Office of the Town Manager
Frank Cassidy

STAFF REPORT

Council Meeting Date:	October 10th, 2022
Agenda Title:	Utilities Project Update for Plants – CIP & Projects Update
Requested Action:	Information and Discussion Only
Department / Agency Lead:	Utilities
Staff Lead:	Steven Friend/Michael Wharton/Frank Cassidy

EXECUTIVE SUMMARY

Over the last two years, Utilities, working with third-party engineers and consultants, has developed a six-year CIP plan to map out and successfully upgrade their aging plants. This is a multi-year approach focused on addressing ongoing repairs while replacing aging, end-of-life equipment. The fundamental focus and identifying the scheduling has been an ongoing effort since 2015, and most likely prior. We refer to the 2015 report as the most recent report we used to build this model as our own assessment of the report, an updated report done by the same company, WRA, in 2022, and our own in-house assessment confirm our plan is based on facts and current conditions of the plants. The challenge moving forward is adjusting repairs while keeping the major construction projects on target. Most of the money spent over the years has been directed to emergency repairs to keep the plants running with the equipment they have. This plan is designed to modernize the equipment to today's standards and functions. This will increase reliability, redundancy, efficiency, and effectiveness especially when dealing with a critical service like water and sewer.

The Town operates a water plant and wastewater treatment plant delivering water and processing wastewater. These plants serve an essential service to all who live, visit, and enjoy the Town. Without a well-operating water and wastewater system, the Town would not be thriving.

As the Town grows and explores additional options for growth and development, it is essential both these plants operate at levels mandated by regulations and laws, as well as the expectations of customers. As these plants age and additional demands are expected from them, we need to encourage a healthy discussion on their capacities while acknowledging their limitations.

Both plants are currently going through upgrades and maintenance operations to ensure the consistent and proper operational aspects required by regulations and laws and to ensure water resources' quality. The WWTP is manifesting the equipment age and continually needs creative ways to repair, workaround, or manufacture systems as the equipment is aging and outdated. Plans for upgrades and replacement have been previously presented and part of operational planning for a few years. Given the recent need to offset budget costs by pushing out CIP expenditures, these repairs and upgrades are becoming failure points.

The purpose of this presentation is to provide an update on ongoing projects and the progression of the CIP. This is part of our ongoing efforts to present progress on major projects in Town and address questions and concerns as these projects move forward.

BACKGROUND

The Town's Public Utilities Department owns and operates an advanced wastewater treatment plant, 8 wastewater pump stations, almost 68 miles of sanitary sewer mains, a freshwater reservoir, 3 active wells, a water treatment and filtration plant, and 88 miles of water distribution system including 743 fire hydrants.

Utilities also provide oversight and control of the Town's water and wastewater treatment facilities; delivery systems; maintenance of the systems; and billing. A high-level breakdown of services is included later in this document.

WATER PLANT OPERATIONS:

The Source of Supply Section is responsible for the safe and efficient operation of the Town's municipal water supply assets. These assets consist of the water treatment plant, three remote wells, two surface water reservoirs, a booster station, a re-chlorination station, two water storage tanks, and the collection of all State and federally-regulated water samples. The operation strives to provide safe, aesthetically pleasing, and pleasant-tasting water to meet the demands of the Town's over 4,944 residential and commercial customers.

The treatment plant on Blackwell Road is permitted to treat 3.2 million gallons per day but is restricted by the safe yield of the reservoirs, which is 2.27 million gallons per day. Currently, the plant produces an average of 1.2 million gallons of water daily.

TRANSMISSION & DISTRIBUTION:

The division is responsible for the overall maintenance, repair, and servicing of over 87 miles of water lines and 69 miles of sewer. Activities include repairing main breaks, replacing old and deteriorated water/sewer lines, maintaining water and sewer line right of ways, and unstopping clogged sewage lines. They also include collecting data with flow meters to identify high areas of infiltration/inflow in the gravity sewage system, maintenance of over 734 fire hydrants, and responding to over 2,527 calls annually for Miss Utility field locations of water and sewage lines as mandated by law.

The Meter Division works under T&D and is responsible for reading 4,944 water meters and providing the data to the Finance Department for billing and revenue collection. In addition, the section provides routine maintenance to all customer meters, including the thawing of frozen meters due to extremely cold weather, the inspections required under the State's cross connection and backflow prevention programs, periodic calibration, and replacement of unserviceable meters. The meter calibration testing frequency depends upon their annual usage, wear and tear, and potential for revenue loss or generation. Staff also responds to customer concerns relative to unusually high or low water bills and often assists customers in identifying leaks in their service lines, homes, and

businesses. Unaccounted water loss has averaged less than 10% for the past several years, below the American Waterworks Standard of 13%.

WASTEWATER PLANT OPERATIONS:

The wastewater plant operates and maintains the Town's 2.5 million gallons per day (mgd) sewage and 8 sewage pump stations. The plant treats, on average, 1.8-2.0 mgd, with the operation responsible for protecting downstream waters by plant operations and monitoring for compliance with state and federal regulations.

Treatment begins at the head works with screening and grit removal, followed by primary sedimentation. The second process involves biological treatment with the newly constructed Moving Bed Biofilm Reactor (MBBR). The third phase employs chemical coagulation and flocculation, followed by secondary sedimentation. The final stage of treatment includes nutrient removal via deep bed filtration, disinfection with ultraviolet lamps, and post-aeration before discharge into the unnamed tributary to Great Run. Sludge generated by the treatment process is anaerobically digested, dewatered by a 2–meter belt press, hauled away by an outside contractor, and land applied. Annual nutrient limits for nitrogen and phosphorus are in effect to comply with actions to clean up the Chesapeake Bay.

STAFF RECOMMENDATION

WRA completed a Capacity Study in November of 2022. This study provided an overall assessment of water and wastewater operations moving forward, considering all potential future developments within the Town and incorporated with discussion on BLA, Tri-Party Agreements, and other requests for the Town to provide utility services. Based on this study, we are looking at the Water and Wastewater plants reaching their maximum capacities in 2040. The Wastewater Plant will reach the 2.5 MGD limit by the year 2030.

Given the study results, staff recommends moving forward with the outlined projects for maintenance and upgrades as discussed and identified in the CIP. We want to make the Council aware the order of the projects may change as we continue to move forward because of unexpected maintenance issues or other challenges. We highly encourage the Council to stay the course with the future improvements and maintenance of both these plants to ensure proper functioning while keeping in mind the challenges of adding more accounts to these systems.

This will require a resolution to clarify funding sources.

Service Level / Policy Impact

These projects are in line with the Plan Warrenton 2040, Goals as follows:

- **CF-4: Ensure healthy, safe, and adequate water and wastewater services.**
    - **CF-4.1:** Maintain a reliable and sufficient quantity of wastewater treatment capacity and an adequate quantity and quality of public water supply to meet the needs of expected long-term residential and commercial growth.

- **CF-4.2:** Meet the future infrastructure needs through careful planning and acquisition of required permits.
- **CF-4.3:** Reduce Infiltration and Inflow (I&I) and promote sustainability within the wastewater infrastructure system.
- **CF-4.5:** Evaluate and update the Town of Warrenton – Fauquier County Master Water and Sewer Plan's Tri-Party Agreement as needed, creating a regional strategy for future needs and reevaluating the Town boundaries in relationship to its service areas.
- **CF-4.8:** Explore resources to help property owners and promote connection to public.

- **CF-5: To provide a fiscally responsible infrastructure that maintains a high quality of life for residents, supports current businesses, and attracts new employers with a stable tax structure.**
  - **CF-5.1:** Implement robust maintenance schedules on community facilities to extend the life of investments.

CF-5.2: Support the Town's current and future population by providing timely and comprehensive community facilities.

Fiscal Impact

Budgeted CIP

Legal Impact

N/A

ATTACHMENTS

1. Updated Project Report
2. Presentation from December 2022 and related documents
3. 2015 WRA 2015 Report and PowerPoint presentation to Council
4. I&I memo and documents, March 2022
5. Reports and Charts from the 2022 Capacity Study