

3.4 AIR QUALITY

Section 3.4 describes the existing air quality in the region of influence for the proposed action. Air quality refers to pollutants in the air, and the health and safety aspect of those pollutants to humans and the environment, including plants and animals. Air pollution refers to chemical substances, particulates, biological materials, or other harmful materials that degrade the quality of the atmosphere. Air quality is affected by air pollutants from mobile sources such as vehicles, aircraft, ships, and construction equipment, as well as by stationary sources such as emergency generators, industrial stacks, exhaust vents, prescribed fires, and natural processes (e.g., wildfires and volcanic activity). The region of influence for air quality is Tinian's and Pagan's airsheds, which include the land areas and coastal waters within 3 nautical miles (5.5 kilometers) of the respective islands. Tinian's and Pagan's airsheds are under the same air quality jurisdiction.

3.4.1 Definition

Air quality is defined as a measurement of pollutants in the air. Regulatory definitions are based on the 1970 Clean Air Act (amended in 1977 and 1990), and are described in detail in Appendix G, *Air Quality Technical Memo*.

3.4.2 Regulatory Framework

The regulatory framework governing air quality is briefly summarized below and described in greater detail in Appendix G, *Air Quality Technical Memo*. A complete listing of applicable regulations is provided in Appendix E, *Applicable Federal and Local Regulations*.

- Clean Air Act 42 U.S. Code § 7401 *et seq.*
- CNMI Air Pollution Control Regulations
- Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management
- Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance

The U.S. Environmental Protection Agency, under the requirements of the Clean Air Act, established National Ambient Air Quality Standards for six contaminants. These contaminants, referred to as criteria pollutants, are:

- Carbon monoxide
- Nitrogen dioxide
- Ozone
- Particulate matter
- Lead
- Sulfur dioxide

The National Ambient Air Quality Standards include primary and secondary standards. The primary standards were established to protect human health, particularly the health of sensitive populations such as asthmatics, children, and the elderly. Sensitive land uses protected by the primary air quality

standards are publicly accessible areas used by these sensitive populations; including residences, hospitals, libraries, churches, parks, playgrounds, and schools. The secondary air quality standards set limits to protect the environment, including plants and animals, from adverse effects associated with pollutants in the air. In addition to the criteria pollutants that have been established by the National Ambient Air Quality Standards, greenhouse gas emissions that trap heat in the atmosphere also occur from both natural processes and human activities. Human activities are responsible for almost all of the increase in greenhouse gases in the atmosphere over the last 150 years (U.S. Environmental Protection Agency 2013). The primary long-lived greenhouse gases directly emitted by human activities are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

3.4.3 Methodology

Areas where concentration levels of a criteria pollutant are below standards are designated as being “in attainment,” per the Clean Air Act. Areas where a criteria pollutant level equals or exceeds standards are designated as being in “nonattainment.” A “maintenance area” is one that has been redesignated from nonattainment status to attainment status, and has an approved maintenance plan under § 175 of the Clean Air Act. Where insufficient data exist to determine an area’s attainment status, it is designated as unclassifiable.

The CNMI local government has not collected ambient air quality data. Therefore, no existing ambient air quality data are available to represent current air quality conditions with respect to criteria pollutants. Because of the lack of ambient air quality monitoring data, the existing air quality conditions on Tinian and Pagan cannot be evaluated against National Ambient Air Quality Standards. Therefore, both islands are considered unclassifiable. However, given limited emission sources on these islands, it is anticipated that they would presumably be in an attainment area if the ambient data were monitored as other states. The discussion of existing air quality conditions on, and surrounding, the islands of Tinian and Pagan is based on a brief discussion of major emission sources and where they exist on the two islands. The localized air quality condition can be correlated with the close proximity of major emission sources. In general, the sensitive receptors (e.g., individuals with respiratory conditions) that are close to major emission sources tend to have more air quality concerns than those located far from these sources.

Stationary source permits regulate emissions from a facility but cannot be utilized to calculate ambient air quality conditions in terms of the National Ambient Air Quality Standards.

3.4.4 Tinian

Tinian has a tropical climate. Over the course of the year, the temperature varies from 76 to 88 degrees Fahrenheit (24 to 31 degrees Celsius) and is rarely below 73 degrees Fahrenheit (22 degrees Celsius) or above 90 degrees Fahrenheit (32 degrees Celsius). The probability of precipitation varies throughout the year but occurs most often around October. Wind speeds typically vary from 2 to 22 miles per hour with dominant winds originating from the east. It is anticipated that air pollutants from the island would be quickly dispersed under normal weather conditions.

The major stationary sources on Tinian include power generation units and distribution facilities that comprise the existing island-wide power system owned by the Commonwealth Utilities Corporation. The

power generation facility consists of four 2.5-megawatt diesel generators and two 5-megawatt diesel generators. These generators are the largest stationary sources of air emissions on Tinian. Given the limited human activities on the island, Tinian is considered an unclassified area and presumed to be in attainment for all criteria pollutants. In addition to the major stationary sources, facilities may have back-up generators in case of grid power failure; however, these sources are intermittent and considered minor stationary sources.

Traffic along major travel routes, such as Broadway and 8th Avenue within the San Jose area, are the dominant source of mobile source emissions. Operation of aircraft and vessels also generate emissions. The airport and seaport are located relatively far from sensitive neighborhoods, approximately 1 mile and 0.2 mile, respectively. Effects from these emission sources are negligible when compared to those from immediately adjacent roadway traffic.

3.4.5 Pagan

Because only sparsely distributed intermittent encampments currently occur on Pagan, and no electrical utility facilities exist, air pollution as a result of human activities is essentially nonexistent. Pagan is considered an unclassified area and presumed to be in attainment for all criteria pollutants. Active volcanoes on Pagan are the main sources of air emissions. Pagan contains two active volcanoes (Mount Pagan and South Pagan volcanoes). Almost all of the historical eruptions have originated from the Mount Pagan volcano (or North Pagan volcano). The largest recorded eruption took place in 1981.

According to satellite images received by the U.S. Geological Survey (2013), the Pagan volcanoes generate persistent gas and steam plumes with occasional robust plumes. Ambient sulfur dioxide conditions are not monitored on Pagan. The only sources of air quality information are satellite observations and occasional reports from observers who pass by or visit the island. However, volcanic emissions released from active volcanoes, such as sulfur dioxide (a criteria pollutant), are of concern with respect to human health.

Sulfur dioxide, a colorless gas with a characteristic and irritating smell, is one of the most common gases released in volcanic eruptions. On the local scale, sulfur dioxide is a hazard to humans in its gaseous form. This odorous pollutant is perceptible at different levels, depending on the individual's sensitivity, but is generally perceived between 0.3 to 1.4 parts per million and is easily noticeable at 3.0 parts per million. Gas concentrations would reduce in half over a period of 6 to 24 hours. Therefore, only about 5% (i.e., 0.5 parts per million approximately) of the emitted gas is present in the lower atmosphere after 1 to 4 days, which is close to the odor level that is barely perceivable.