Water and Sewer Rate Sufficiency Study
Denton, MD

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April 2023

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Draft Water and Sewer Rate Study
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Purpose/Objectives of Study

1. To review the Town's 2018 through 2023 water and sewer rate structures for revenue sufficiency, i.e., expense coverage, stability, and fairness.
2. To analyze historic water production and consumption trends along with Town growth for projecting:
    a. Water usage
    b. Water and sewer revenues based on water usage, customer connections, and projected base and usage rates
3. To update the water and sewer rate model developed by MCET for the Town that:
    a. Calculates operating revenue/expense coverage ratios (Recommended cover – greater than 1.1)
    b. Trends cash balances/cash reserves - recommended unreserved cash balances greater than 6 months of operating and maintenance (O&M) expenses
4. To recommend base and water usage rates for the next five years (2024 – 2028) for stabilizing revenues to cover water and sewer (fixed and variable) expenses, i.e., O&M, debt, and capital expenses:
    a. Provide sufficient water and sewer operating revenues and adequate cash balances in the Water and Sewer Enterprise Funds
    b. Cover rising O&M expenses associated with the operation of the water and sewer systems due to inflation.
    c. Cover needed capital expenses for water and sewer system infrastructure repairs and replacements where needed.

Acknowledgements

Assistance by the Town of Denton staff was essential for this rate sufficiency assessment and analysis, particularly assistance by:

Mr. Scott Getchell, Town Administrator

Ms. Karen Monteith, Town Clerk-Treasurer

The Town provided valuable planning and demographic data (i.e., population and household information) and insights on Town growth; Water usage data (pumped and billed); Rainfall data; Wastewater treated data; Town and County Comprehensive Planning documents; Audited annual financial statements; Enterprise fund and accounting practices; City Water and Sewer ordinance documents; and 20 years of water and sewer service rate information.

Executive Summary

Like most Towns and cities in Maryland, water and sewer service rates for the Town of Denton include Base Fees and Usage Charges. Customer revenues and Town expenditures are recorded in separate Water and Sewer Enterprise Funds. Coverage of Town expenditures by Customer revenues along with fund cash balances are monitored for rate sufficiency in annually audited Fund Financial Statements.

Fixed Base Fees ($/Quarter/ERU) are determined on an Equivalent Residential Unit (ERU) basis. An ERU is established by the Caroline County Health Department.

The Town assigns ERUs to system users based on criteria provided in the Town's most recent rate ordinances. Quarterly Volumetric Usage Charges ($/1,000 gallons) are determined based on metered water consumption. Service rates from FY 2018 through FY 2023 are shown in Table 1. below.

Table 1. Water and Sewer Rates, Denton, Maryland

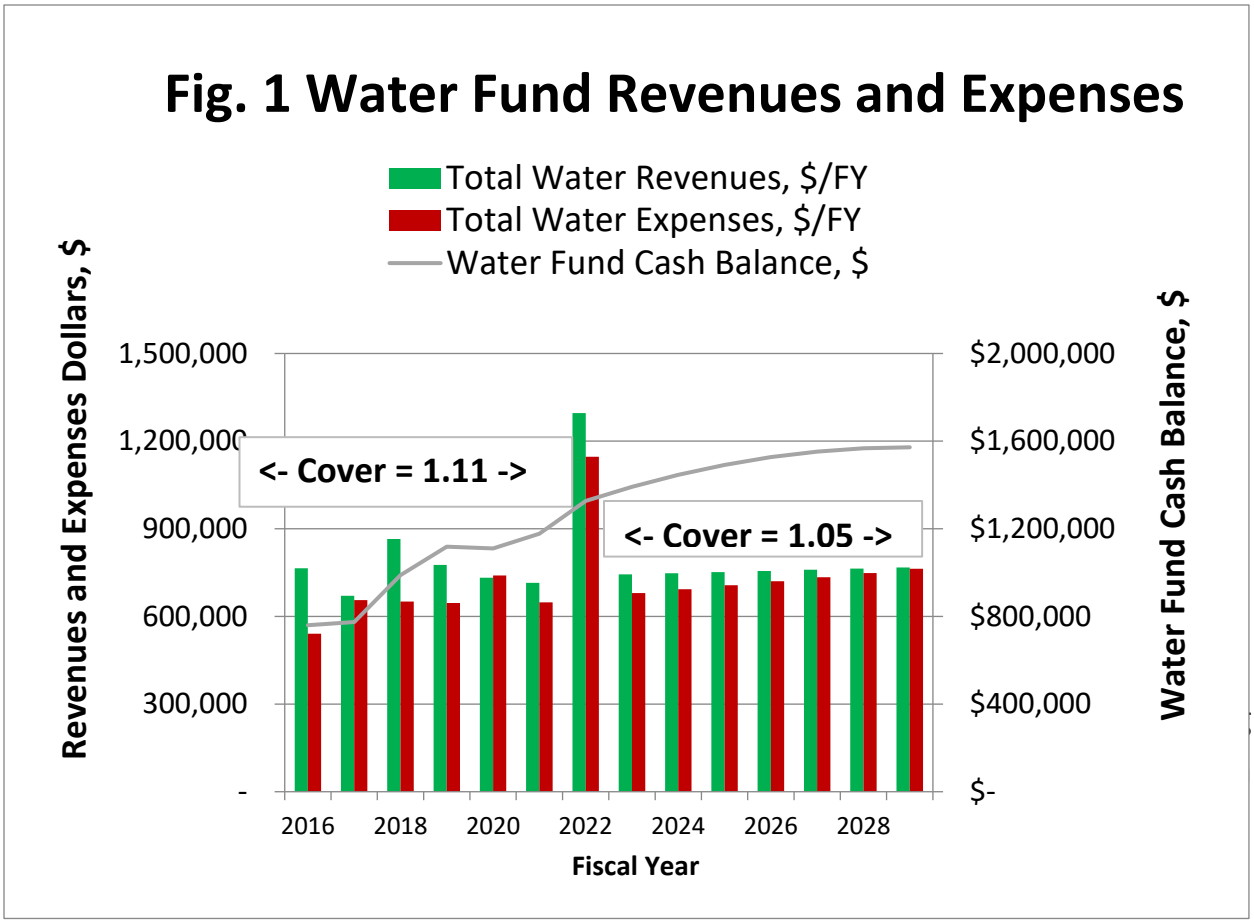
Base Fees and Usage Charges	Fiscal Year					
Water	2018	2019	2020	2021	2022	2023
Connection Fee, $	4,000	4,000	4,000	4,000	4,000	4,000
Base Fee, $/ERU/Qtr.	25.00	25.00	25.00	25.00	25.00	25.00
Usage Charge, $/1,000 gals.	3.45	3.45	3.45	3.25	3.25	3.45
Meter Replacement Fee, $/Qtr. (For water meters < 1-inch)	4.00	4.00	4.00	4.00	**10.00**	10.00
Sewer						
Connection fee, $	5,000	5,000	5,000	5,000	5,000	5,000
Base Fee, $/ERU/Qtr.	25.00	**41.00**	41.00	41.00	41.00	41.00
Usage Charge, $/1,000 gals	6.41	**7.00**	7.00	7.00	7.00	7.00
Vacant Lot Fee, $/Qtr.	25.00	25.00	25.00	25.00	25.00	25.00

The Town Utility Commission reviews the financial position of the Water and Sewer Funds and recommends water and sewer rate increases to the Town Council when needed. The Town Council then reviews and considers rate increases for adoption.

The last water rate increases were adopted in September 2012, by Ordinance #645. New Sewer rates were adopted in September 2018, by Ordinance #694. In January 2022, the Water Meter Fee for properties connected to a 1" service line or less was increased from $4.00 to $10.00 per quarter by Ordinance #723.

The Water Fund

Below is a graph of revenues and expenses along with cash balances in the Water Fund from FY 2016 and projected through FY 2024.



Future cover ratio is projected to be only 1.05 compared to the previous actual cover ratio of 1.11. A minimum cover of 1.1 is recommended. Note that the effect of inflation (i.e., 2.0% to 3.0% annually) on system expenses exceeds effect of Town growth on revenues (i.e., less than 0.5% annually).

The Town has a very active water conservation program. Since FY 2011, the average water usage in gals/day/capita has been 62 gpd/cap, near national averages. Between FY 2006 through FY 2010, water usage was 70 gpd/cap and earlier, between FY 2000 through FY 2005, water usage was 84 gpd/cap. Unfortunately, water conservation creates a damper on customer water usage revenue.

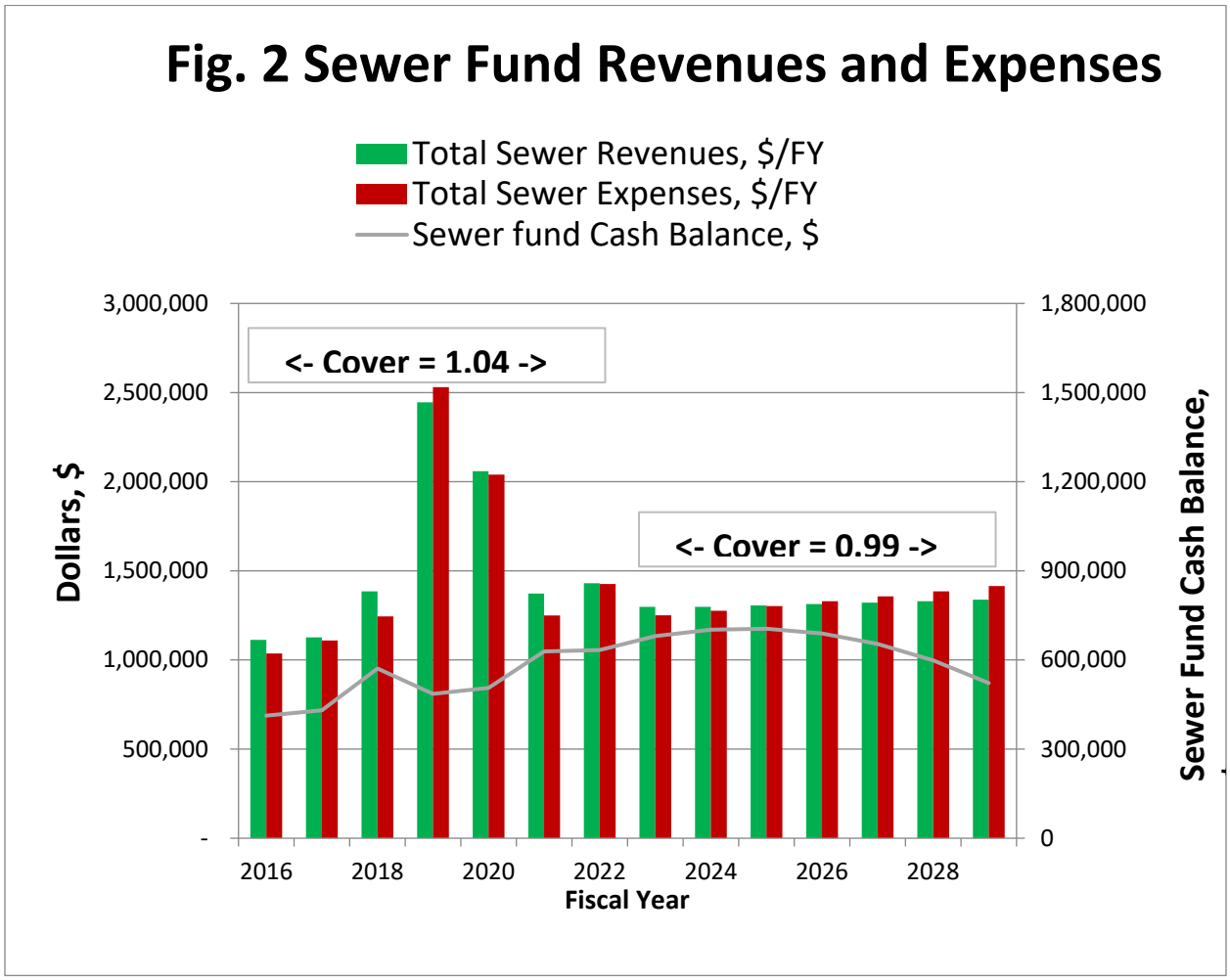
When water usage falls, revenues fall with them, unless water and sewer rates are increased. But a decrease in water sales does not lead to a commensurate reduction in utility expenses. Consistent decreases in water use from year to year can lead to significant revenue shortfalls for utilities. Excessive declines in water use over recent years have caught many utilities off-guard as revenues have fallen below budgeted levels.

If the Town determines that a major capital improvement program (CIP) is needed to Replace, Repair, and Remediate Town water lines and water hydrants, cash balances can be used to cover any debt and capital expenses until water rate increases can be considered and adopted in the future (i.e., FY2026 or FY 2027).

Recommendation: No immediate increase in water rates

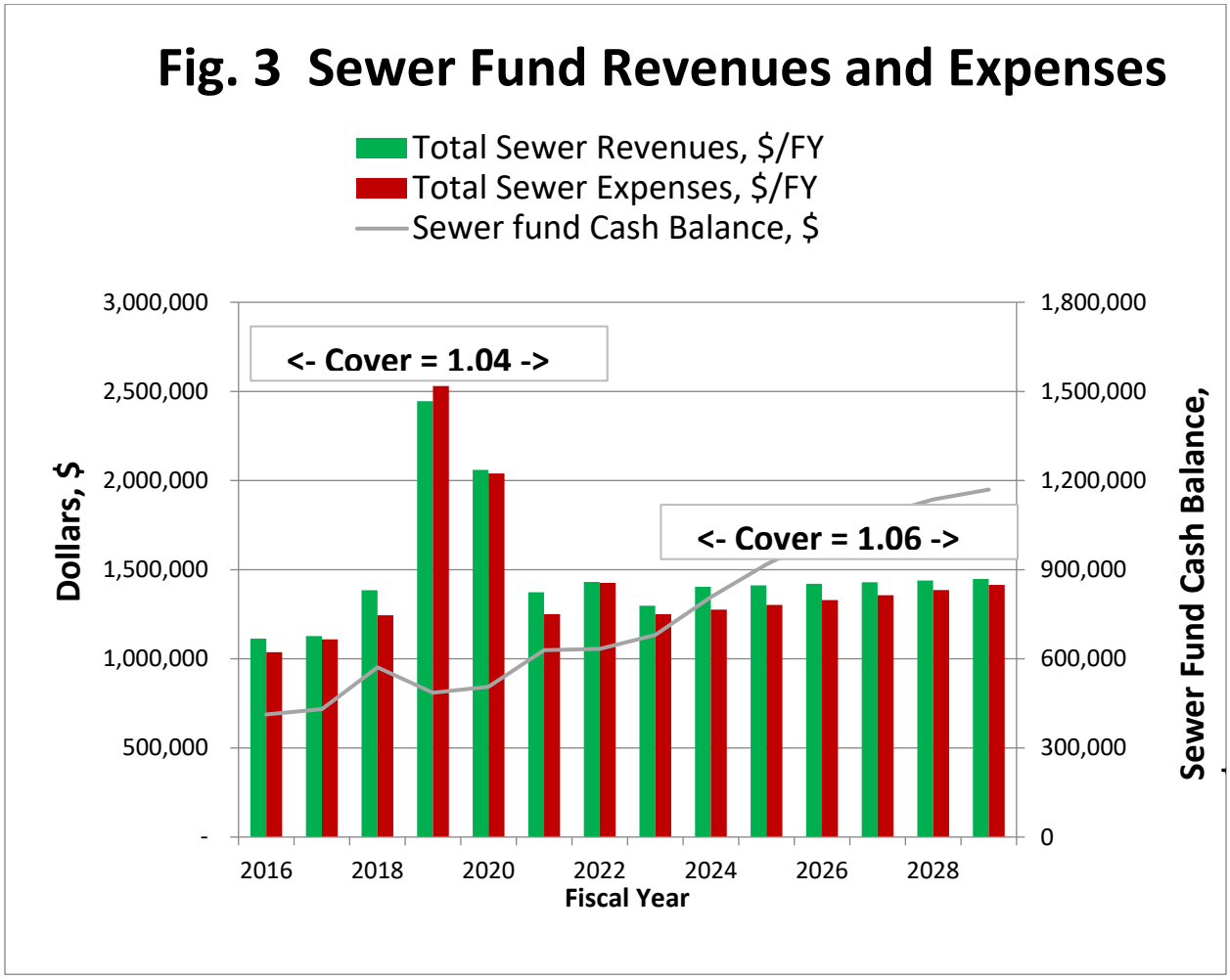
The Sewer Fund

Sewer base rate and usage fee increases are necessary. Below is a graph of revenues and expenses along with cash balances in the Sewer Fund from FY 2016 projected through FY 2029 with no rate increases beyond FY 2019. Sewer base and usage rates were barely adequate to cover 2016 – 2022 operating expenses and debt. Projected cover ratios will be less than 1.0 and cash balances will decrease dramatically.



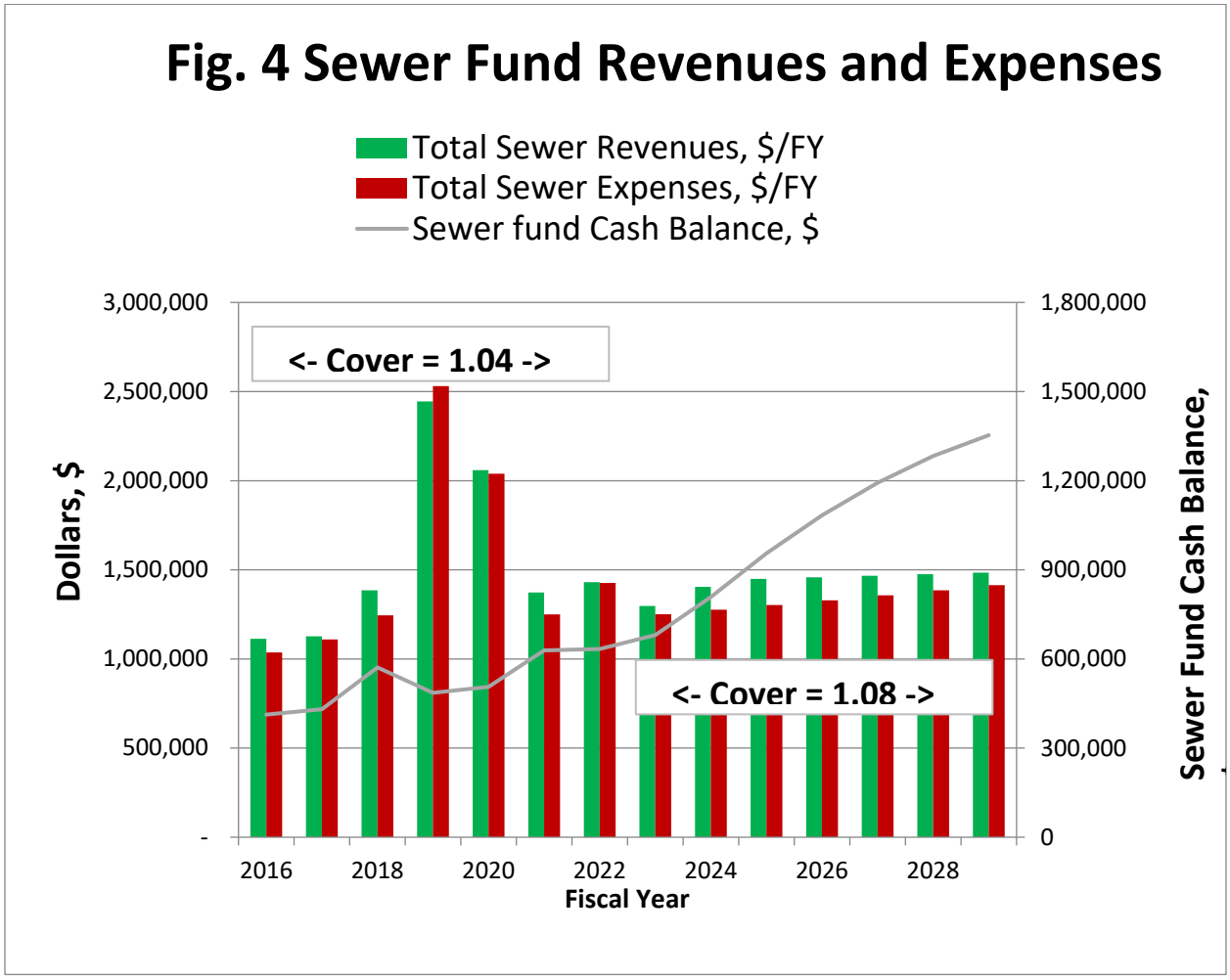
<u>Continuing with no rate increases — NOT RECOMMENED.</u>

Assuming a one time, 10% rate increase in FY 2024 in both the sewer base rate (from $41.00/ERU to $45.00/EU) and usage charge (from $7.00/1000 gals to $7.70/1000 gals), the coverage ratio would improve along with cash balances as shown in Figure 3 below.



<u>One time rate increases — IS A POSSIBLE OPTION.</u>

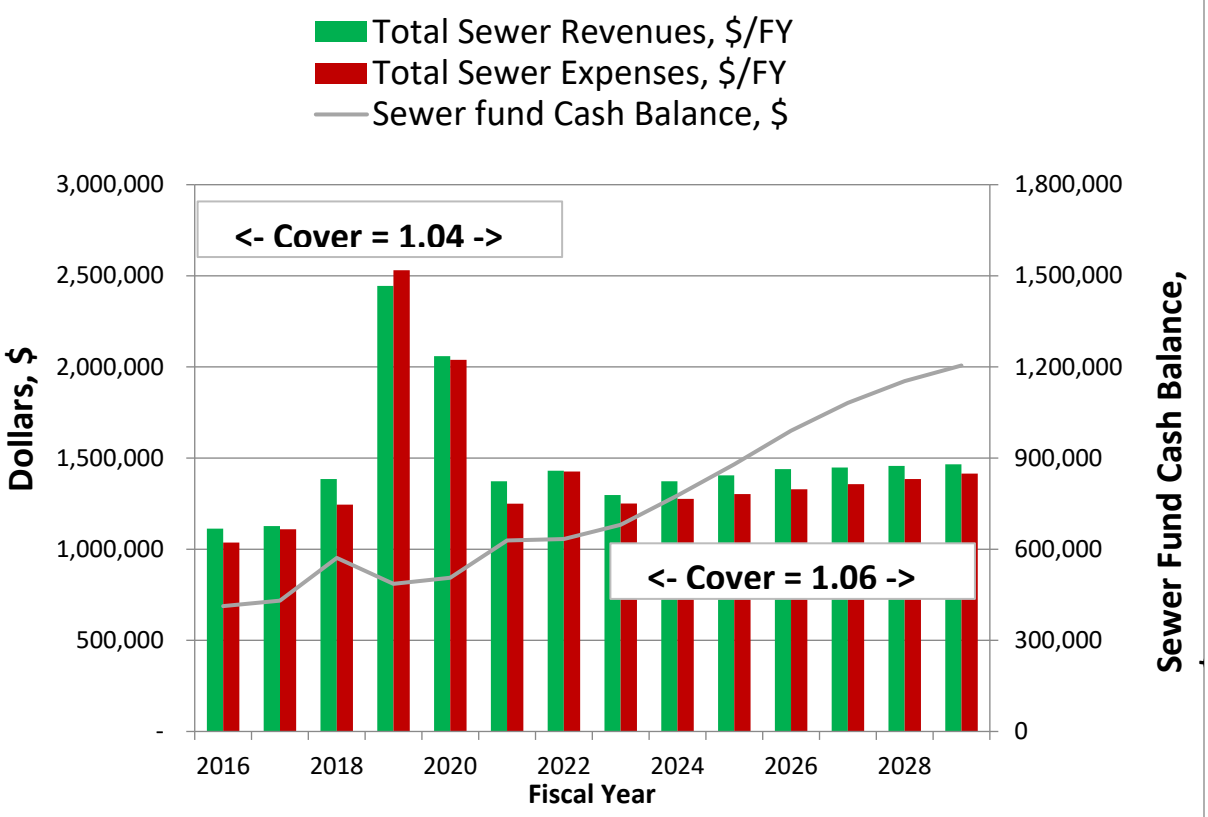
Assuming two, 10% rate increases, one in FY 2024 and another in FY 2025 in both the sewer base rate (from $41.00/ERU to $45.00/EU to $50.00/ERU) and usage charge (from $7.00/1000 gals to $7.70/1000 gals to $8.50/1000 gals), the coverage ratio would improve more significantly along with cash balances as shown in Figure 4 below.



Two-time rate increases — ALSO A POSSIBLE OPTION.

From a customer friendly perspective, three separate and sequential annual increases should be considered. Assuming three, 7% rate increases, each in FY 2024, FY 2025, and FY 2026 in both the sewer base rate (from $41.00/ERU to $44.00/EU to $47.00/ERU, and to $50.00/EREU) and usage charge (from $7.00/1000 gals to $7.50/1000 gals to $8.00/1000 gals, and to $8.60/1000 gals), the coverage ratio would improve significantly along with cash balances as shown in Figure 4 below.

Fig. 5 Sewer Fund Revenues and Expenses



<u>Three-time rate increases — RECOMMENDED OPTION.</u>

Recommendations - Summary

1. Future water rates can remain unchanged depending on desired Water Fund cash balances. Future sewer rates need to be increased to improve cover ratio and increase fund balances.

2. Rate Adjustments – Future rate adjustments will depend on revenue coverage of expenses and target cash balances.

    a. Water rates – Water usage rates can remain unchanged at $3.45/1000 gallons and provide adequate coverage of expenses and cash balances in the Fund. No rate changes are recommended.

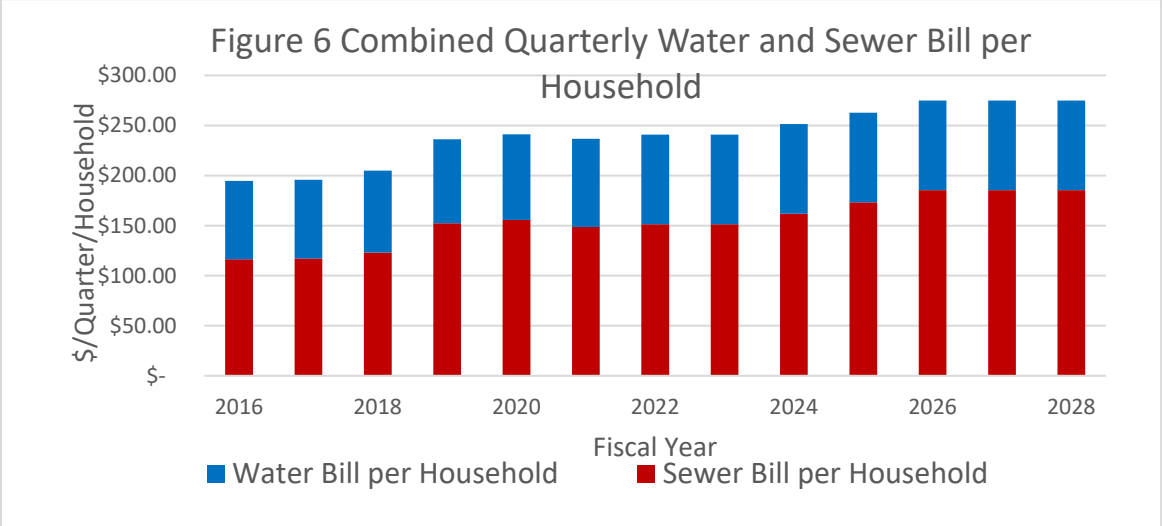
    b. Sewer rates – Rate increases are recommended. Both the sewer base fee and usage charge will need to be increased to cover debt and O&M expenses in the Sewer Fund and build up cash balances.

FY 2024 through FY 2029 projected and recommended water and sewer rates are shown in Table 2 below.

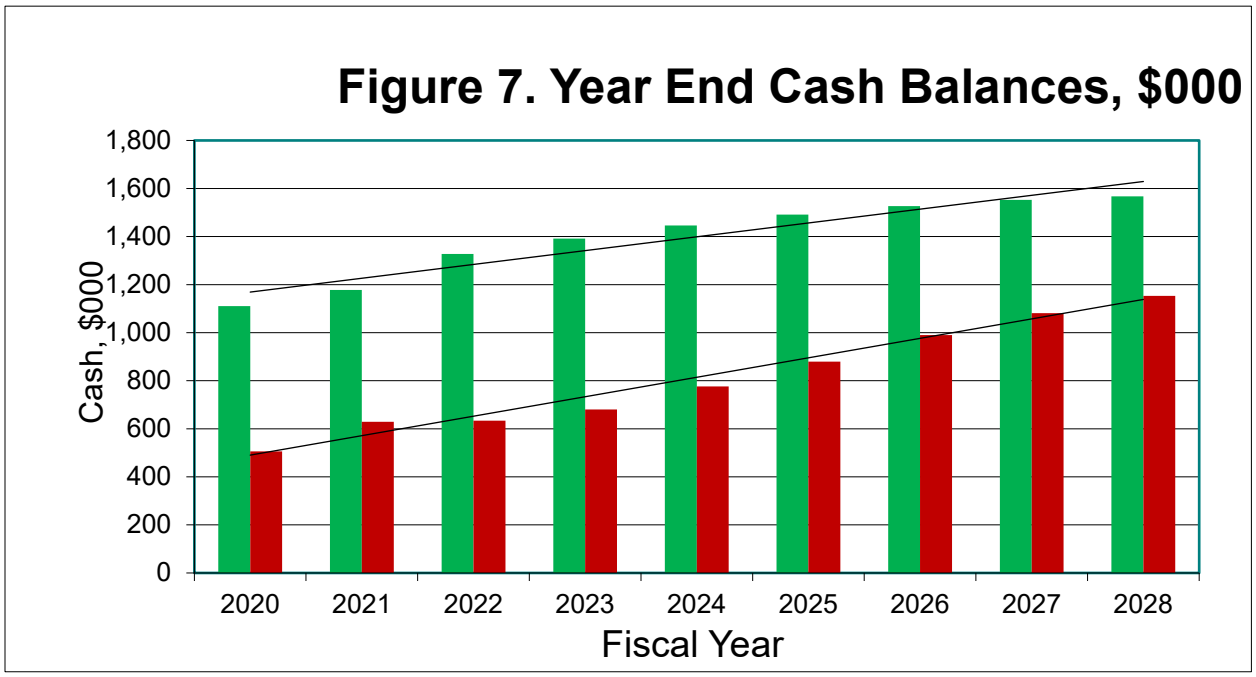
Table 2 - Recommended Water and Sewer Rates

Fiscal Year	Water Charges		Sewer Charges	
	Base, $/Qtr	Usage, $/TG	Base, $/Qtr	Usage, $/TG
2023	$25.00	$3.45	$41.00	$7.00
2024	$25.00	$3.45	$44.00	$7.50
2025	$25.00	$3.45	$47.00	$8.00
2026	$25.00	$3.45	$50.00	$8.60
2027	$25.00	$3.45	$50.00	$8.60
2028	$25.00	$3.45	$50.00	$8.60
2029	25.00	$3.45	$50.00	$8.60

Water and Sewer Billings, Households - Adopting the recommended water and sewer rates will not dramatically impact existing customer water and sewer bills as shown below.



Cash Balances - Projected cash balances in the Water Fund will equal approximately two years of expenses by FY 2020 while cash balances in the sewer Fund will equal approximately one year of expenses by FY 2023.

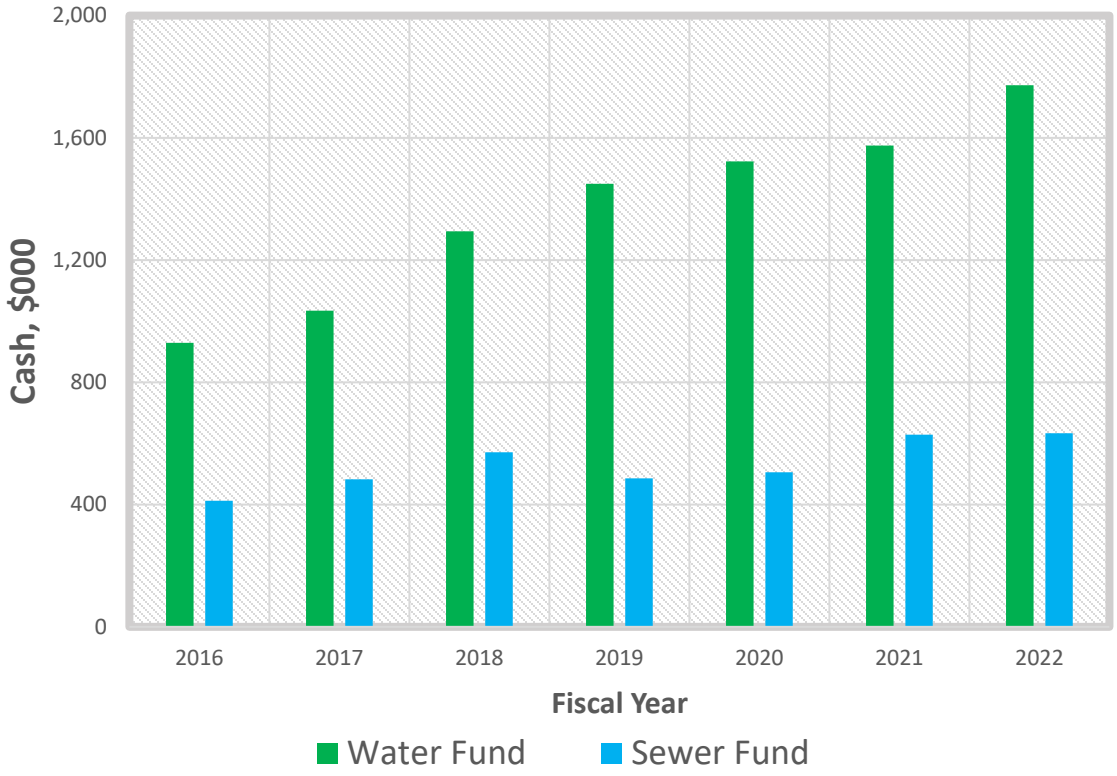


Introduction

In February 2023, the Town of Denton requested the Maryland Center for Environmental Training (MCET) to perform a water and sewer rate sufficiency assessment and recommend a future rate structure (FY 2024 – FY 2029) to ensure a fair and stable coverage of future increases in water and sewer O&M, debt, and capital expenses.

Previously, MCET completed rate sufficiency studies in 2014 and 2018. Town water rate increases have been timely in increasing Water Fund cash balances. However, sewer rate increases have been only partially able to cover expenses, thus sewer rate increases will be necessary beyond FY 2023 to increase Sewer Fund cash balances. Cash balances for the Water and Sewer Funds from FY 2016 through FY 2022 are shown in Figure 6 below.

Figure 8. Year End Cash Balances, $000



Water and Sewer Enterprise Funds must each be self-supporting. The cost of operating and maintaining the water system must be supported by water fees and charges collected from water customers. Likewise, the cost of operating and maintaining the sewer system must be supported by sewer fees and charges collected from sewer customers.

MCET's financial analysis process included a review of the Town's historic water and sewer service rate structure (FY 2016 – FY 2023) and connection charges collected from new customers. Both existing and new customer revenue streams are used to cover O&M, debt, and pay-as-you-go (PAYGO) capital outlay expenses.

Water and Sewer Fund Financial Statements are audited and recorded separately from the General Fund. The Town of Denton's Water and Sewer Fund Financial Statements post separate cash balance, revenue, and expense information. Historic water and sewer debt expense information was developed using Town budget information along with debt information. Cover ratios (ratios of Revenues/Expenses) were then calculated for combined, separate water, and separate sewer revenue/expense streams to determine rate and revenue sufficiency.

Annual Financial Statements (provided by the Town's Finance Department) report audited information on revenues, expenses, and cash balances. Thirteen (19) years of Annual Financial Statements (FY 2004 – FY 2022) are available. Annual "charges for services" (Base Fee and Usage Charge revenues combined) are shown in a line item on the "Statement of Revenues, Expenses, and Changes in Fund Position" for both Water and Sewer Funds. Operating expenses, debt, and capital expenses are shown separately. The "Statement of Cash Flows" shows revenues and expenses on a cash basis.

Customer base (e.g., population, housing units, accounts) and water consumption data were essential to this study. Demographic and water consumption data was provided by the Town and trended (FY 2016 – FY 2022) to compute water usage on a per Equivalent Dwelling Unit (EDU), per household, and per capita basis.

Revenues needed to cover future expenses are projected using best estimates of forecasted number of accounts, historic water usage parameters, and projected water and sewer service rates.

Pumped and metered water data, rainfall data, and wastewater treated data was provided by the Town's Department of Water and Wastewater Operations. Eighteen (21) years (2000 – 2022) of data is available. Water consumption data is used to determine water usage per household (gpd/household), water usage per capita (gpd/capita), and per ERU (gpd/ERU). The Town assigns ERUs to users based on criteria provided in rate ordinances. For modeling purposes, water consumption in gpd/ERU and gpd/capita is preferred over gpd/household for forecasting purposes. Local rainfall data was also provided by the Town to determine the effect of precipitation on metered water usage.

Water and Sewer Rate Structures and Revenue Sufficiency Studies

Small towns face a challenge in providing water and sewer services because they serve a smaller customer base. Small towns need to periodically evaluate water and sewer rates to ensure that "revenues cover expenses."

Key questions to answer during revenue sufficiency assessments:

1. Are revenues covering current expenses?
2. Is the population increasing or decreasing?
3. Is water usage increasing or decreasing (water conservation)?
4. Will projected revenues cover future expenses?
5. Are unreserved cash balances available for unexpected expenses?
6. Is the Town rate structure fair and equitable to water and sewer customers?
7. Is the Town financially able to build new facilities?
8. Can the Town apply for grants and/or loans?
9. What effects do the economy, inflation, or interest rate changes have on Town revenues?

Water and sewer (W&S) agencies use a range of rate structures to bill customers for services. Almost all W&S agencies use a combination of fixed "base charges" and volumetric "usage charges". However, considerable variations exist in how rates are calculated and how different customer classes are charged. Regardless, the price of water and sewer services must roughly equal its cost or value to produce, store, and distribute water and/or treat wastewater if equity among customers is to be maintained, a concept principle referred to as "cost-based" or "cost of service".

Most W&S agencies use the same rate structure for residential, business, commercial, and industrial customers, but some have separate rates for different customer classes. Water and sewer bills are almost always calculated based on metered water consumption quantities. Consequently, water use patterns have a strong influence on revenue receipts and on an agency's financial position. The relative share of an agency's water usage consumed by different customer sectors

can affect the agency's revenue and costs, and the vulnerability of its revenue generation to customer demand fluctuations, e.g., seasonal customers, seasonal weather variations.

The primary test for rate adequacy is available cash balance. Target cash balances should be equal to or greater than six months of expenses - considered a best management practice. Maintaining cash balances is also an indicator that adequate customer revenues are collected to cover system operating expenses and debt. As cash balances rise, revenues exceed expenses; as cash balances fall, expenses exceed revenues.

Water and sewer rates are priced to generate revenues that will cover operating and maintenance expenses (O&M), debt, and pay-as-you-go (PAYGO) capital outlay expenses. Water and sewer rates should be cost-based, equitable, and set at a level to ensure revenue sufficiency. Rates should also be easy to understand and administer.

Three rate structures commonly used for billing W&S services are as follows:

1. Fixed base rate ($/ERU/quarter)
2. Fixed base rate ($/ERU/quarter) for a prescribed minimum water usage along with a volumetric rate ($/1000 gals) for water usage over minimum
3. Uniform volumetric rate ($/1000 gals), no base rate, no minimum water usage rate

The rate structure adopted by the Town of Denton for billing water and sewer service is a combination of fixed base charge (no minimum volume) and a usage charge for water consumption. With an adequate base charge/usage charge structure, the Town is assured recovery of fixed expenses, e.g., salary expenses, utility, capital outlay, and debt expenses. A combination base charge/usage structure is Town friendly for revenue generation purposes.

In many cases, agencies charge different rates for customers living inside or outside municipal boundaries. Out-of-town customers who are charged a different water and sewer rate than in-town customers pay as much as 2 times more than in-town customers.

Water and sewer service rates are adopted to recover the cost of operating, maintaining, and financing improvements in water and sewer systems. Typically, water and sewer charges are collected at the beginning of each quarter based on water used in the prior quarter. The Town of Denton mails out water and sewer bills the first week in January, April, July, and October. Property owners have until the 20th of the month to pay the bill without penalties.

Water and Sewer rate studies and revenue sufficiency studies typically consist of three interrelated analyses:

1. Multi-year Financial Analysis: Develop a financial plan that meets future obligations of the Water and Sewer Enterprise Fund, recommend reserve requirements, and assure that the coverage ratios are met. Expenses and revenues are projected for 3 - 5 years in financial forecasts to identify annual increases in operating and maintenance (O&M) expenses, any known capital improvement program (CIP) expenses, and debt service expenses for capital improvements. The analysis compares revenues to expenses (e.g., coverage ratios) to determine annual revenue adjustments, which results in rate increases typically due to inflation and/or capital improvements. In addition, the long-term financial forecast identifies and maintains adequate cash reserves based on agency fiscal policies, e.g., typically unreserved cash balances no less than 6 months of O&M and debt expenses.

   Key Coverage Ratios that can be used in rate studies include:

   a. Coverage Ratio = $\frac{\text{Operating Revenues}}{\text{Operating Expenses}}$

Coverage Ratio is a comparison of system revenues to expenses (with debt) and should be > 1.1 for revenue sufficiency, the bigger the better.

b. Debt Coverage Ratio = $\frac{\text{(Total Revenue – Operating Expenses)}}{\text{Debt Service Expenses}}$

This ratio shows how well water and sewer systems can repay debt, e.g., principal and interest on loans; >1.25 is a normal target for loan/debt coverage. Again, the bigger the better.

c. Fixed Expense Cover Ratio = $\frac{\text{Base Charge Revenues}}{\text{Fixed Operating and Debt Expenses}}$

For this study, base charge revenues needed to be analyzed for sufficiency, so a new coverage ratio was developed. (Target > 1.0)

d. Variable Expense Cover Ratio = $\frac{\text{Usage Charge Revenues}}{\text{Variable operating Expenses}}$

Likewise, usage charge revenues needed to be analyzed for sufficiency, so a new coverage ratio was developed. (Target > 1.0)

2. Cost of Service Analysis: Annual expenses and revenues are identified and distributed between the water and sewer systems. The analysis allocates revenue requirements based on how costs are incurred. For example, what fixed expenses should be considered in the base rates, what variable expenses should be included in the volumetric rates.

3. Rate Design: Equitable and proportionate schedules of fixed and volumetric rates are prepared and designed to recover water and sewer expenses. Rate schedules developed consider both the pricing and structure of the rates to collect the appropriate and targeted level of revenues. Policy objectives are also considered during rate design, such as target minimum cash reserves and coverage ratios and encouragement of water conservation.

Policy objectives are blended with cost-of-service objectives to achieve a balance of rate equity and fairness, financial stability, and resource conservation goals. Future adjustments to the rate structure can assist the Town in achieving different goals and objectives, such as revenue stability, water conservation, or affordability for essential use.

4. Water usage: Determining water consumption is critical when setting water and sewer rates since water usage per customer has been declining over the past two decades. Whether the result of changes in rates, weather, household size, water conservation policies, economic realities, or a combination of all factors, lower levels of water use per customer likely represents a "new normal" for water and sewer utilities. Future financing strategies should focus on maintaining revenue stability and financial solvency in the context of lower water demand.

Significant Observations - FY 2016 - 2022

1. Water System - Water for the Town of Denton is pumped from three wells drilled into the Piney Point Aquifer. Well #3, drilled in 1970, is located off Kerr Avenue and Md. Rt. 404 (Pumping capacity - 440 gpm). Well #5, drilled in 2000, is located south of Engerman Avenue and West of Park Lane (Pumping capacity - 510 gpm). Well #6, drilled in 2010, is located on Camp Road (Pumping capacity – 500 gpm).

2. Water production and water usage (metered) has slowly increased during the past ten years. The most recent 3-year average of water pumped from the wells was 331,000 gpd, or approximately 43.0% of the system's 770,000 gpd permitted capacity. The most recent 3-year average of water metered to customers was 297,000 gpd. The unaccounted water loss of 32,000 gpd represents a loss of only 9.6%.

Figure 9. Water Production versus Water Billed

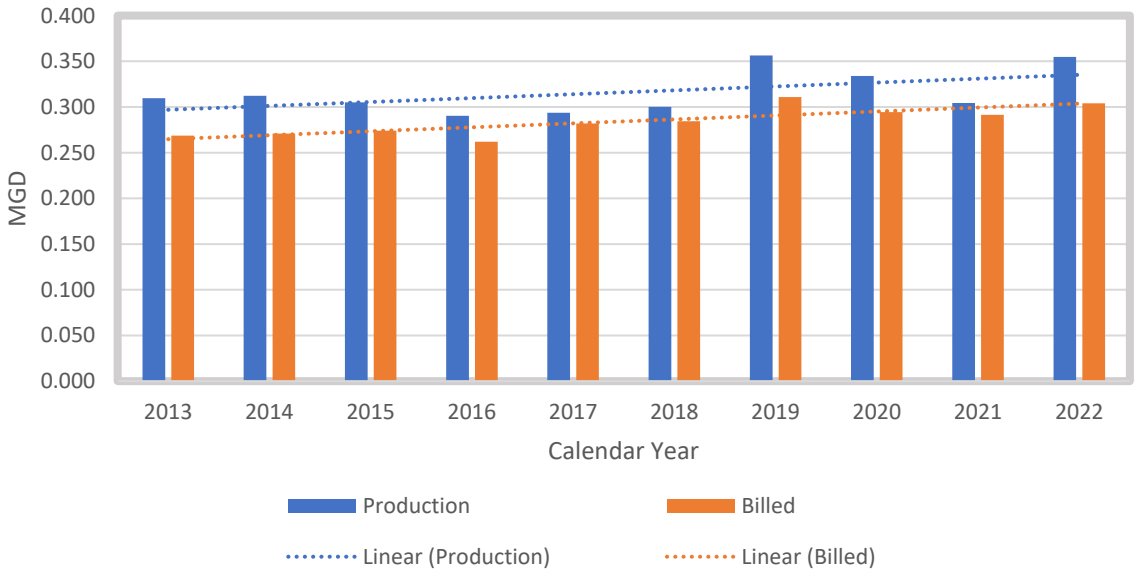


Table 3. Pumped and Metered Water				
3-year Averages (gpd) FY 2019 – FY 2022		Permitted Capacity (gpd)	Maximum Demand (gpd)	Available Capacity (gpd)
Pumped (Wells)	331,000	770,000	1,000,000	439,000
Metered	297,000	The Town's unaccounted for water is well below national averages (15%).		
Unaccounted for	32,000			
% Loss	9.6%			

The Town has three water storage tanks, one with 100,000 gallons of storage capacity and two with 300,000 gallons of storage capacity.

3. Sewer System

The Town operates and maintains 11 wastewater pumping stations. Collected wastewater is pumped to the Town's WWTP, which was upgraded to Biological Nutrient Removal (BNR) in 1999 and then to Enhanced Nutrient Removal (ENR) in 2012. The treatment plant uses an Biolac activated sludge process to biologically remove nitrogen. Phosphorus is removed chemically. As required by the WWTP's NPDES permit, total nitrogen (TN) and total phosphorus (TP) discharges from the plant must be less than 9,746 lbs/yr (<4.0 mg/l) and 731 lbs/yr (<0.3 mg/l), respectively. Permitted capacity of the WWTP is 0.8 MGD with a peak of 2.67 MGD.

The most recent 3-year average of wastewater treated was 418,000 gpd or approximately 49% of the system's 800,000 gpd permitted capacity. The most recent 3-year average of water metered to customers was 297,000 gpd. Excess inflow/infiltration of 121,000 gpd represents an infiltration/inflow (I/I) rate of 28.9%.

Table 4. Wastewater Treated				
3-year Average (gpd) FY 2019 – FY 2022		Permitted Capacity (gpd)	Peak Capacity (gpd)	Available Capacity (gpd)
Wastewater Treated	418,000	800,000	2,670,000	382,000
Water to customers	297,000	I/I in most wastewater systems is approximately 30%.		
Excess I/I	121,000			
% I/I	28.9%			

4. New customers (growth) are billed connection charges prior to connecting to either the water or sewer systems. Water connection charges since FY 2008 have been $4000/EDU; sewer connection charges since 2008 have been $5000/EDU.

5. Usage charge revenues, base charge revenues, and connection charges collected are used to cover operating, debt, and capital expenses.

6. Water charges from FY 2013 through FY 2017 did not change. The base fee was $25/quarter/EDU and the usage rate was $3.45/1000 gallons

7. Sewer charges from FY 2013 through FY 2017 did not change. The base fee was $25/quarter/EDU and the usage rate was $6.41/1000 gallons

8. The recommended coverage ratio (Revenues/Expenses) to pay for any unexpected/unplanned expenses should average greater than 1.1.

9. Annual water consumption averages slightly less than 100 MGs/year. Recent consumption rates have averaged less than 62 gpd/capita.

10. Precipitation effects water usage. In recent years, rainfall (60 inches/year) has been slightly above the average of 54 inches.

11. Revenue coverage of Water Fund operations and maintenance (O&M), debt, and capital outlay expenses is more than adequate (e.g.,> 1.1) using combined water service charges and other revenues. Average cover ratio during FY 2017 – FY 2022 equaled 1.15. Water base and usage service charges are both priced adequately to cover Water Fund expenses without help from other revenues. Water base charges are priced well enough to nearly cover Water Fund fixed employee and debt expenses. Usage charge revenues are the largest source of revenue in the Water Fund.

12. However, revenue coverage of Sewer Fund operations and maintenance (O&M), debt, and capital outlay expenses is less than adequate using combined existing customer service charges and other revenues. Average cover ratio during FY 2017 – FY 2022 equaled 1.04. Sewer base and usage service charges are priced too conservatively to cover Sewer Fund expenses without help from other revenues. Sewer base charge revenues barely cover half of Sewer Fund employee expenses and debt and should be the focus of any future rate increases. Usage charge revenues are the largest source of revenue in the Sewer Fund.

13. Town water and sewer connections are split approximately 80% residential and 20% non-residential based on water meter counts. Residential connections consist of single and multi-family (apartments) facilities. Non-residential connections consist of commercial, industrial, institutional, schools, churches, and governmental facilities. Because the Town of Denton is the County seat of Caroline County, a 100-resident correctional facility and 24 other Town, county, state, and federal governmental facilities are in the Town. The Town has an historic downtown district as well as a central business district. Town growth will consist of Town infill along with suburban and mixed residential, commercial, and industrial development on the outskirts of Town.

    According to the 2010 census data, Denton had a population of 4418. The number of residential housing units totaled 1791. Following is a table comparing 2000 and 2010 Census data for the Town of Denton.

Table 5. Census Data – for the Town of Denton			
	2000	**2010**	**2020**
Population	2960	4418	4848
10-year Increase	(17)	1458	430
Percent Increase, %	(0.6)%	49.3%	9.7%
Housing Units	1264	1791	1864
10-year Increase	172	527	73
Percent Increase, %	15.8%	41.7%	4.1%
Housing Units Occupied	1140	1606	1678
Percent Occupied, %	90.2%	89.7%	~90%

14. Significant system growth (e.g., new connections) was observed beginning in FY 2015 and peaked in FY 2016. Approximately 50 new EDUs paid to connect during that 2-year period. Growth is expected to continue at a moderate rate (5 to 6 new connections/year).

15. Future rates should provide reliable, stable and adequate revenue to meet the Town's financial, operational, and regulatory requirements. Rate levels should be stable from year to year - no "rate shocks". Conservative growth assumptions and prudent financial planning are fundamental in ensuring adequate revenues to promote agency financial stability.

16. Guidelines from the Water Environmental Federation's (WEF), "Financing and Charges for Wastewater Systems" and the American Water Works Association's (AWWA), "Principles of Water Rates, Fees, and Charges" were used to develop recommended water and sewer rates and rate structures in this study.

References and Source Information

A. 2014 Town of Denton Rate Study by MCET
B. 2018 Town of Denton Rate Study by MCET
C. Town of Denton Water and Sewer Ordinances
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F. Town of Denton's, "2010 Comprehensive Plan", Chapter 5 - Water Resources Element
G. Water and Sewer Debt Schedules for Town of Denton
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I. AWWA's, "Principles of Water Rates, Fees, and Charges", Manual of Water Supply Practices – M1, 2000
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