13.8 kV feed line runs from the generation facility to the airport. This feed line runs above ground via Broadway north to the airport access road, then west along this airport access road to the airport. Up to 1.5 MW would be available for use from this feed line following expansion of the airport.

15.1.2.2 Potable Water

The ROI for potable water includes the existing municipal potable water system on Tinian. The primary source of potable water on Tinian is the freshwater Marpo Valley marsh. The marsh is the exposed surface of a basal groundwater lens. Water is collected from the lens by two horizontal wells, Maui Well No. 1 and Maui Well No. 2. It has been estimated that the Maui Well Nos. 1 and 2 together can produce at least 1 million gallons per day (MGd) (3.8 million liters per day [mld]) of clean, low salinity, potable water in the dry season, and 1.5 MGd (5.7 mld) in the wet season (Belt Collins 2003).

Tinian's public water system is operated and maintained by the CUC. Existing water infrastructure includes the two Maui-type horizontal wells, four deep vertical wells, chlorine injection points, two storage tanks, and water distribution lines servicing the San Jose, Makpo Heights, and Carolinas Heights areas. The two storage tanks include a 0.25 million gallon (MG) (0.95 million liter) tank south of the airport; and a 0.5 MG (1.9 million liter) tank in the vicinity of Carolinas Heights.

Currently, the quantity of water production from municipal wells easily meets the current average daily water demand of approximately 1.3 MGd (4.9 mld). The capacity for water production is 2.2 MGd (8.3 mld) based on a 24-hour period and 1.8 MGd (12.3 mld) for a 16-hour period.

15.1.2.3 Wastewater

There is currently no centralized wastewater treatment system on Tinian. Most residents utilize personal septic tanks with leach fields or cesspools. The Tinian Dynasty Hotel and Casino has its own tertiary treatment plant with an average flow of 0.17 MGd (0.64 mld) and discharges the treated effluent to a leach field on the hotel's property. The IBB has its own septic tank/leach field system. DoD installed a septic tank/leach field in 1998-1999 in support of the "Tandem Thrust" training exercise (CNMI Division of Water Quality [DEQ] 1999). The size of the septic tank is 25-feet (ft) (8-meters [m]) long, 25-ft (8-m) wide and 5-ft (1.5-m) deep below bottom of the outlet pipe. The size of the leach field is 70-ft (21-m) long, 40-ft (12-m) wide and 6-ft (2-m) deep from finish grade to bottom of gravel. The system was permitted to service population of 2,500 and handle an average daily sewage flow of 6,640 gallons/day (25,140 liters/day). That exercise involved approximately 2,000 people for one week. This DoD septic tank/leach field is not currently being used, so its total capacity would be available. Portable sanitary facilities are used on Tinian, being available from an on-island company.

A centralized wastewater treatment plant, treating wastewater mainly generated from residents on the southern portion of the island, was studied and proposed at a location south of the IBB, west of 8th Avenue, and co-located with a proposed solid waste landfill. Funding to construct and operate the proposed wastewater treatment plant is not currently available. The proposed new training ranges would not restrict civilian access to and west of 8th Avenue, thus there would be no impact to the operation of the proposed new wastewater treatment plant should it be built.

15.1.2.4 Solid Waste

The ROI for solid waste includes the existing unlined open dump operated by the CNMI Department of Public Works and the proposed new landfill adjacent to the proposed new wastewater treatment plant, south of the IBB, and west of 8th Avenue. All municipal solid waste (including septage) is currently received at an open dumpsite located approximately 0.5 mile (mi) (0.8 kilometer [km]) north of San Jose,

and west of 8th Avenue. The disposal site is operated as an open burning dump. Current practice is for septage pumped from septic tanks, cesspools, or portable sanitation devices to be discharged at an area adjacent to the existing open dumpsite as there is no separate septage disposal facility. The existing municipal solid waste dumpsite does not comply with the Resource Conservation and Recovery Act Subtitle D regulations for municipal solid waste landfills (40 Code of Federal Regulations Part 258). Development of a new compliant landfill for Tinian is currently in the planning/design phase (Wil-Chee Planning 2005). The proposed new ranges would not restrict civilian access to and west of 8th Avenue. Thus, operations at the proposed new landfill and the existing landfill would not be impacted.

15.2 ENVIRONMENTAL CONSEQUENCES

This section contains a discussion of the potential environmental consequences associated with implementation of the proposed alternatives for power, potable water, wastewater, and solid waste.

15.2.1.1 Approach to Analysis

Methodology

The impact analysis for utilities is based on comparing the existing capacity and demand on a utility to the projected capacity and demand under each of the alternatives.

Determination of Significance

A determination of significant adverse effect is made where the projected increase in demand for a utility would exceed the planned capacity for that utility.

Issues Identified during Public Scoping Process

As part of the analysis, concerns related to utilities that were mentioned by the public, including regulatory stakeholders, during the public scoping meetings were addressed. This includes concern for the impact that the proposed United States (U.S.) Marine Corps relocation would have on public utilities on Tinian, and a desire on the part of respondents for the military to partner with the CUC to improve utilities and infrastructure for all residents.

Respondents questioned if the existing utility infrastructure and the reliability of the CUC could sustain adequate utility services with the increase in military training activities. In addition, respondents requested that a certified solid waste landfill be constructed and operated on Tinian.

15.2.2 Alternative 1 (Preferred Alternative)

15.2.2.1 Tinian

Construction

There would be minimal construction activities associated with the proposed action. There would be some clearing and grading to establish the ranges and for placement of targets. Construction equipment would be diesel-powered and there would be water trucks available for construction-related activities such as dust-control. Water trucks would utilize the municipal water supply; however, this would be short-term and would not have an adverse impact on the municipal water supply. Bottled potable water would be provided to construction workers for drinking. Impacts to utilities would be less than significant.

Operation

No supporting facilities are proposed for the Tinian firing ranges. All training would be considered "expeditionary," in that the Marines would bring all necessary equipment to the ranges, would bivouac

onsite, and would remove all equipment following completion of the training activities. No construction of utility infrastructure or tie-ins to public utilities are proposed to support the firing ranges.

Water service would be provided via a water truck. Estimated potable water consumption would be 1 gallon per person per day for drinking and additional water would be consumed for cleaning, bathing, etc. Bottled potable water would be delivered to the range support areas associated with the four proposed ranges. Range fire fighting would be performed by local fire fighting services, as augmented for a range fire fighting role. Portable sanitary facilities would be provided at the ranges and bivouac areas by a contractor. Solid waste would be collected and returned with the using unit, pending a certified landfill being established on Tinian. Portable generators or solar-battery systems would be used to operate any equipment needed at the bivouac site.

The existing municipal water supply is adequate to support the proposed military demand. Proposed training activities would have no impact on public power or wastewater utilities on Tinian. Solid waste would be back-hauled to Guam, and the DoD would not dispose of solid waste at the open dump operated by the CNMI Department of Public Works.

For the training exercises, portable sanitary facilities would be provided and maintained by a contractor company. This contract would require the collected wastewater to be disposed in compliance with both local and federal regulations and that compliance would be monitored by DoD field inspectors. Leach field friendly odor control chemicals, such as IceClear® LavFluid or Spartan Consume® Eco-Lyzer® Neutral Disinfectant, would be used by the contracted services to prevent any impacts to groundwater from septic tank/leach field operations. The estimated wastewater generation for 400 people for one week using portable toilets is approximately 5 gallons per person per day (19 liters per person per day), or a total of 2,000 gallons per day (7,529 liters per day) (*Integrated Publishing-Construction,* Public Picnic Parks (toilet waste only), www.tpub.com). Potential disposal methods that the contractor could utilize include: 1) taking the wastewater to the existing DoD septic tank/leach field system (refer to Figure 2.1-3), after performing maintenance to ensure proper operation of this existing DoD facility, 2) taking the wastewater to the Dynasty Casino and injecting into their tertiary treatment system, 3) constructing a new leach field to handle the wastewater, and 4) finding other existing septic tank/leach field systems on Tinian with the capacity to accept this wastewater and with an owner willing to accept it. The preferred approach would be option 1, the use of an existing DoD septic tank/leach field. Septage from the portable sanitary facilities would be emptied by the providing contractor into and treated at the existing DoD septic tank/leach field. The existing septic tank with dimensions of 25 ft x 20 ft x 5 ft (8 m x 8 m x 2 m) would provide 224 hours retention time for the estimated flow of 2,000 gallons per day (7,529 liters per day), which exceeds UFC suggested 24 hours retention time in a normal septic tank design. The other options would not be implemented as part of the proposed action. The existing DoD system has adequate pretreatment capacity based on the original design basis population and can handle the flows without major failure or raw sewage backups (CNMI DEQ 1999). DoD would monitor the contractor's execution in proper disposal of the wastewater and would perform the following operation and maintenance of the septic tank and leach field system per permit requirements:

- Septic system would be inspected at intervals of not more than 3 years to determine the rate of scum and sludge accumulation.
- Inlet, outlet, and key joints to the septic tank would be inspected for damage after each pump out

- The septic tank would be cleaned or pumped out if the bottom of the scum layer is within 3 inches (in) (8 centimeters [cm]) of the bottom of the outlet device, and the sludge level is within 8 inches (20 cm) from the bottom of the outlet device.
- DoD would obtain approval from the DEQ prior to using a cleaning agent (degreaser) to maintain the system.

Impacts to utilities would be less than significant. Impacts to water resources are presented in Chapter 4, Water Resources; use of the existing septic tank/leach field would result in less than significant impacts to groundwater and nearshore water.

15.2.2.2 Summary of Alternative 1 Impacts

Table 15.2-1 summarizes Alternative 1 impacts.

Table 15.2-1. Summary of Alternative 1 Impacts

Area	*Project Activities*	*Project Specific Impacts*
Tinian	Construction	There would be water trucks available for construction-related activities such as dust-control. Water trucks would utilize the municipal water supply. The existing municipal water supply is adequate to support the proposed military demand; no adverse impacts would be anticipated.
	Operation	No construction of utility infrastructure or tie-ins to public utilities are proposed to support the firing ranges. Potable water from the municipal water supply would be provided via a water truck. The existing municipal water supply is adequate to support the proposed military demand. Proposed training activities would have no impact on public power and wastewater utilities on Tinian. Solid waste would be back-hauled to Guam, and the DoD would not dispose of solid waste at the open dump operated by the CNMI Department of Public Works. Septage from the portable sanitary facilities would be emptied by the providing company into and treated at the existing DoD septic tank/leach field.

15.2.2.3 Alternative 1 Proposed Mitigation Measures

No mitigation measures are suggested for Alternative 1.

15.2.3 Alternative 2

15.2.3.1 Tinian

Construction

The construction impacts for Alternative 2 are the same as Alternative 1. Therefore, impacts to utilities would be less than significant.

Operation

The operation impacts for Alternative 2 are the same as Alternative 1. Therefore, impacts to utilities would be less than significant.

15.2.3.2 Summary of Alternative 2 Impacts

Table 15.2-2 summarizes Alternative 2 impacts.

Table 15.2-2. Summary of Alternative 2 Impacts

Area	*Project Activities*	*Project Specific Impacts*
Tinian	Construction	There would be water trucks available for construction-related activities such as dust-control. Water trucks would utilize the municipal water supply. The existing municipal water supply is adequate to support the proposed military demand; no adverse impacts would be anticipated.
	Operation	No construction of utility infrastructure or tie-ins to public utilities are proposed to support the firing ranges. Potable water from the municipal water supply would be provided via a water truck. The existing municipal water supply is adequate to support the proposed military demand. Proposed training activities would have no impact on public power and wastewater utilities on Tinian. Solid waste would be back-hauled to Guam, and the DoD would not dispose of solid waste at the open dump operated by the CNMI Department of Public Works. Septage from the portable sanitary facilities would be emptied by the providing company into and treated at the existing DoD septic tank/leach field.

15.2.3.3 Alternative 2 Proposed Mitigation Measures

No mitigation measures are suggested for Alternative 2.

15.2.4 Alternative 3

15.2.4.1 Tinian

Construction

The construction impacts for Alternative 3 are the same as Alternative 1. Therefore, impacts to utilities would be less than significant.

Operation

The operation impacts for Alternative 2 are the same as Alternative 1. Therefore, impacts to utilities would be less than significant.

15.2.4.2 Summary of Alternative 3 Impacts

Table 15.2-3 summarizes Alternative 3 impacts.

Table 15.2-3. Summary of Alternative 3 Impacts

Area	*Project Activities*	*Project Specific Impacts*
Tinian	Construction	There would be water trucks available for construction-related activities such as dust-control. Water trucks would utilize the municipal water supply. The existing municipal water supply is adequate to support the proposed military demand; no adverse impacts would be anticipated.
	Operation	No construction of utility infrastructure or tie-ins to public utilities are proposed to support the firing ranges. Potable water from the municipal water supply would be provided via a water truck. The existing municipal water supply is adequate to support the proposed military demand. Proposed training activities would have no impact on public power and wastewater utilities on Tinian. Solid waste would be back-hauled to Guam, and the DoD would not dispose of solid waste at the open dump operated by the CNMI Department of Public Works. Septage from the portable sanitary facilities would be emptied by the providing company into and treated at the existing DoD septic tank/leach field.

15.2.4.3 Alternative 3 Proposed Mitigation Measures

No mitigation measures are suggested for Alternative 3.

15.2.5 No-Action Alternative

Under the no-action alternative, no new construction or new training activities associated with the Marine Corps relocation to Guam would occur in Tinian, and the Marine Corps would not meet training needs and requirements in support of the proposed action. The purpose and need for training in Tinian as described in Chapter 1 would not be met. There would be no change to power, potable water, wastewater, and solid waste infrastructure on Tinian. Therefore, the no-action alternative would have no impacts to utilities.

15.2.6 Summary of Impacts

Table 15.2-4 summarizes the potential impacts of each action alternative and the no-action alternative. A text summary is provided below.

Table 15.2-4. Summary of Impacts

Alternative 1	*Alternative 2*	*Alternative 3*	*No-Action Alternative*
Utilities			
LSI • Use of existing wastewater treatment systems and potable water NI • Power and solid waste utilities would not be used.	LSI • Use of existing wastewater treatment systems and potable water NI • Power and solid waste utilities would not be used.	LSI • Use of existing wastewater treatment systems and potable water NI • Power and solid waste utilities would not be used.	NI • No impacts

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

No construction of utility infrastructure or tie-ins to public utilities are proposed. However, treatment and disposal of wastewater generated during training exercises would be done at existing DoD on-island facilities. Potable water would also be obtained from the current on-island public water system and used for fire-fighting activities. These existing systems are adequate to handle the additional demand with less than significant impacts. Thus the overall summary of impacts would be deemed less than significant from implementation of any of the alternatives considered.

15.2.7 Summary of Proposed Mitigation Measures

Less than significant impacts would result from the implementation of the proposed action, and no mitigation measures are required. Table 15.2-5 summarizes the proposed mitigation measures.

Table 15.2-5. Summary of Proposed Mitigation Measures

Alternative 1	*Alternative 2*	*Alternative 3*
Utilities		
• None	• None	• None

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