

Attachment J02

Fort A.P. Hill Wastewater System

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J02Fort A.P. Hill Wastewater System

J02.1 Fort A P Hill Overview

Fort A.P. Hill (APH) is a U.S. Army Installation serving every component of the U.S. Armed Forces, active and reserve, and several other agencies of the U.S. Government including the Bureau of Alcohol, Tobacco, and Firearms, the Immigration and Naturalization Service, and the State Department. The Installation annually hosts between 500,000 and 800,000 man-days of training.

While one of the largest installations in terms of landmass, Fort A.P. Hill is also one of the smallest in terms of permanent garrison staff, with just 183 full time civilian employees and 13 active duty soldiers currently authorized. Primary products and services include delivery of maneuver and live fire training services, logistics support (shelter, food, and ammunition), recreational support, telecommunications and automation services, and public work services. The range complex consists of 50 direct fire ranges and 50 indirect fire ranges capable of accommodating mortar, artillery, and combined running fire, hover fire, and terrain flight aerial gunnery. Fort A.P. Hill is continually adjusting its ranges and services, with its integrated creative team of professionals designing solutions to meet the pressing dynamic needs of an Army in transformation.

Fort A.P. Hill hosts the National Boys Scouts of America (BSA) Jamboree in a four-year cycle. During the Jamboree, which spans a 10-day period, Fort A.P. Hill's population explodes, making it very unique among all military installations. Among other services, Fort A. P. Hill provides potable water to the Boys Scouts during the Jamboree.

J02.2 Wastewater System Description

The wastewater system at APH is composed of four completely independent components including; Main Cantonment areas, Cooke Camp, Pender Camp, and Rappahannock sites.

The largest component is the Main Cantonment area of APH. This component serves the sub-areas of Heth, Jackson and Malone; Davis; Travis Lake; Longstreet and Rodes; Archer; Ammunition Supply Point; U S Army Garrison; Anderson Camp; APH Army Airfield; EP-4; Naval Special Training; and Wilcox. The wastewater generated in these areas flows to the Wilcox Wastewater Treatment Plant (WWTP). The WWTP is located in the Wilcox area near the western edge of the Main Cantonment.

The other three components are independent systems that serve the isolated areas at Cooke, Rappahannock and Pender Camps. There are other smaller isolated areas where the generated wastewaters flow to local area holding tanks, septic tanks and drain fields for either treatment or disposal.

A unique requirement of the APH wastewater system is to accommodate the BSA Jamboree that has been held at APH every four years since 1981. The actual BSA Jamboree lasts for only 10 days, but takes months to prepare the wastewater system to accommodate the wastewater flows from the Jamboree's enormous attendance. It is estimated that APH hosts approximately 30,000 boy scouts and nearly 300,000 visitors during the Jamboree. The previous Jamboree occurred during 2001, the next Jamboree is planned for CY 2005. The points listed below are taken from a study performed from the 1993 Jamboree:

- Total wastewater generated was 3,856,640 gallons
- Maximum daily wastewater flow was 840,210 gallons
- Minimum daily wastewater flow was 399,750 gallons
- Average daily wastewater flow was 550,950 gallons
- Maximum hourly peak flowrate was 1,050 gpm
- Average daily wastewater flow per person was 16.39 gallons
- Average peak duration was 5 hours generally from 0700 hrs until 1200 hrs
- Increase of hourly peak flowrate above average daily rate was 191%
- The Jackson/Mahone Camp produced 56% of the total wastewater flow
- The Davis Camp pump station reached 100% capacity during the Jamboree
- Wastewater flowrates into the Jackson Camp pump station exceeded station capacity by 179%
- Odor problems were noticed at the Longstreet Lagoon

J02.2.1 Collection System

The wastewater collection system at APH consists of gravity lines, equalization basins, lift stations and force mains that transport the wastewater generated to treatment facilities. The wastewater collection system at APH can be divided into two sections. The Main Cantonment section includes the areas where generated wastewater flows to the WWTP for treatment. The second section includes the outlying areas where the wastewater treatment occurs within the specific area. The collection system for the wastewater flows to the WWTP is shown in Figure 2.2.1.A. The outlying areas collection system is shown in Figures 2.2.1.B.

J02.2.1.1 Equalization Basins

Some of the areas within the Main Cantonment have equalization basins. The basins are located near lift stations and their primary purpose is to store flows to the lift station that are greater than the pump capacity. When the flow to the lift station is greater than the lift station pump capacity, the excess flow is transferred to the equalization basins. When the flow to the lift station is less than lift stations pump capacity and if there is any wastewater in the equalization basin, the wastewater flows by gravity from the basin to the lift station. Some of the basins have aeration to keep particles in suspension. The aeration does provide treatment and assists in reducing the potential for hydrogen sulfide development.

TABLE 2.2.1.1
 Equalization Basin Inventory

Location	Capacity, gallons	Number	Aeration	Lined
Wilcox near treatment plant	1,000,000 each	2	Yes	No
DECON Area	100,000	1	No	Yes
Longstreet Area	2,400,227 & 13,000,000	2	No/Yes	No/Yes
Jackson Area	300,000	1	No	Yes
Davis Area	100,000	1	No	Yes
Rodes	259,000	1	No	Yes

J02.2.1.2 Lift Stations

There are 33 lift stations located throughout APH with additional systems either in design or under construction. Twenty of the lift stations are located within the Main Cantonment area. A single lift station is located in the Pender Camp area and no lift stations are located in the Cooke and Rappahannock Camp areas. A majority of the lift stations at APH are duplex type serving large collection systems, additional simplex systems, which may service only one or two structures, pump into existing gravity mains. A summary of the lift station information such as dedicated emergency generators, flow rates, pump head, force main length and pipe diameter are listed in Table 2.2.1.2. A schematic of the lift stations and force mains, showing force main diameters and lengths, lift station flow and pump head are shown in Figure 2.2.1.A.

TABLE 2.2.1.2
Lift Station Inventory

Station Identification	Location	Year Constr.	Flow (GPM)	Pump Head (Feet)	Diameter (Inches)	Length (Feet)	Emergency Generator
PSPJAX	Jackson-Monroe	1990	2-315	127	8	5,070	Basin
PSPCDT	Decon	1992	2-344	80	6	495	60kW
PSPLOD	Lodge Area	1992	2-25	112	2	2,860	20kW
PSP264	Boathouse	1990	1-40	35	2	90	No
PSP253	Cabin 1 & 2	1992	1-18.5	38	2	290	No
PSPEGR	Engineer Road	1992	2-340	60	6	2,490	40kW
PSPHTH	Heth	1990	2-35	97	2.5	340	30 kW
PSPDAV	Davis	1990	2-190	97	6	1,360	Basin
PSPOGD	Longstreet Camp	1972	2-315	45	6	510	40 kW
PSPLGS	Longstreet Lagoon	1990	2-555	145	8	19,335	Pond
PSPROD	Rodes	1990	2-450	140	6	3,355	Basin + 100kW
PSPARC	Archer	1990	2-180	77	6	4,235	60kW
PSPHQA	HQ Area	1990	2-206	32	6	2,610	30kW
PSPHQC	Chalet	1983	2-50	35	3	850	No
PSPAND	Anderson *	1972	2-125	44	4	2,150	20 kW
PSPWTP	Old Wilcox STP	1983	1-20	30	2	50	No
PSPHQS	HQ STP	1990	2-180	82	6	2,810	75 kVA
PSPNSW	Seal Team	1995	2-120	115	4	8,800	125 kW
PSPASP	Ammunition Supply Point	1991	2-40	37	2	350	No
PSPDEL	Delos	2002	2-225	70	6	2,500	60kW
PSP160	Telephone Bldg.	1993	2-35	85	1.54	240	125kW
PSPPA	Picnic Area	2001	2-92	80	3	2,500	No

Station Identification	Location	Year Constr.	Flow (GPM)	Pump Head (Feet)	Diameter (Inches)	Length (Feet)	Emergency Generator
PSPRG34	Range 34	2000	1-12	118	3	180	No
PSPRG4	Range 4	2000	1-28	114	2	400	No
PSPH211	Building 211	1996	1-30	23	2	300	No
PSPCVW	Central Wash Point	1995	2-100	30	4	60	20kW
PSPHQL	HQ Laboratory	1993	1-22	86	2	35	No
PSPPEN	Pender	1997	2-64	25	2 @ 3.5	425	No
PSPDSW	EP-4	1995	2-64	130	4 to 8	1500	60kW
SPTRC	Trailer Court	1991	2-35	107	4	450	30kW
SPSDPW	DPW	2000	2-56	114	4	400	No
SPSDB	Dirt Bridge	1999	2-111	45	4	800	No
PSPFHL	Fishhook Lake	1995	100	50	2	200	No

*Note: Anderson Lift Station (PSPAND) has a building.

J02.2.1.2.1 Lift Stations - Main Cantonment Areas

The wastewater generated at Main Cantonment area facilities flow to gravity collections lines, then on to a lift station where it is pumped to other gravity collection lines and eventually on to the (WWTP). The plant is located in the southeast portion of APH. Only wastewater generated within the Wilcox Camp by gravity to the WWTP.

The sub-areas that make up the Main Cantonment area are: Mahone, Jackson, Heth, Davis, Lodge Area, Rodes, Longstreet, Wilcox, Archer, ASP, Anderson, Headquarters and Sealteam.

The wastewater collection system in the Main Cantonment area consists of pipes size raging from less than 4 to 12-inches. The total length of the pipe is 34 miles with approximately 414 manholes. Table 2.2.10 shows the approximate size and length of the pipes.

Mahone and Jackson Camp Sites

The wastewater generated in the Mahone and Jackson Camp Sites, flow by gravity to the Jackson-Mahone lift station. The collection lines are 8-inch in diameter and consist mostly of PVC lines installed in 1989. Near the lift station is the 300,000-gallon equalization basin. The basin essentially is connected in parallel with the lift station and rides on line with the water level in the lift station wet well. When the flow to the lift station is greater than the lift station's pumping capacity, the water level in the wet well rises and to a point where it flows into the basin. When the lift station pumps lowers the water in the wet well to a point then the water in the basin will flow into the lift station wet well. All the wastewater generated in this area is transferred to the Longstreet Campsite area and then flows into the WWTP. The force main originating at the Jackson-Mahone lift station runs along Thomas Road and ends at the Longstreet Lagoon. Heth, Davis, and Longstreet Camp pump into this common main.

Heth Area

HETH is a relatively small area located near the Mahone and Jackson Camp Sites. All the wastewater generated in the Heth area flows to the Heth lift station. The collection lines in the area are 6 and 8-inch diameter PVC lines installed in 1989.

Davis Camp

The collection lines in the Davis area are 8-inch PVC lines installed in 1989. All the wastewater generated in the Davis Camp area flows by gravity to the Davis Lift Station. Adjacent to the Davis Lift Station is a 100,000-gallon equalization basin. The basin operates in similar method to the equalization basin at Jackson Camp Site.

Lodge Area

The wastewater generated in the Lodge Area flows to several individual lift stations and is pumped to the main Lodge Lift Station. The discharge from the main station is then pumped via a force main to a gravity line that flows into the Engineer Road lift station for transfer to the Rodes Camp Site. The collection lines in the Lodge Area are primarily 4-inch PVC lines installed in 1992.

Rodes Camp Site

The collection lines in the Rodes Camp Site are 8-inch PVC lines installed in 1984. In addition to the wastewater generated within the Rodes Camp Site, the wastewater generated in the Lodge Area flows to the Rodes Camp Lift Station. Adjacent to the Rodes Camp lift station is a 259,000-gallon equalization basin. The equalization basin operates similarly to the equalization basin at Jackson Camp Site. The Rodes Camp lift station pumps wastewater flows via a force main to the Longstreet Lift Station for transfer to the WWTP.

Longstreet Camp Site

The collection lines in the Longstreet Camp Site are mostly 8-inch PVC installed in 1984; however, some ductile iron and asbestos-cement lines were installed at an earlier date. In addition to the wastewater generated within the Longstreet Camp Site.

Longstreet Lagoon Site

Wastewater pumped from the Jackson-Mahone, Heth, Davis and the Rodes Lift Stations are discharged to a gravity line that flows into the Longstreet Lagoon Lift Station. Adjacent to the Longstreet Lagoon Lift Station is a single equalization basin equipped with aerators. A second non-aerated basin is used, as emergency storage should the aerated basin reach design capacity. The basin capacities are 13,000,000 and 2,413,227 gallons. The aerated equalization basin operates in a similar manner to the equalization basins described above. The non-aerated basin must be filled by using the discharge from the Longstreet Lagoon Lift Station.

Archer Camp Site

The wastewater generated in the Archer Camp Site flows to the Archer Camp Lift Station. The collection lines in the Archer Camp Site are 8-inch PVC installed in 1989. The flows to the Archer Camp lift station are pumped via a force main to the WWTP.

Ammunition Supply Point

The wastewater collection system at Ammunition Supply Point is a small system installed in 1989 that flows to the Archer Supply Lift Station. The lift station pumps the collected wastewater into the Archer Camp Site force main that flows on to the WWTP.

U S Army Garrison Area

The wastewater generated in the U S Army Garrison Area flows to the Headquarters Lift Station where it is pumped to the Anderson Camp Lift Station. The collection lines in this area are 8-inch PVC installed in 1984. The U S Army Garrison Area also receives wastewater generated at the Seal Team Training Area and Range 34 via a force main.

Anderson Camp

The Anderson Camp is a relatively small area where the wastewater flows via 8-inch VC pipe to the Anderson Camp Lift Station. The Anderson Camp Lift Station pumps to the Headquarters STP which is connected to the Archer Force Main. The wastewater generated from the family housing area gravity flows into the Headquarters STP Lift Station.

Sealteam and Range 34

The wastewater generated in the Naval Area flows by gravity to the Naval Area Lift Station. The Naval area lift stations pumps the wastewater to the Main Cantonment area where it flows to the Headquarters Lift Station where it is further pumped on to the WWTP.

J02.2.1.2.2 Lift Stations - Outlying Areas

A schematic of the outlying areas wastewater system is shown in Figure 2.2.1.B.

Cooke Camp Site

All the wastewater generated in the Cooke Camp area flows by gravity from the facilities to two wastewater lagoons for treatment and disposal at the spray irrigation field. The collection lines consist of a combination of 8-inch and 4-inch vitrified clay and ductile iron pipe installed in 1958.

Pender Camp Site

The wastewater generated on the east side of the Pender Camp area flows from the one shower house to a dedicated lift station and drain field. The wastewater generated on the west side flows to a holding tank for later removal. The wastewater system at Pender Camp site was installed in 1957.

Rappahannock Camp Site

The wastewater generated in the Rappahannock area flows to a holding tank for later removal. The system was installed in 1957.

Pender Camp Site

There is a single lift station in the Pender Camp area that pumps wastewater to a drain field for disposal.

Cooke and Rappahannock Camp Sites

There are no lift stations in the Cooke and Rappahannock Camp areas.

J02.2.2 Wastewater Treatment Systems

The wastewater treatment systems at APG consist of the Wilcox Wastewater Treatment Plant (WWTP) for the Main Cantonment area and the Cooke Camp wastewater treatment system for the outlying areas.

J02.2.2.1 Wastewater Treatment Systems - Main Cantonment Area

The primary treatment in the main cantonment area is the WWTP located in the Wilcox area. However, there are equalization basins associated with each pump station in the Davis, DECON, Longstreet, Rodes and Jackson-Mahone areas that provide storage before transfer to the main treatment facility. The equalization basins are designed to provide storage within the collection system to accommodate peak flows associated with the BSA Jamboree. The equalization basins are designed to be a sideline overflow structure and provide the Class III Reliability assigned under the Wilcox Treatment Plant permit.

All the wastewater generated in the main cantonment area is transferred to the wastewater treatment plant located in the Wilcox area. The plant was constructed in the early 1990s and is operated under permit number VA0032034, issued by the Commonwealth of Virginia Department of Environmental Quality. The permit will expire on November 28, 2004. The plant's rated capacity is 530,000 gallons per day. A. P. Hill is currently pursuing a permit modification to remove selenium from the permit and to increase the proposed copper limit. The regular permit reapplication is due to the Virginia Department of Environmental Quality-Northern Virginia Regional Office on May 28, 2003, six months prior to the expiration of the existing permit.

In addition to treating all the wastewater in the Main Cantonment area, the WWTP also treats all the wastewater generated from the Puemansend Creek Regional Jail (PCRJ) complex located approximately one mile northeast of the wastewater treatment plant along Peuman Road. The PCRJ complex is allowed to transfer no more than 50,000 gallons per day for treatment to the WWTP, except during the 10-day BSA Jamboree period. During the BSA Jamboree, the PCRJ is not allowed to transfer ANY wastewater flows to the WWTP; the jail must haul all flows for off-site treatment.

Basically, the plant consists of screening, aerated flow equalization lagoons, pH adjustment system, extended aeration activated sludge, secondary clarification, polymer addition, sand filtration, ultra violet disinfection and cascade aeration.

The wastewater collection system terminates at the headworks to the plant. The headworks contain a manual bar screen, a continuous mechanical screen, a sampler and a flow meter. The mechanical screen normally operates automatically and removes material larger than 0.25 inches up to 3.25 inches. From the headworks, the flow is directed into the Influent Pump Station and is lifted into the activated sludge process. Variable speed pumps located in the pump station provide a multiple of process flows. If the influent plant flow exceeds the selected process flow, the excess, gravity flows into one of two equalization basins. Under normal operations only one of the equalization basins is used with the other only used as necessary for backup. The equalization basins are equipped with aerators to provide partial treatment by introducing more dissolved into the wastewater. From the equalization basin, flows travel by gravity to the influent pump station. The influent pump station has two - 340 gallons per minute (gpm) at 54-foot total dynamic head pumps driven by 30 horsepower variable speed motors. The pumps transfer wastewater from the basins to a splitter box just upstream of the three aeration basins. At the splitter box, the flow is manually directed by means of adjustable v-notch weirs to one of the three aeration basins. Four blowers supply air to the aeration basins. Depending on oxygen requirements, the blowers can be brought on line in stages as needed. Blowers also provide oxygen for a digester aerator that is located adjacent to the aeration basins. After passing through the aeration basins, the flow is directed to a splitter box that distributes the flow to one of two circular clarifiers. Within the splitter box are two manually operated slide gates that control the flow to each clarifier. The clarifier effluent passes over the overflow weir is gravity drains to a manhole with a mechanical flash mixer. After passing through the mechanical flash mixer, the fluid flows into one of three sand filters each unit designed for a flow of 245 gpm and a suspended solids concentration of 45 parts per million (ppm). The solids that settle out in the clarifier are withdrawn

from the bottom of the clarifier and are pumped by sludge pumps either to the flow splitter ahead of the aeration basins for processing back through the plant or to the aerobic digesters. After passing through the sand filters, the wastewater is disinfected by an ultraviolet light disinfection unit. There are two ultraviolet units in the disinfection system. The two units operate simultaneously will provide effective treatment. After passing through the disinfection system, the wastewater flow is measured by a Parshall flume. After the flume is a flow sampler and cascade aeration with the final effluent being discharged to an unnamed tributary of Mill Creek, which is a tributary of the Rappahannock River that flows to the Chesapeake Bay. After treatment in the aerobic digesters, the digested sludge is decanted and transferred to the sludge drying beds for further dewatering. After drying, the sludge is manually removed to roll off containers to be trucked offsite for landfill disposal.

A portion of the wastewater generated in the DECON area flows to a single cell sideline equalization basin. The primary purpose of the equalization basin is to provide temporary storage before the fluid is pumped to the WWTP. Within the Davis area is a 100,000-gallon equalization basin. The primary purpose of the equalization basin is temporary storage. When the wastewater flows exceed the Davis lift station capacity, the excess flow is diverted to the equalization basin for storage and later pumping to the WWTP.

When the wastewater flows in the Longstreet area exceed the pumping capacity of the Longstreet lift station, the excess flows are diverted to the equalization basin for temporary storage and partial treatment. The two equalization basins have a combined storage capacity of approximately 15,400,000 gallons. The equalization basins are used quite extensively during the BSA Jamboree. The mechanical aerators assist in treatment by increasing the dissolved oxygen level of the wastewater.

J02.2.2.2 Wastewater Treatment Systems - Outlying Areas

Cooke Camp Site

The wastewater generated in the Cooke Camp area is transferred to the Cooke Camp treatment facility. The Cooke Camp treatment facility consists of two clay lined lagoons with a combined storage capacity of 2,600,000 gallons, a chlorination facility, a pump structure that has three 50 gpm pumps, 4-inch force mains approximately 2,400 feet long and a sprinkler irrigation system on 2.6 acres. The facilities were constructed in the early 1970s and are operated under permit number VPA00008, issued by the Commonwealth of Virginia Department of Environmental Quality. The permit was reissued effective on June 27, 2001 and will expire on June 27, 2011. The effluent can be applied on the irrigation site (1.) at a rate not to exceed 0.25 inches per hour, one inch per day or two inches per week, or (2.) when the irrigation ground is saturated, and/or (3.) during periods of rainfall. Effluent from the lagoons cannot be applied between the November 15 and March 15 each year. Prior to November 15 each year the lagoon must be lower to allow for storage until March 15 of the following year. The lagoons have a free board requirement stipulated in the current permit.

When the wastewater arrives at the facility it is manually diverted to one of the two lagoons for storage and treatment. Each lagoon has aerators to assist in the treatment process. After passing through the lagoons, the water is transferred to the chlorination facility where chlorine is added for disinfection and then stored in a contact tank for 30 minutes. The wastewater is then pumped to the irrigation field. A timer that controls the amount of water pumped to the irrigation field operates the pumps. Within the lagoon and irrigation sites are six monitoring wells for monitoring the characteristics of the groundwater in the area. The Virginia Department of Environmental Quality has requested that two additional monitoring wells to be installed to assist in improved ground water quality monitoring at both sites.

Pender and Rappahannock Camp Sites

The wastewater treatment system at Pender and Rappahannock Camp Sites is by means of septic tanks, drain fields and large holding tanks that require scheduled pump outs. Pender and Rappahannock Camp sites have a 37,000 and a 34,500-gallon holding tank, respectively.

J02.2.3 Lagoons

There are two lagoons included in the APH wastewater system with a combined total capacity of 2,600,000 gallons. The lagoons are located near the Cooke Camp site. The lagoons at Cooke Camp Site are designed to provide treatment prior to land application of wastewater. The lagoon information is listed on the table below and is shown on Figure 2.2.1.A. These lagoons shall be maintained and operated in accordance with controlling regulations. All lagoons are considered a part of the wastewater systems at APH.

TABLE 2.2.3
APH Lagoons

Location	Capacity (gallons)	Number	Aeration	Lined
Cooke Camp Site	1,300,000 each	2	Yes	Yes

J02.2.4 Remote Telemetry Units

Listed below are the remote telemetry units for the wastewater facilities on Fort A.P. Hill. The new utility service provider will be required to own, operate and maintain this system. The new utility service provider will also be required to meet all Installation frequency and security requirements in the operation of this system.

TABLE 2.2.4
WW Remote Telemetry Units

RTU #	Location
18	Jackson-Mahone LS
19	Heth LS
20	Davis LS
21	Rodes LS
22	Longstreet Camp LS
23	Longstreet Lagoon LS
24	Trailer Court LS
25	HQ STP LS
26	Archer LS
27	HQ Area LS
28	Chalet-HQ LS
29	Anderson LS
30	Wilcox Master
31	Lodge LS
32	Engineer Road LS
33	Seal Team LS
36	Pender Holding
37	Pender LS
39	Rappahannock Holding
41	Decontamination LS

RTU #	Location
42	Ammunition Supply LS
43	EP-4 Compound LS
44	DPW – Range 4 LS
45	Central Wash LS
46	Delos LS
51	TISA / SSS LS

J02.2.5 Septic Tanks and Drain Fields

There are 12 septic tanks and drain fields that treat and dispose of wastewater generated at individual facilities within APH. These septic tanks are for facilities that cannot conveniently be located near a wastewater collection line. The septic tanks and drain fields are included as part of the wastewater system at APH.

TABLE 2.2.5
 Septic Tanks

Location	Number of Tanks	Tank Capacity (Gal)
Airfield Ops Bldg	1	1,000
Bullock Pond Cabins	4	1,000 (each)
POL	1	2,000
Gamecheck	1	2,000
SSS Warehouse	1	1,000
TISA	1	2,000
Miscellaneous Bldgs (ITAM, Training #1 & #2)	3	1,000 (each)

J02.2.6 Grease Traps

There are 66 grease traps at individual facilities located within APH. Of the 66-grease traps, 8 are associated with Mess Halls and 58 are associated with kitchen facilities. Presently, the grease traps are inspected at two-week intervals and are emptied as needed according to inspection results. The material removed from the tanks shall be disposed in accordance with controlling regulations. The grease traps are considered a part of the wastewater system at APH.

TABLE 2.2.6
 Grease Traps

Mess Hall Grease Traps		
Location	Tank Size in Gallons	Units
Tucker’s Tavern	1,000	1
EM Mess Hall (Heth)	1,000	1
EM Mess Hall (Cooke)	500	1
EM Mess Hall (Longstreet)	1,000	1
EM Mess Hall (Wilcox)	750	1

EM Mess Hall (Wilcox)	750	1
EM Mess Hall (Wilcox)	750	1
PX Services (Wilcox)	500	1

Kitchen Grease Traps		
Location	Tank Size in Gallons	Units
Archer Camp	1,000	11
Rodes Camp	1,000	11
Davis Camp	1,000	10
Mahone Camp	1,000	7
Rappahannock Camp	1,000	7
Pender Camp	1,000	10
Jackson Camp	1,000	2

J02.2.7 Oil/Water Separators

There are 3 oil/water separators, each are located at individual facilities within APH. The Oil/Water Separators shall be inspected, evaluated and cleaned on an annual basis. The oil-like material removed from the oil/water separators shall be disposed in accordance with controlling regulations. The oil/water separators are included as part of the wastewater system at APH.

TABLE 2.2.7
 Oil/Water Separators

Location	Tank Size Gallons
EP-4	1,000
Car Wash 2 Silt Traps HQ Area (2 traps in the bays and 1 O/W on building exterior)	1,000
Silt Trap DS Maint. Bldg 1290	750

J02.2.8 Holding Tanks

There are 3 holding tanks at individual facilities located within APH. The size and location of the holding tanks is shown below in Table 2.2.8. Presently, the holding tanks are inspected at two-week intervals. Tanks are pumped if indicated by inspection results. The material removed from the holding tanks shall be disposed in accordance with controlling regulations. The holding tanks are included as part of the wastewater system at APH.

TABLE 2.2.8
Holding Tanks

Location	Number of Tanks	Tank Size in Gallons
Rappahannock	1	34,500
Pender	1	37,000
Old Wilcox STP	1	6,000

J02.2.9 Fixed Field Latrines

APH has 105 1,000-gallon field latrines that are used on an intermittent basis to supplement the existing wastewater system at APH. The field latrines are generally located in the remote areas of APH and are activated when needed. They are pumped and sanitized as required during use while at the site and when no longer needed, they are pumped and sanitized and returned to storage. The material removed from the field latrines shall be disposed in accordance with controlling regulations. The field latrines are considered a part of the wastewater system at APH. The wastewater removed from BSA related portable latrines will be dumped at the WWTP.

J02.2.10 Fixed Inventory

Table 2.2.10 provides a general listing of the major wastewater system fixed assets for the APH wastewater system included in the transfer. The system will be transferred in a “as is, where is” condition without any warranty, representation, or obligation on the part of Government to make any alterations, repairs, or improvements. Ancillary equipment attached to, and necessary for, operating the systems, though not specifically mentioned herein, is considered part of the transferred utility.

TABLE 2.2.10
Utility System Fixed Inventory

Description	Unit	Quantity	Avg. Age
Gravity Lines			
Polyvinylchloride (PVC) Pipe	inch	LF	years
	2	180	11
	4	7,810	22
	6	5,805	15
	8	58,310	15
	10	1,560	19
	12	2,320	19
Cast Iron (CI) Pipe			
	inch	LF	years
	8	700	40
Ductile Iron (DI) Pipe			
	inch	LF	years
	8	5,090	21

Description	Unit	Quantity	Avg. Age
Vitreous Clay (VC) Pipe	inch	LF	years
	6	9,010	26
	8	8,575	36
	10	600	24
Gravity Line Subtotal		99,960	
Force Mains			
Polyvinylchloride (PVC) Pipe	inch	LF	years
	2	4,060	11
	2.5	340	14
	3	850	19
	4	11,585	19
	6	17,840	16
	8	39,600	18
Asbestos Cement (AC) Pipe	inch	LF	years
	4	2,150	19
Cast Iron (CI) Pipe	inch	LF	years
	6	2,610	19
Force Main Subtotal		79,035	
Wastewater Line Total		178,995	
Manholes		Each	years
		414	18
Air Release Valves		Each	years
		55	17
Remote Telemetry Units		each	years
WW Units		26	2
Fixed Field Latrines	capacity	Each	years
	1,000 gal.	105	20

Description	Unit	Quantity	Avg. Age
Holding Tanks	capacity	Each	years
Rappahannock	34,500 gal.	1	47
Pender	37,000 gal.	1	47
Old Wilcox STP	6,000 gal	1	21
Oil/Water Separators	capacity	Each	years
	750 gal.	1	14
	1,000 gal.	2	14
Grease Traps	capacity	Each	years
	500 gal.	2	22
	750 gal.	3	22
	1,000 gal.	61	22
Septic Tanks	capacity	Each	years
	1,000 gal.	9	15
	2,000 gal.	3	15
Lagoons	capacity	Each	years
Cooke Camp	1.3 Mil gal.	2	46
Lift Stations		Each	years
		33	15
Wastewater Treatment Plant			
Wilcox Wastewater Plant		1	12
Cooke Wastewater Plant		1	32

J02.3 Non-Fixed Equipment and Specialized Tools Inventory

Table 2.3.A lists other ancillary equipment (spare parts) and Table 2.3.B lists specialized vehicles and tools included in the purchase. Offerors shall field verify all equipment and tools prior to submitting a bid. Offerors shall make their own determination of the adequacy of all equipment and tools. The successful Contractor shall provide any and all equipment, vehicles, and tools, whether included in the purchase or not, to maintain a fully operating system under the terms of this contract.

TABLE 2.3.A

Spare Parts

Quantity	Item	Make/Model	Description	Remarks
None identified.				

TABLE 2.3.B

Specialized Equipment and Vehicles

Description	Quantity	Location	Maker
None identified.			

J02.4 Wastewater System Manuals, Drawings, and Records Inventory

Table 2.4 lists the manuals, drawings, and records that will be transferred with the system.

TABLE 2.4

Manuals, Drawings, and Records

Quantity	Item	Description	Remarks
<p>APH maintains a limited collection of technical manuals, drawings, and records on the installed components of the wastewater collection system. This information will be transferred to the new owner during the transition period. System maps will be available in the bidders' library. Directorate of Public Works has some of the original construction drawings of the wastewater system facilities and buildings. Copies of these drawings will be available to the successful offeror. A preliminary list of contents for the Fort A.P. Hill Utility Privatization Technical Library is contained in Section J14.</p>			

J02.5 Current Service Arrangement

All the wastewater generated at APH is transported to APH wastewater treatment facilities for treatment and disposal. There is a current service agreement, described below, and pretreatment permit for APH's treatment of wastewater from the Puemansend Creek Regional Jail (PCRJ) complex. There is also current service agreement for APH to provide collection, transporting and treatment of the wastewater generated by the Boy Scout Jamboree activities. During the Jamboree, the jail is not allowed to transfer wastewater flows to A.P. Hill; the jail must make arrangements for shipping and treatment during the 2-week Jamboree.

Fort A.P. Hill has an existing Contract for Sale of Utilities Services with PCRJ, under which the Government accepts and treats the wastewater generated from the facility. If Fort A.P. Hill's wastewater systems are privatized, the Government will no longer own the system and can no longer provide the service. At that point, the contract with PCRJ will terminate. In order for service to continue, PCRJ will have to pursue a new agreement with the new owner. Any new agreements, modifications to the existing agreement or renewals between the new owner and PCRJ shall be bound to the existing contract Special Provisions D (S) for Wastewater Service, Items 1, 2, 3, 6a, 6b, 6c, 6d, 6e, 6f, 6g, 6h, 6k, 6l, and the Wastewater Discharge Permit. The contract Special Provisions D (S) for Wastewater Service, Items 1, 2, 3, 6a, 6b, 6c, 6d, 6e, 6f, 6g, 6h, 6k, 6l, and the Wastewater Discharge

Permit are not negotiable, unless approved by the Government. The rate of charge is negotiable not requiring Government approval.

The reserve capacity at the Wilcox WWTP shall not be deemed as marketable capacity. The reserve capacity is required for continued Installation mission support and Boy Scout Jamboree Support. The Government reserves the right to be considered the primary customer and PCRJ a secondary.

J02.6 Secondary Metering

APH may require secondary meters for internal billings of their reimbursable customers, utility usage management, and energy conservation monitoring. The Contractor shall assume full ownership and responsibility for existing and future secondary meters IAW Clause C.3. All meters should be read with billing data submitted by the 10th of each month.

J02.6.1 Existing Secondary Meters

TABLE 2.6.1
 Existing Secondary Meters

Meter Location	Meter Description
Manhole just upstream of wastewater plant	Manhole meter that measures the flow from the Puemansend Creek Regional Jail (PCRJ) complex. Please note the meter is owned by the PCRJ.

J02.6.2 Required New Secondary Meters

The Contractor shall install and calibrate new secondary meters as listed in Table 2.6.2. New secondary meters shall be installed IAW Clause C.17, Transition Plan.

TABLE 2.6.2
 New Secondary Meters

Meter Location	Meter Description
None identified	

J02.7 Monthly Submittals

The Contractor shall provide the Government monthly submittals for the following: Invoice (IAW G.2) for the previous month’s service. The Contractor’s monthly invoice shall be presented in a format proposed by the Contractor and accepted by the Contracting Officer. Invoices shall be submitted by the 10th of each month for the previous month. Invoices shall be submitted to the Contracting Officer’s designee. (This information will be provided upon award.)

Outage Report: The Contractor’s monthly outage report will be prepared in the format proposed by the Contractor and accepted by the Contracting Officer. Outage reports shall include the following information for Scheduled and Unscheduled outages:

Scheduled: Requestor, date, time, duration, facilities affected, feedback provided during outage, outage notification form number, and digging clearance number.

Unscheduled: Include date, time and duration, facilities affected, response time after notification, completion times, feedback provided at time of outage, specific item failure, probability of future failure, long term fix, and emergency digging clearance number.

Outage reports shall be submitted by the 25th of each month for the previous month. Outage reports shall be submitted to the Contracting Officer’s designee. (This information will be provided upon award.)

System Efficiency Report: If required by Paragraph C.3, the Contractor shall submit a system efficiency report in a format proposed by the Contractor and accepted by the Contracting Officer. System efficiency reports shall be submitted by the 25th of each month for the previous month. System efficiency reports shall be submitted to the Contracting Officer’s designee. (This information will be provided upon award.)

J02.8 Energy Savings and Conservation Projects

Use of energy efficient equipment shall be used in all renewal, refurbishment and replacement projects. IAW C.3, Utility Service Requirement, the following projects have been implemented by the Government for energy conservation purposes:

None.

J02.9 Service Area

IAW Clause C.4, Service Area, the service area is defined as all areas within the APH boundaries.

J02.10 Off-Installation Sites

There are no off-site installations at APH.

J02.11 Specific Transition Requirements

IAW Clause C.17, Transition Plan, Table 2.11.A lists service connections and disconnections required upon transfer, and Table 2.11.B lists the improvement projects required upon transfer of the APH wastewater system.

TABLE 2.11.A
Service Connections and Disconnections

Location	Description
Future non-DOD entities will negotiate directly with successful bidder.	

TABLE 2.11.B
System Improvement Projects

Project Location	Project Description
Wilcox Wastewater Treatment Plant	Boy Scouts of America Microscreen Project (pre-treatment upgrade)
Old Wilcox Wastewater Treatment Plant	New Septic Receiving Station; replacement of old tank
Post - Wide	Survey and refurbishment of pumps at various Lift Stations

Longstreet Lagoon	Lagoon liner repair
Post-wide	Various PW/WW Improvements for the 2005 BSA Jamboree
Range #1 & #2	Range #1 and #2 LS Improvement

J02.12 Wastewater Collection System Points of Demarcation

The point of demarcation is defined as the point on the piping system where ownership changes from the Grantee to the building owner. The table below identifies the general locations of these points with respect to the building served.

TABLE 2.12
Points of Demarcation

Point of Demarcation	Applicable Scenario	Sketch
Point of demarcation is one foot from where the service line enters the structure.	A sewer system cleanout is located within 1 feet of the building perimeter on the service line.	
Point of demarcation is one foot from where the service line enters the structure.	No cleanout exists on the service line entering the structure.	
Point of demarcation is at the inflow to the existing sediment trap prior to the oil/water separator.	Any oil/water separator on the service line. The O/W sep will be included in this scenario.	
Septic Tanks and Grease Traps	Septic Tanks and Grease Traps are included with the wastewater system. The line leading to these facilities is included to a point 1-foot from the building perimeter or the cleanout if one is installed, in not one will be installed within 1-foot of the building perimeter,	None

Point of Demarcation	Applicable Scenario	Sketch
<p>POD is at the overhead service line’s connection to the service entrance mast.</p> <p>Note: If an electric meter is present, or is to be installed, the owner of the electric distribution system on the installation is the owner and maintainer of the electric meter and the can. The POD for the electric meter is at the wastewater utility owner’s conductors to the electric utility owner’s conductors. This meter POD applies regardless of the location of the electric utility owner’s meter. The wastewater utility owner will own the service entrance mast.</p>	<p>Electric power is provided to a wastewater facility via an <u>overhead</u> service drop. This configuration could be found at facilities dedicated to the wastewater utility such as a lift station or wastewater treatment plant.</p>	<p>None</p>
<p>POD is at the transformer secondary terminal spade.</p> <p>Note: If an electric meter is present, or is to be installed, the owner of the electric distribution system on the installation is the owner and maintainer of the electric meter. The POD for the meter is at the wastewater utility owner’s conductors to the electric utility owner’s conductors. This meter POD applies regardless of the location of the electric meters and transformers.</p>	<p>Electric power is provided to a wastewater facility via an <u>underground</u> service connection. This configuration could be found at facilities dedicated to the wastewater utility such as a lift station or wastewater treatment plant.</p>	<p>None</p>

J02.12.1 Unique Points of Demarcation

The following table lists anomalous points of demarcation that do not fit any of the above categories.

TABLE 2.12.1
Unique Points of Demarcation

Building No.	Point of Demarcation Description
Main Cantonment Wastewater	The downstream demarcation point includes the headwall on the

Building No.	Point of Demarcation Description
Treatment Plant (Wilcox WWTP)	wastewater treatment plant outfall line to the receiving stream.
Puemansend Creek Regional Jail (PCRJ) Discharge Point	An upstream demarcation point is the manhole where the force main enters the APH wastewater manhole. Upstream of this point is the responsibility of PCRJ.

J02.13 Plants

There are two wastewater treatment plants at APH that is made up of a number of facilities. The various facilities and facility numbers are listed in the following table.

TABLE 2.13
Plants

Description	Facility Number	State Coordinates	Other Information
Wilcox Wastewater Treatment Plant			Please see Paragraph J02.2.2.1, Wastewater Treatment Systems – Main Cantonment Area for a complete description.
Cooke Wastewater Treatment Plant			Please see Paragraph J02.2.2.2, Wastewater Treatment Systems – Outlying Area for a complete description.

J02.14 Special APH Requirements

Excavation Permit: Because of the special subsurface conditions at APH, all excavations shall be performed in accordance with the unique APH specifications. See Section J12, Fort A.P. Hill Excavation Permit.

Grass Mowing: All grass mowing responsibilities must be realized and captured within services provided and cost associated. The Wilcox WWTP has a large grass-mowing requirement; the Cooke Camp Site sewage disposal facility has a large requirement as well. The perimeter fence, berms, and site area must be maintained per the permit. Each lift station has a seasonal grass-mowing requirement inside the fence and outside the perimeter of the fence. The Cooke Spray Irrigation site has an irrigation schedule that requires at an annual cutting and baling of the orchard pasture grass. This costs needs to be captured. In addition to mowing and baling any field improvements needed must be addressed. All collection system right-of-ways need to be cleared and maintained. This cost needs to be captured in the proposal. The SOW for grass mowing is attached in Technical Library.

Technical Library: Important contract requirements, operational manuals and other important data will be contained within the Fort A.P. Hill PW and WW Utility Privatization Technical Library. The Technical Library will be made available for inspection during the Site Visit or other at times by agreement of Fort A.P. Hill. Section J14 lists the preliminary contents of the Technical Library.