

LUKE AFB, AZ
UTILITY SYSTEM DESCRIPTIONS

System Descriptions: Luke Air Force Base is located 15 miles due west of Phoenix, AZ. It has 356 buildings and 874 military family housing units, spanning 4,524,064 square feet, which the Air Force controls. Gila Bend Airfield is 65 miles southwest of Phoenix, AZ. It has 40 buildings and 180,605 square feet, which the Air Force controls. Fort Tuthill is 135 miles north of Phoenix, AZ. It has 31 buildings and 44,119 square feet, which the Air Force controls. At each location, the utilities to be possibly privatized are the wastewater and natural gas distribution systems only. Luke Air Force Base has its own wastewater treatment plant. Although the systems shall be evaluated individually, privatization shall combine and group as many systems as is feasible under a single RFP.

Natural Gas:

Luke Air Force Base: Natural gas is supplied to Luke Air Force Base at three separate locations by 175 pound per square inch gauge (psig) gas mains owned by Southwest Gas Corporation. The natural gas commodity is supplied by Enron. The natural gas piping on the main base is almost entirely polyethylene (PE). Steel piping is located in the Military Family Housing area. The piping is coated, rather than wrapped, and includes a cathodic protection system. The system contains 19 rectifiers. There is no physical on-base production of gas or natural gas wells. The meters owned by the Air Force are used for billing purposes. The Air Force-owned distribution system consists of approximately 119,000 linear feet of underground piping. The majority of the piping is less than 20 years old, with some as old as 50 years.

Gila Bend Airfield. Three one thousand-gallon propane tanks owned by the propane supplier, Amerigas Inc., supply propane gas to Gila Bend Airfield. The tanks store propane at 100 psig. Propane gas is delivered to the lodge at 12.5 psig, and to the Fire Department at 10 psig.

Fort Tuthill Recreation Area. Propane gas is supplied to Ft. Tuthill Recreation Area at two each, one thousand-gallon propane tanks owned by the propane supplier, All Star Gas, Inc. The Air Force-owned piping consists of approximately 1250 feet of piping. The tanks store propane at approximately 100 psig. Distribution is at 5 psig.

Sanitary Wastewater:

Luke Air Force Base. The sanitary sewer system at Luke Air Force Base (AFB) consists of three major components, the sanitary sewer collection system, the Wastewater Treatment Plant (WWTP), and non-potable water reuse system. The sanitary sewer system consists of the gravity mains, cleanouts, lift stations, force mains, and access manholes associated with the collection of sanitary sewer from the facility buildings and family housing on the base. A majority of the gravity collection mains and service laterals were installed in the 1940s when the base was first constructed and in the 1950s and 1960. The gravity collection mains installed during these construction periods are composed primarily of Reinforced Concrete Pipe (RCP), the force mains are Cast Iron (CI), and the service laterals are Vitrified Clay Pipe (VCP). In the late 1970s, additional base housing was installed. The gravity collection mains installed during these construction periods are composed primarily of Reinforced Concrete Pipe (RCP), the force mains are Cement Mortar Lined Ductile Iron (DI), and the service laterals are Vitrified Clay Pipe (VCP). Since the 1980s, the base has made a concerted effort to install PVC for all sanitary sewer piping of sizes 8-inches or less. Consequently, most of the gravity mains, force mains, and service laterals in these areas are composed of PVC. A majority of the gravity collection mains, force mains and service laterals installed during the 1940s, 1950s and 1960s are in fair to good condition. A majority of the gravity collection mains, force mains and service laterals installed during the 1970s, 1980s and 1990s are in good to excellent condition.

The WWTP is designed to accept all of the sanitary flow from the sanitary sewer collection system through a 21" RCP main gravity line flowing from the site. Major improvements were conducted in 1994 to provide an advanced wastewater treatment plant which consistently met effluent discharge limitations and provided reuse water for discharge to the base golf course and parks for irrigation purposes. Improvements were designed to allow the facility to effectively treat an average daily flow of 1.0 million gallons per day (1.0 MGD) with removal efficiencies in excess of 95% or better for Biochemical Oxygen Demand (BOD) and suspended solids. The WWTP has a certified laboratory capable of performing both process control and process monitoring tests. Since most of the WWTP equipment was installed or reconstructed in the 1994 improvements, its overall condition is good to excellent.

Gila Bend Airfield. The sanitary sewer system at Gila Bend Airfield consists of service laterals, cleanouts, oil/water separators, lift stations, gravity mains, force mains, and access manholes associated with the collection of sanitary sewer from the facility buildings on the base. The collected sanitary wastewater is transferred to a central treatment system that was installed in 1970. The gravity collection system consists of primarily Vitrified Clay Pipe (VCP) mains with VCP or Cast Iron Pipe (CIP) laterals. Approximately 90% of the system was installed in 1970s. In the 1990s, a small portion of the original mains and laterals was replaced with PolyVinyl Chloride (PVC) piping. The treatment system consists of a manually cleaned bar screen, influent Parshall flume and four lagoons designed for 125,000 gallons per day. The treatment system has an NPDES permit and is permitted for discharge. Lagoons No. 1 and No. 2 have liners that require repairs; however, Lagoon No. 3 and Lagoon No.4 do not have liners.

Fort Tuthill Recreation Area. The sanitary sewer system at the Fort Tuthill Recreation Area consists of service laterals, cleanouts, lift stations, gravity mains, junction boxes, and access manholes associated with the collection of sanitary sewage. The collected sanitary wastewater is transferred to a central septic system, which was installed in the 1960s. The gravity collection system consists of primarily Vitrified Clay Pipe (VCP) mains with VCP or Cast Iron Pipe (CIP) laterals with PolyVinyl Chloride (PVC) mains and laterals installed in later additions. The treatment system consists of a lift station, a 20,000 gallon storage tank, septic tank and lateral field designed for 12,000 gallons per day. The lift station contains a wet well, two (2) pumps, float type level controls and a control panel with an Hand-Off-Auto switch for local manual pump control. In 1996, the pumps were replaced with new submersible grinder pumps.

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