



TO: Natasha Tucker, Acting Town Manager
FROM: Diane Beyer, Public Works Director *Diane Beyer*
SUBJECT: Request for transfer of Westmoreland County Settlement funding for WWTP & System Repairs
DATE: September 14, 2023

SUMMARY:

The WWTP is in need of various repairs and upgrades and deferred maintenance and replacement of machinery and other equipment has placed the plant in a precarious position. Below is a list of repairs and upgrades needed for the WWTP and associated pump stations as identified to the Town Manager most recently on July 7 via email.

Also below is a list of improvements/repairs/replacements (over a certain amount???) we have put into place in the past 6 months at the WWTP and associated pump stations.

BACKGROUND:

Systems and replacements have not been done as needed.

List of Repairs and Upgrades needed for the WWTP and Associated pump stations:

WWTP.

| | |
|--|---|
| UV Disinfection system | \$ 79,000 |
| 125 HP motor for jet pump | \$ 15,000 (already completed \$13,250) |
| Air compressors for sand filters | \$ 35,000 (costing \$1400/month in oil) |
| Sludge Pumps/Waste RAS | \$ 50,000 (On order) |
| FEB Valve Replacement | \$ 24,000 |
| Filtrate pump station control panel | \$ 7,000 (partial press room pump station repair) |
| 200HP soft starter – FEB Jet pump | \$ 6,500 (on order) |
| ISCO 5800 Auto Sampler | \$ 10,000 (currently failing) |
| Digester Air Lines | \$500,000 (early estimate) |
| Transfer switch | \$ 30,000 |
| Sandblast/repaint/coat catwalks/ pit structures | \$100,000 (est only) |
| Holes in concrete influent baffle structure | \$ 25,000 |
| Lab Equipment | \$ 10,000 |
| Mission Wireless/cellular alarm/comm System | \$ 40,000 (working on procurement) |
| SCADA Upgrade/repair/replace | \$160,000 (already procured) |
| WWTP TOTAL EST. | \$1,091,500 |

SEWAGE PUMP STATIONS

| | |
|--|---------------------|
| * (partial) 30 pumps | \$280,000 installed |
| Cabinet replacements (8) | \$ 50,000 |
| Large cabinets (5) on peds | \$150,000 |
| Locks | \$ 6,000 |
| Roofs and bldg. repair | \$ 75,000 |
| SEWAGE PUMP STATIONS TOTAL EST. | \$561,000 |

WATER WELLS.

| | |
|-------------------------|-----------|
| Roofs/Bldg. maintenance | \$ 50,000 |
|-------------------------|-----------|



| | |
|-------------------------------|------------------|
| Pumps | \$ 90,000 |
| WATER WELLS TOTAL EST. | \$140,000 |

CIP ITEMS ALREADY IDENTIFIED AND APPROVED.

| | |
|--|--|
| Communication for water meter system | \$ 90,000 |
| WWTP Conveyer System Upgrade | \$121,000 |
| Generator Upgrade – 3 rd Street | \$ 75,000 |
| RTU Pumps – 3 | \$120,000 |
| WWTP pump replacement – 8 | \$1,000,000 |
| SCADA | \$ 125,000 (accounted for as \$160K on page 1) |
| TOTAL CIP | \$1,406,000 |

| | |
|----------------------------------|--------------------|
| TOTAL ALL above this line | \$3,198,500 |
|----------------------------------|--------------------|

List of repairs/upgrades begun/completed in past 6-12 months:

| | |
|--|---|
| Potomac Beach Lift station pumps – 2 plus check valves | \$ 27,450 |
| Cedar/Wakefield – all wet well pumps and parts (ordered) | \$ 29,000 |
| 125HP motor for jet pump | \$ 13,250 |
| Roof on 4 th Street water well | \$ 2,350 |
| Water Control Communication cellular system | \$ 30,000 + annual cost |
| RTU 20 – one replacement pump | \$ 39,000 |
| Horton Pump station - pumps replacement (obsolete) | \$ 24,500 (ordered) |
| WWTP press room pumps – 2 | \$ 44,000 |
| Clarifier motor repairs | \$ 10,000 est. |
| Press Room pump station – pumps & controls | \$ 28,000 (ordered, waiting on parts) |
| UV System repair (listed for complete replacement) | \$ 10,000 |
| Roots blower (hi capacity air pump for WWTP air system) | \$ 7,500 (6 total in WWTP, this is for 1) |
| FEB Pump repair kits | \$ 14,500 (for 2 of 3 pumps) |
| TOTAL | \$ 279,550 |

ISSUE:

Equipment is malfunctioning due to aging out, deferred maintenance, etc.

ALTERNATIVES: Do Nothing

FISCAL IMPACT:

The fiscal impact is estimated at almost \$3.2 million on this date (costs will rise). This is a request to transfer the remainder of the settlement monies, \$519,294.40, to account 501-046000-8101 (WWTP Capital Improvement) in order to expedite the process when items are ordered, replaced, repaired. Transferring the funds thus removes the need to do individual budget amendment memos needing individual approval, which may cause unneeded delay in forward movement. All procurement requirements for each purchase will still, of course, be followed, but the extra step of transferring monies would be eliminated.

RECOMMENDATION:

Staff recommendation is for Council to approve the transfer of the \$519,294.40 remaining in the Westmoreland County settlement monies to account 501-046000-8101 (DPW WWTP Contingency).

Diane,

Based on the information we have in the file we believe the 2008/2009 WWTS BNR Upgrade Project included the following:

1. New Self-Priming Grit Pumps
2. New Grit Dewatering Screen
3. New Two Stage MLE Activated Sludge Process/System:
 - The two existing Flow Equalization Basin (FEB) tanks and the two existing Complete Mix (Aerobic) Activated Sludge (CMAS) tanks were modified to function as a dual train, two stage Modified Ludzack Ettinger (MLE) activated sludge treatment process to provide biological nitrogen removal (BNR) by nitrification and denitrification.
 - Two existing 90 ft. dia. x 21.25 ft. maximum liquid depth, 1.00 MG volume FEB Tanks were retrofitted to function as first stage FEB/Anoxic (low DO) Reactors providing combined hydraulic flow equalization, carbonaceous BOD removal, and, removal of nitrate nitrogen contained in mixed liquor recycled by gravity from two existing downstream second stage nitrification Reactors. The FEB/Anoxic Reactor retrofit includes the following upgrades:
 - One New Floating Mixer in each of the two FEB/Anoxic Reactors #1A and #1B
 - Two new 20" dia. Nitrate Recycle Lines were installed to provide for gravity recycle flow of mixed liquor from Nitrification Reactors #2A & #2B back into FEB Anoxic Reactors #1A & #1B.
 - The existing FEB/Anoxic Reactor Effluent Pump Station #1 that consists of three self-priming pumps were modified by the installation of larger 50 HP motors, belts and sheaves to increase pump capacity/head rating up to 1,400 gpm @ 70 ft and variable speed drives.
 - Two new larger 12" magnetic flow meters were installed in the FEB/Anoxic Reactor Effluent Pump Station #1 effluent force mains to be operated with existing downstream flow control valves to accurately measure, indicate and equally divide the equalized wastewater flow to each Nitrification Reactors #2A & #2B. Each magnetic flow meters is rated for a flow range of 300 gpm to 3,000 gpm = 0.43 MGD to 4.3 MGD
 - One new FEB/Anoxic Reactor Effluent Pump Station #2 that consists of a new building with electrical room and two self-priming pumps with flow meter. Each new pump was rated at 5,600 gpm @ 45' TDH.
 - Two existing 108 ft. dia. x 22.00 ft. maximum liquid depth, 1.55 MG volume complete mix activated sludge aeration basins will be modified to function as second stage Aerobic Nitrification Reactors #2A & #2B in the two stage BNR process to accomplish

final carbonaceous BOD removal and ammonia nitrogen removal. The aeration basin retrofit includes the following upgrades:

- Two new 125 HP jet recirculation pumps were installed adjacent to the two existing jet pumps for Nitrification Reactors #2A and #2B. The new pumps are provided as installed standby pumps. The head/capacity curve for the new jet pumps is provided on the following page.
4. The existing RAS pumps were modified by the installation of new larger 50 HP motors, belts and sheaves and variable speed drive controls, in order to increase the pump capacity/head rating up to 2,100 gpm @ 45 feet.
- Two new larger 12" magnetic flow meters were provided in the existing sludge return force mains to be operated with the existing downstream flow control valves to accurately measure, indicate, totalize and record and equally divide the sludge return flow to Nitrification Reactors #2A and #2B. Each magnetic flow meter is rated for a flow range of 300 gpm to 3,000 gpm = 0.43 MGD to 4.3 MGD.
5. New Tertiary Denitrification Filters:
- Eighteen New Tertiary Denitrification Denite Filters were installed and operated to achieve biological denitrification and suspended solids filtration in order to reduce final effluent Total Nitrogen (TN) below 3.0 mg/L and Total Phosphorus (TP) below 0.30 mg/L. A new, non-methanol, non-flammable supplemental carbon source (CS) solution storage and feed system and an alternate methanol solution dosage system was provided for injection of CS solution into the clarifier effluent wastewater flow upstream of the new tertiary Denite Filters. CS dosage is necessary to operate the new Denite Filters to provide final nitrate nitrogen removal by biological denitrification.
 - Two new non-flammable "polysweet" or equal carbon source solution pumps each rated at 10 gphr @ 60 psi were installed to pump from the new CS solution bulk storage tank to dose CS solution into the influent wastewater flowing into the tertiary denite filters.
 - Flammable methanol solution can be used as the secondary or alternate supplemental carbon source solution. Two new methanol solution pumps each rated at 10 gphr @ 60 psi were installed to pump from 330 gallon carbon totes to optionally dose CS solution into the denite filter influent wastewater flow.
6. New UV Disinfection System:
- The existing chlorine gas and sulfur dioxide gas equipment was replaced by new UV equipment installed in the new UV Contact Basin. Adequate hydraulic head is not available between the water level in the existing Final Clarifiers, and, the water level in the existing chlorine contact basins to allow gravity flow from the existing Final Clarifiers, through the new Tertiary Denite filters into the existing chlorine contact basins. Consequently a new UV contact channel and UV disinfection system had to be installed to provide final effluent disinfection instead of disinfection by

chlorination/dechlorination since the liquid level in the existing chlorine contact basin must be significantly lower to provide adequate head drop for gravity flow capability from the existing Final Clarifiers to the existing chlorine contact channel which will be used as post aeration basins.

7. The existing Chlorine Contact Basin was retrofitted into a new Post Aeration Basin operated downstream of the new Tertiary Filter System to raise the final effluent DO concentration above the discharge permit DO limit.
8. One new 90° V Notch Weir Final Effluent Flow Meter is provided at the discharge end of the Post Aeration Basin.
9. Two new Liquid Lime (LL) solution pumps with automatic variable speed drives will be provided each rated at 12.7 to 127 gphr @ 60 psi to inject LL solution into the final effluent wastewater discharge flow. One pump @ 12.7 to 127 gphr will inject LL at a rate up to 200 mg/L (dry basis) into the 4.00 MGD final effluent discharge flow rate; operation of two pumps will double this LL dosage rate; the normal LL dosage requirement is expected to be between 5 to 10 gphr or 25 to 50 mg/L (dry basis).
10. One new 90 degree V notch final effluent Flow Meter was installed at the discharge end of the Post Aeration Basin.

We hope this helps and let us know if you would like to meet with John on-site.

Blessings,

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