

Attachment J13

Big Bethel Potable Water Treatment Plant

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J13 Big Bethel Water Treatment Plant

J13.1 Big Bethel Overview

Fort Monroe is located at the southeastern tip of the Virginia Lower Peninsula on a sand spit between Hampton Roads and the Chesapeake Bay. Fort Monroe is completely surrounded by water except for the northern tip and is connected to the mainland by two bridges at the western end. Originally named Fortress Monroe, in honor of James Monroe, our fifth president, it was designated Fort Monroe by the secretary of war in 1832. The Fort comprises 568 acres, of which approximately 108 acres are under water. Today, Fort Monroe is the home of the Army's Training and Doctrine Command (TRADOC), whose mission is to develop the doctrine, weapon systems, equipment, organizations and training needed for the battlefields. The Big Bethel Water Treatment Plant (BBWTP) is owned by the army and is located approximately nine miles from Fort Monroe. The plant serves Langley Air Force Base (LAFB), Air Force housing known as Bethel Manor, and Fort Monroe. BBWTP draws raw water from the 500-acre Army owned Big Bethel Reservoir. During times of extreme drought the reservoir can be replenished from the Chickahominy River. Of the potable water produced by BBWTP, approximately 80 percent is used by Air Force facilities mentioned above. The remaining 20 percent of the plant's 1.33 million gallons per day (MGD) average total output is used by Fort Monroe.

J13.2 Water Treatment Plant Description

The BBWTP comprises the water treatment plant and all appurtenances physically connected to the Plant to the points of demarcation defined by the real estate instruments. The plant includes the potable water distribution pipelines from the plant to LAFB, Bethel Manor housing, and Fort Monroe. The potable water pipelines are described in the inventory. Generally, the points of demarcation are at the points where the pipelines from BBWTP enter Air Force property and the point at which the pipeline going from LAFB to Fort Monroe leaves LAFB. The Plant may include, but is not limited to the transportation pipelines, buildings, utility distribution systems, fences, intake structure, wastewater collection pumps and pipelines and the storage and treatment facilities. The dam, reservoir, and all associated water rights are not included as part of the system. No land is to be transferred with the Big Bethel Water Treatment Plant. The following description and inventory is included to provide the Offeror with a general understanding of the size and configuration of the distribution Plant. The inventory is assumed to be approximately 90 percent complete. The Offeror shall base the proposal on site inspections, information in the bidder's library, other pertinent information, and to a lesser degree the following description. Under no circumstances shall the successful Offeror be entitled to any rate adjustments based on the accuracy of the following description and inventory.

J13.2.1 Water Treatment Plant Fixed Equipment Inventory

The treatment plant constructed in 1918 is a modified lime/alum/sedimentation/filtration facility permitted to treat 4.0 MGD. The plant was modified in 1996 to add a bulk chemical storage area, revamp the chemical feed systems to convert to a chloramines system, rework the filter layers, deepen the filter media, update wash water troughs, replace the wheeler bottoms with an integrated media support cap, add surface wash capability, add a continuous sludge removal system to the first set of sedimentation basins, add traveling vacuum collectors, add a sludge thickening basin, add pumping equipment and polymer addition to the solids handling train, as well as to make repairs to selected

concrete surfaces, make structural modifications, and add an updated power system with new emergency generator.

BBWTP is located adjacent the Big Bethel Reservoir from which it draws raw water. The treatment process incorporates mechanical flash mixing followed by hydraulic flocculation, primary sedimentation basins, secondary sedimentation basins, and four ½ MG and two 1 MG dual media filters. Finished water is stored in a 500,000 gallon clear well located just behind the treatment portion of the plant. Three 200 HP high-service horizontal centrifugal pumps, of unknown capacities, pump the finished water from the suction well into the distribution system at a pressure of approximately 60-65 psi.

The primary sedimentation basin is continuously cleaned by a vacuum system that covers the entire basin approximately once every eight hours. The secondary sedimentation basins are manually cleaned once per year. The dual media filters are back washed every 72 hours.

The BBWTP produces an average of 120,000 gallons of wastewater per day. Wastewater consists of filter backwash and primary and secondary sedimentation sludge. Sludge from the cleaning of the sedimentation basins is pumped to a new gravity thickener and then pumped to a sludge press located in the wastewater treatment building. Between the wastewater treatment building and the gravity thickener is a 250,000-gallon open concrete lagoon into which the filter back wash water is pumped. Water from the lagoon is also processed in the wastewater treatment building. The sludge from the press is processed into cake solids and taken to a landfill, by a contractor, for final disposal. The effluent from the wastewater treatment process is discharged into Brick Kiln Creek, downstream of the plant's raw water intake, and ultimately drains into the Chesapeake Bay.

A major Fort Monroe project to renovate and upgrade BBWTP was completed in July 1996 at a cost of \$2,518,900. As a part of the renovation, the water treatment process was modified to utilize chloramines as a disinfectant and a substitute for chlorides due to Newport News Waterworks recent switch to the chloramines system. Fort Monroe has no other planned upgrade or expansion to the treatment plant water pipelines.

J13.2.2 Inventory

Table 1 below provides a general listing of the major Water Treatment Plant fixed assets for the BBWTP included in the purchase. The Plant will be sold 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 Plant, though not specifically mentioned herein, is considered part of the purchased utility.

TABLE 1
1. Fixed Inventory
Big Bethel Water Treatment Plant

Fixed Inventory – Big Bethel Water Treatment Plant	
Lower Big Bethel Reservoir, Original Constructed 1918	
	Intake Structure
	Screen Chamber

Fixed Inventory – Big Bethel Water Treatment Plant
Water Treatment Plant, Original Constructed 1918
Rapid Mix Structure and Mixing Equipment, 9.4 Ft. x 15 Ft. x 24 Ft. Depth
Influent/Effluent Channel, Flocculation Section, Paddle Flocculators, Primary Sedimentation Basin (2-250,000 Gallon Basins), 100 Ft. x 68 Ft. x 12 Ft. Depth
Secondary Sedimentation Structure, 55 Ft. x 36 Ft. x 10 Ft. Depth
Filter Room, Building No.1; boiler room with furnace, water heater, main distribution panel, and metering equipment; laboratory
Suction Well
Filter Well below Floor Level
Pump Room Pumping Equipment, 1-Backwash Pump, 3-Hi-Service Pumps, 2-Raw Water Pumps, 2-Filter Pumps
Clear well, 562,000 Gallons, 64 Ft. x 102 Ft. x 12 Ft. Depth
Site Work, Exterior Piping
Facilities Upgrade, 1979
Lagoon (250,000 Gal. Basin) 80 Ft. x 80 Ft. x 8 Ft. Depth
Wastewater Treatment Plant, Two-Story Building, 50 Ft. x 25 Ft.
Pump Station No. 1, Sludge Pumps, 18 Ft. x 13 Ft.
Pump Station No. 2, Decant Pumps, 18 Ft. x 13 Ft.
Chlorine Building, 30 Ft. x 15 Ft.
Site Work, Exterior Piping
Facilities Upgrade, 1996
Gravity Thickener Structure, 20 Ft. Dia. x 12 Ft. Side Wall
Chemical Containment Structure (Covered) and Caustic, Aqua Ammonia, Alum Bulk Storage and Day Tanks, Pumps, and Equipment, 60 Ft. x 22 Ft.
Chlorine Dioxide Building, 20 Ft. x 12 Ft.
Belt Filter Press, Thickened Sludge Pumps, Polymer Feeder. All in the existing Wastewater Treatment Plant 2-story bldg.
Filter Upgrades, changed to dual media filter
Residuals Collectors in Sedimentation Tanks
Residuals Pump Station

Fixed Inventory – Big Bethel Water Treatment Plant
2 Diesel Generators: New Generator Added and Existing Generator Moved Outside with New Generator. One generator serves main plant; one generator serves waste side of plant.
Site Work, Exterior Piping
700 linear feet of 8" pipe from BBWTP to Bethel Manor Air Force housing. Pipeline was constructed approximately 1959.
11,200 linear feet of 12" pipe from BBWTP to Langley Air Force Base. Pipeline was constructed approximately 1922.
23,200 linear feet of 14" pipe from King Street entrance at LAFB at to Fort Monroe area near 200 Old Buckroe Road, Hampton. Pipeline was constructed approximately 1951.
11,200 linear feet of 16" pipe from BBWTP to Langley Air Force Base. Pipeline was constructed approximately 1922.
11,200 linear feet of 20" pipe, for potable water from BBWTP to Langley Air Force Base. Pipeline was constructed approximately 1960.
Utilities Serving the Water Treatment Plant
The inventory includes all utility distribution systems within and adjacent the plant from the point where the utility company ownership stops. This may include, but is not limited to, electric, gas, telephone, sewage collection, and water.

J13.2.3 Water Distribution Piping

An 8" pipeline goes from BBWTP to an Air Force housing area known as Bethel Manor. This pipeline goes from the plant in a northerly direction with no known takeoffs from the pipeline between the plant and Air Force property. The point of demarcation between BBWTP ownership and Air Force ownership is at the point where the pipeline enters Air Force property.

Three pipelines, 12", 16", and 20" in size, go from the plant in a southeasterly direction onto Air Force property at Langley Air Force Base. There are no known takeoffs from these pipelines between the plant and the Air Force property. These pipelines are on a deeded right-of-way. The right-of-way goes from BBWTP to Langley Air Force Base, crossing private and public property. When the pipelines enter Air Force property the pipe and the right-of-way on which it is installed is LAFB property. All of the pipes that are on LAFB are Air Force property. The points of demarcation between LAFB ownership and BBWTP ownership are at the points at which the pipes enter the boundary of LAFB from BBWTP.

A 14" pipeline goes from LAFB to Fort Monroe. This pipeline is on a deeded right-of-way. The right-of-way goes from Langley Air Force Base to Fort Monroe, crossing private and public property. The point of demarcation between this pipeline and LAFB is at the point where the pipeline leaves the boundary of LAFB at the King Street entrance to LAFB. The point of demarcation between this pipeline and the Fort Monroe water system is at the BBWTP side of the 14" cutout valve that is used to separate the Fort Monroe water system from the BBWTP system so that water can be taken into Fort Monroe's water distribution system at 200 Old Buckroe Road from the Newport News Waterworks System.

J13.2.4 Water Distribution Plant Non-Fixed Equipment and Specialized Tools Inventory

Table 2 lists other ancillary equipment (spare parts) and **Table 3** 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 Plant under the terms of this contract.

TABLE 2

2. Spare Parts
Big Bethel Water Treatment Plant

Qty	Item	Make/Model	Description	Remarks
Big Bethel Water Treatment Plant maintains an inventory of spare parts for the water plant. Contents of the inventory vary as items are used and/or purchased. Availability of this inventory to the new owner will be negotiated before or during the transition period.				

TABLE 3

3. Specialized Equipment and Vehicles
Big Bethel Water Treatment Plant

Description	Quantity	Location	Maker
No specialized equipment or vehicles for maintenance of the Big Bethel Water Treatment Plant will be transferred to the new owner of the system.			

J13.2.5 Water Treatment Plant Manuals, Drawings, and Records Inventory

Table 4 below lists the manuals, drawings, and records that will be transferred with the Plant.

TABLE 4

4. Manuals, Drawings, and Records
Big Bethel Water Treatment Plant

Qty	Item	Description	Remarks
Big Bethel Water Treatment Plant maintains a limited collection of technical manuals, drawings, and records on the installed components of the water distribution system. This information will be transferred to the new owner during the transition period. System maps will be available in the bidders library.			

J13.3 Current Service Arrangement and Water Production

The Army owned Water Treatment Plant at Big Bethel provides potable water for part of Langley Air Force Base, Air Force housing, and Fort Monroe. The owner will be required to continue current service obligations. **Table 5** below lists approximately two years of Big Bethel Water Plant water

production and Fort Monroe water usage. Langley Air Force Base used the water that was produced by the water plant and not used by Fort Monroe.

TABLE 5

5. Water Production and Fort Monroe Water Usage
Fort Monroe Water Distribution System

Note: NN Water designates Newport News water

Water Production and Fort Monroe Usage (gallons)					
Month	Monroe Use	Plant total	% Used	% of Max	Plant Cap: 120,000,000 gal/mo.
Apr-99	8,294,643	40,982,000	20.2%	34.2%	
May-99	11,508,929	47,265,000	24.3%	39.4%	
Jun-99	14,008,929	54,680,000	25.6%	45.6%	
Jul-99	14,958,674	58,562,000	25.5%	48.8%	
Aug-99	14,142,857	44,550,000		37.1%	Used 5.9 Mgallons of NN water
Sep-99	10,374,181	32,472,000	31.9%	27.1%	On NN water
Oct-99	9,160,000	45,532,000	20.1%	37.9%	
Nov-99	9,450,000	36,923,000	25.6%	30.8%	
Dec-99	6,290,000	31,482,000	20.0%	26.2%	
Jan-00	4,319,375	39,589,000	10.9%	33.0%	
Feb-00	3,750,000	34,692,000	10.8%	28.9%	
Mar-00	6,039,310	9,562,000		8.0%	Plant under renovation
Apr-00	5,539,322	24,637,000	22.5%	20.5%	
May-00	11,177,000	44,107,000	25.3%	36.8%	
Jun-00	12,200,285	43,951,000	27.8%	36.6%	
Jul-00	12,097,213	43,300,000	27.9%	36.1%	
Aug-00	11,328,979	35,880,000	31.6%	29.9%	
Sep-00	8,008,366	33,098,000	24.2%	27.6%	
Oct-00	7,215,489	37,987,000	19.0%	31.7%	
Nov-00	3,893,943	28,980,000	13.4%	24.2%	
Dec-00	4,482,144	12,759,000	35.1%	10.6%	
Jan-01	4,029,832				On NN water
Feb-01	3,388,381				On NN water
Mar-01	3,390,021				On NN water
Apr-01	4,398,002				On NN water

J13.4 Secondary Metering

The Base 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 Paragraph C.3.

J13.4.1 Existing Secondary Meters

TABLE 6

6. Existing Secondary Meters
Big Bethel Water Treatment Plant

BLDG NO.	METER TYPE	METER NO.	LOCATION

J13.5 Submittals

The Contractor shall provide the Government monthly submittals for:

1. Invoicing (IAW paragraph G.2) for the previous month's services. The Contractors invoice shall be prepared in a format proposed by the Contractor and accepted by the Contracting Officer.
2. Monthly Service Interruption Report for the previous month.
3. Meter Reading Report in support of internal billings, water usage management, and monitoring.
4. Plant Efficiency Report. If required by Paragraph C.3 the Contractors shall submit a Plant efficiency report in a format proposed by the Contractor and accepted by the Contracting Officer.

J13.6 Energy Savings and Conservation Projects

IAW paragraph C.3, Utility Service Requirement, the following projects have been implemented by the Government for energy conservation purposes:

?? None

J13.7 Service Area

IAW Paragraph C.4, Service Area, the service area is defined as all areas within the Big Bethel Water Treatment Plant boundaries and the water distribution pipelines as described below.

J13.8 Off-Installation Sites

The entire site of this system is off the main cantonment area of Fort Monroe. The water treatment plant and Big Bethel Reservoir are located on property owned by Fort Monroe. Three pipelines from the plant, of 12", 16", and 20" sizes, go onto LAFB property and become Air Force property at the point where they cross the boundary into LAFB. An 8" pipeline goes to Air Force housing known as Bethel Manor and becomes Air Force property where it crosses the boundary of the housing area. The 14-inch pipeline that delivers water produced by the treatment plant to Fort Monroe takes water from the 20" main and runs in a right-of-way across Air Force, public, and private property from inside LAFB to Fort Monroe. That portion of the 14" pipeline on LAFB is property of the Air Force. More complete descriptions of these pipelines are provided in the "Water Distribution Piping" section of this document. Water service to LAFB facilities is supplied from the trunk lines on LAFB. Information on the rights-of-way on which the trunk lines are located is in the bidders' library.

J13.9 Specific Transition Requirements

IAW Paragraph C.13, Transition Plan, **Table 7** lists service connections and disconnections required upon transfer, and **Table 8** lists the improvement projects required upon transfer of the Big Bethel Water Treatment Plant.

TABLE 7

7. Service Connections and Disconnections
Big Bethel Water Treatment Plant

Location	Description
None Identified	

TABLE 8

8. Plant Improvement Projects
Big Bethel Water Treatment Plant

Project Location	Project Description
None Identified	

J13.10 Water Plant Points of Demarcation

The points of demarcation are defined as the points on the piping system where ownership changes from the Grantee to water users' systems. The points of demarcation are the points at which the water piping crosses into or out of Air Force property. During the operation and maintenance transition period, concurrence on specific demarcation points will be documented during the joint inventory of facilities.

J13.11 Unique Points of Demarcation

Table 9 below lists anomalous points of demarcation that do not fit any of the above categories.

TABLE 9

10. Unique Points of Demarcation
Big Bethel Water Treatment Plant

Point of Demarcation	Applicable Scenario	Sketch
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Point of Demarcation	Applicable Scenario	Sketch
<p>At inlet side of 14" valve in waterline in left turn lane of Mercury Blvd before Meter vault owned by Newport News Waterworks at 200 Old Buckroe Road.</p>	<p>Near 200 Old Buckroe Road, beside Mercury Blvd, is a connection to Newport Waterworks piping and an isolation valve to cut off water supply from Big Bethel Water Treatment Plant when water is being received from Newport News Waterworks.</p>	<p>The sketch illustrates a waterline configuration. A horizontal line represents a 14-inch waterline from the Big Bethel Water Treatment Plant. On the right side of this line is a 14-inch valve. A 6-inch waterline from Newport News Waterworks branches off to the right, passing through a meter vault and a backflow preventer in an above-ground vault before connecting to the main line. A point of demarcation is indicated at the inlet side of the 14-inch valve.</p>

J13.12 Tanks and Standpipes

The Big Bethel Water Treatment Plant does not include any existing water storage tanks or standpipes.

J13.13 Antennas on Water Plant Property

Fort Monroe reserves the exclusive right to use existing and future water plant water tanks, standpipes, buildings, and other water plant property to support communications antennas and associated equipment at no cost to the government. The property may be used by the installation to support existing antennas and new antennas as needed. Any antenna or electronic equipment to be installed on water plant property by the Grantee, or others through agreements with the Grantee, must be approved by Fort Monroe and must be compatible with Fort Monroe's antenna systems. Fort Monroe's antennas will always have primacy should there be compatibility conflicts between antennas.