

TOWN OF ROUND HILL

**WATER AND SEWER
RATE STUDY**

FINAL VERSION

July 5, 2023

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1. Historical Background and Executive Summary

The current rate structure for the Town of Round Hill was set from the May 19, 2021 Water and Sewer Rate Study. That 2021 study recommended a substantial increase in water availability fees and annual 3% increases in user rates. It assumed \$3M in bond financing to build the Southern Water Tank and an additional \$3M in financing for other projects. The Town has set rates according to those recommendations.

This update to the rate study is to reflect several changes since the 2021 rate study:

- Though system growth (+89 units in 2 years) exceeded the 30/year scenario, household usage decreased significantly (142 gal/day down from 149 gal/day).
- Another large expansion in the Town 5-year capital improvement plan (CIP) which is now \$12.3M, up from \$9M in 2021 and \$5.4M back in 2019, with most of the increases due to inflation in projected construction costs.
- Large inflation in operating costs (approximately 8%/year) has occurred well beyond the estimates from the 2021 rate study of 2% per year.
- Borrowing costs have increased significantly in the past 2 years. While 5-6% interest rates are historically normal, they are well above the 2-3% assumed at the time of the 2021 rate study and the Town is planning to secure new debt.

The changes in planned CIP and borrowing costs are particularly stressful on the current rate structure. The current rates were designed to fund a \$9M CIP in a favorable (2-2.5%) interest rate environment, not a \$12.3M CIP in a moderate (5-5.5%) interest rate environment. There are very few new availability fees incoming to buffer the user rates from capital costs.

Avoiding a structural utility system deficit requires a major adjustment in either planned capital construction or user rates, as these are outcomes that can be controlled and predicted accurately. Efficiencies in operations and additional sources of funding must also be pursued, but neither can produce predictable outcomes so their impact on rates should be after they have been realized, not anticipatory (e.g. used to reduce future rates or delay future rate increases). Regular reassessment of system financial performance is recommended to ensure the lowest sustainable rates.

Any rate study only provides a snapshot in time of the best rates for the system. It relies on assumptions about the housing market, growth in operating expenses, inflation, the need for various capital projects, and other factors which history has proven can only be guessed. Sound annual management of the utility system is ultimately what matters most to fiscal health. Rates merely reflect the results of that management and actual costs.

After analyzing the current financial position of the system, updating the user population, incorporating a revised capital plan and reviewing various assumptions in the financial model, this 2023 Water Rate Study is submitted for adoption by the Town Council. A significant increase in both user and availability fees of 15% for FY24 is recommended for next year, followed by a second 15% annual increase in FY25, then 5% annual

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increases in FY26 and beyond (or adjusted as needed) to track inflation in operating and capital costs. A simpler alternative of increasing rates 24% in one year is also shown.

Due to the shift in system costs to more water projects (vs. wastewater projects), it is recommended that the subsequent 5% annual increases be achieved through water rate increases rather than equally balanced water and wastewater rate increases. This is to adjust the ratio of water/wastewater rates over time to better represent the true ratio of projected system costs. The rate increases to achieve this are shown in Table 1 where in later years there are no sewer rate increases at all but instead only water rate increases (resulting in an average rate increase for combined water/sewer users of 5.0%).

Table 1. Recommended Usage and Availability Fees for Fiscal Years 2024-2028

Recommended Rates	FY24	FY24	FY25	FY25	FY26	FY26	FY27	FY27	FY28	FY28
	Proposed	%	Proposed	%	Proposed	%	Proposed	%	Proposed	%
Water Availability	\$ 14,754	24.0%	\$ 18,295	24.0%	\$ 20,029	9.5%	\$ 21,849	9.1%	\$ 23,761	8.8%
Sewer Availability	\$ 15,391	7.5%	\$ 16,371	6.4%	\$ 16,371	0.0%	\$ 16,371	0.0%	\$ 16,371	0.0%
Combined Availability	\$ 30,145	15.0%	\$ 34,666	15.0%	\$ 36,400	5.0%	\$ 38,220	5.0%	\$ 40,132	5.0%
Water Usage (1000 gal)	\$ 8.85	19.8%	\$ 10.60	19.8%	\$ 11.82	11.5%	\$ 13.10	10.8%	\$ 14.45	10.3%
Sewer Usage (1000 gal)	\$ 12.40	11.8%	\$ 13.84	11.6%	\$ 13.84	0.0%	\$ 13.84	0.0%	\$ 13.84	0.0%
Combined Usage	\$ 21.25	15.0%	\$ 24.44	15.0%	\$ 25.66	5.0%	\$ 26.94	5.0%	\$ 28.29	5.0%

The alternative structure with a single 24% rate increase, again followed by 5% annual increases beginning in FY25 – is shown in Table 2.

Table 2. Alternate Usage and Availability Fees for Fiscal Years 2024-2028

Alternate Rates	FY24	FY24	FY25	FY25	FY26	FY26	FY27	FY27	FY28	FY28
	Proposed	%	Proposed	%	Proposed	%	Proposed	%	Proposed	%
Water Availability	\$ 14,754	24.0%	\$ 16,380	11.0%	\$ 18,087	10.4%	\$ 19,879	9.9%	\$ 21,761	9.5%
Sewer Availability	\$ 17,751	24.0%	\$ 17,751	0.0%	\$ 17,751	0.0%	\$ 17,751	0.0%	\$ 17,751	0.0%
Combined Availability	\$ 32,505	24.0%	\$ 34,131	5.0%	\$ 35,838	5.0%	\$ 37,630	5.0%	\$ 39,512	5.0%
Water Usage (1000 gal)	\$ 9.16	24.0%	\$ 10.31	12.6%	\$ 11.51	11.6%	\$ 12.78	11.0%	\$ 14.11	10.4%
Sewer Usage (1000 gal)	\$ 13.75	24.0%	\$ 13.75	0.0%	\$ 13.75	0.0%	\$ 13.75	0.0%	\$ 13.75	0.0%
Combined Usage	\$ 22.91	24.0%	\$ 24.06	5.0%	\$ 25.26	5.0%	\$ 26.53	5.0%	\$ 27.86	5.0%

These rates are based on several assumptions as described later, most importantly projections of operating cost inflation and construction costs for several large projects.

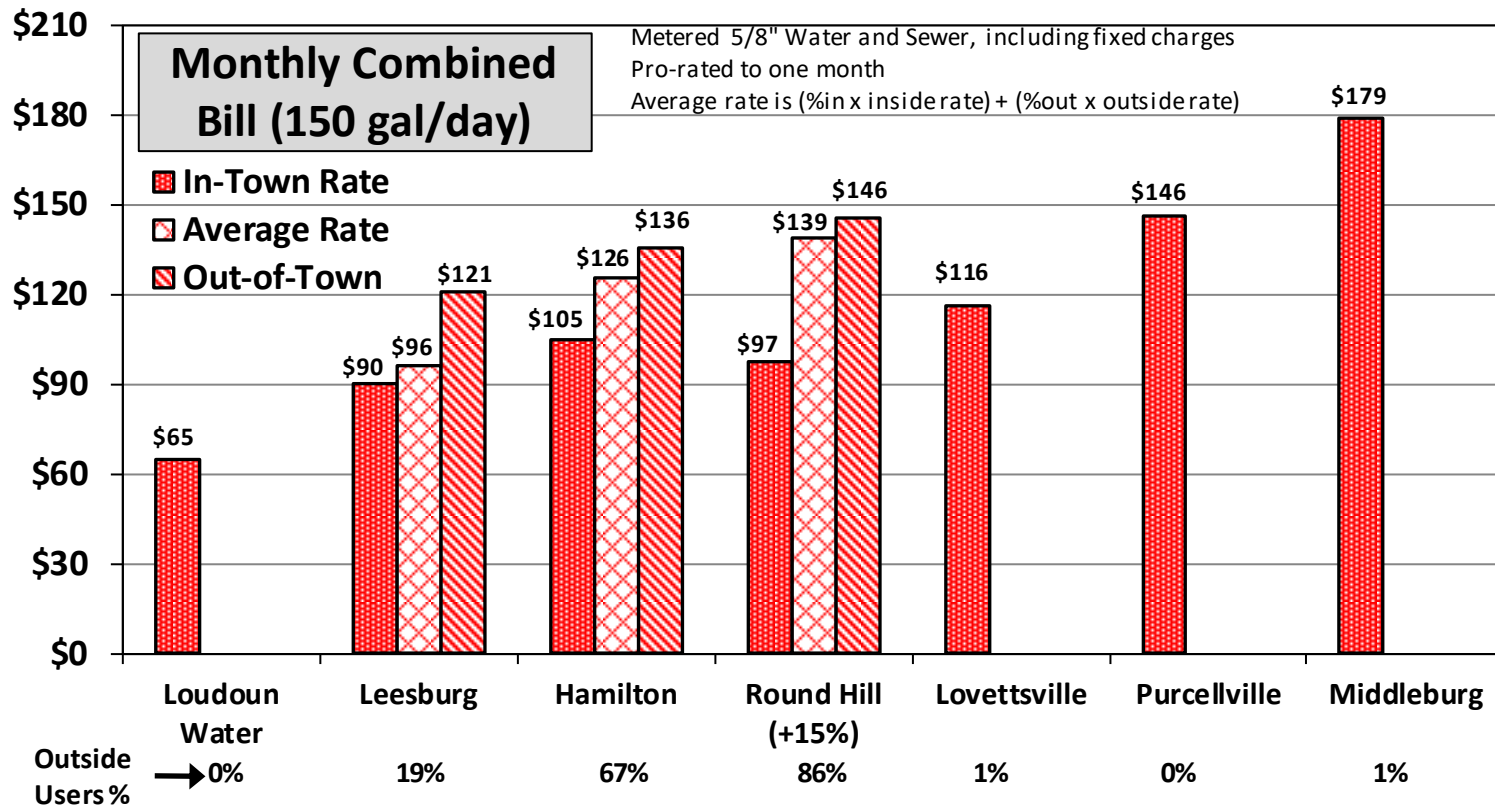
The Town is pursuing a policy of expanding town boundaries to shift existing users from out-of-town to in-town. Since the Town does not control the outcome of changes in boundary (which must also be approved by the County), the calculated rates herein are based on existing boundaries. Shifting small amounts of connections, such as a smaller neighborhood with less than 100 connections, would not have a significant change on calculated rates. But large shifts, such as incorporating the 1165 homes in the Round Hill Owner’s Association, would require recalculation of rates to keep system revenues even.

It is recommended the financial model be reviewed annually after the Town’s annual audit along with updates to projected capital improvement costs to confirm whether the planned rates still conform to fiscal policies or if adjustments to the recommendations herein are warranted. A comprehensive rate study should be performed no later than 5 years, and earlier if there is any major change in circumstances.

Town of Round Hill Water and Sewer Rate Study

A comparison of FY24 utility rates with other Loudoun systems (including the recommended 15% increase for Round Hill) is shown below. The comparison is for a 150 gallon/day user, including any fixed charges, and pro-rated to a month (Leesburg and Loudoun Water bill quarterly, Lovettsville bills monthly, and other systems bill bi-monthly). In addition to the in-town and out-of-town rates, an average system user rate is shown considering the proportion of out-of-town customers. Because 99% of system users for Loudoun Water, Lovettsville, Purcellville, and Middleburg pay their in-town (or core) rate, the out-of-town rate column is omitted for those localities to avoid confusion as higher rates only apply to a very small portion of users. At the bottom of the figure, the ratio of outside customers is shown for each system (for example Round Hill has 86% of its system users out of town).

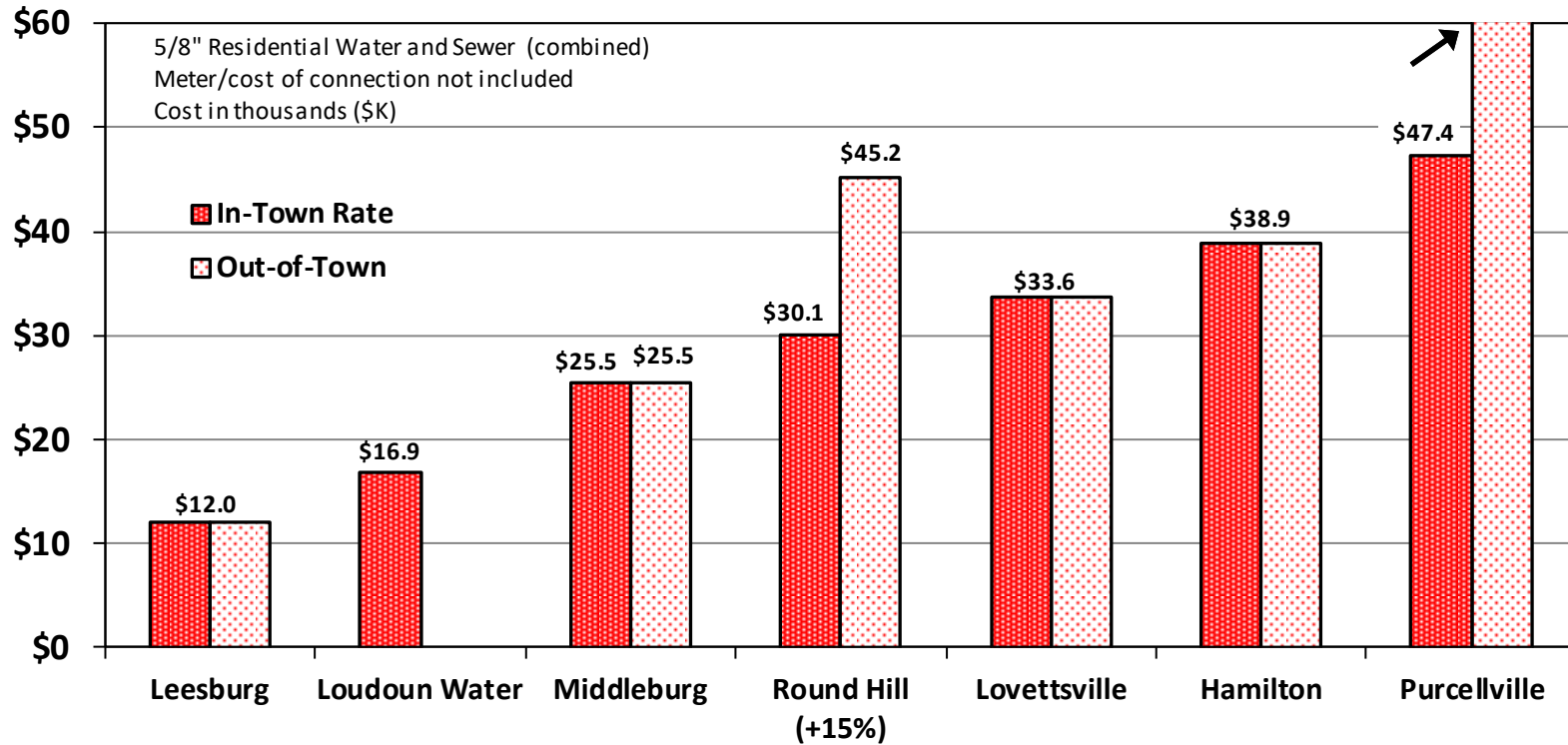
Figure 1. Fiscal Year 2024 Loudoun Utility Rates (Monthly Water & Sewer, 150 gallons/day)



Town of Round Hill Water and Sewer Rate Study

A comparison of availability fees with other Loudoun systems for FY24 (including the recommended 15% increase for Round Hill), is shown below. The comparison is only for availability fees and does not include connection charges or meter fees often associated with new connections (connection fees are usually set from actual costs of labor and meters and not part of capital financing).

Figure 2. Fiscal Year 2024 Loudoun Availability Fees (Residential Water & Sewer)



Town of Round Hill Water and Sewer Rate Study

The remainder of this report is organized as follows:

Section 2 provides a general discussion of how rates and fees are computed. Several key terms are defined that will be used during this report.

Section 3 provides a review of the current and expected future system users.

Section 4 provides a review of the different kinds of utility revenues and how they were modeled.

Section 5 provides a review of utility expenses, including a review of the Capital Improvements Plan and existing debt.

Section 6 provides an analysis of the cost of growth and computes availability fees.

Section 7 provides an analysis of the total system finances and computes user fees under the recommended availability fees.

Section 8 provides a discussion on the financial implications of the out-of-town rate multiplier. The cost per household of the multiplier is calculated.

Section 9 includes miscellaneous tables including recommended rate and fee schedules.

2. Overview of a Rate Study

This section provides an overview of how rates and the financial model are calculated. It is for explanatory purposes. The only significant difference in approach from prior rate studies is that availability fees were not comprehensively re-analyzed, but instead a flat adjustment was made in line with the adjustment made for user rates.

2.1. Fiscal Year

The Town of Round Hill fiscal year begins on July 1. The year beginning July 1, 2023 (e.g. 2023-2024) is FY24. This report recommends new rates for FY24 and beyond.

2.2. Virtual Water and Sewer Funds

Some users only receive sewer service, and some only receive water service, so the Town carries separate rates for each. This study estimates expenses and revenues from sewer operations to determine fair sewer rates, and from water operations to determine fair water rates. For the purposes of this report, there is a virtual water fund and a virtual sewer fund that are studied even though in reality the Town accounts for all utility costs and revenues in a single utility ledger.

2.3. Operating vs. Capital Expenses

Operating and Maintenance (O&M in this report) expenses are used to perform the daily functions of the system – salaries for utility system employees, supplies to treat water and wastewater, electricity to operate the facilities, replacement parts for equipment which wears out or breaks, permit fees that are paid to the state, lab equipment and testing costs to verify water quality, and other items. Often, usage fees (i.e. the bi-monthly bill) are associated with operating expenses. In fact, usage fees are also used to cover capital expenses, especially those that are required to improve service for current users.

Capital expenses are costs used to design and construct new or upgraded treatment facilities and lines, and to service the debt from prior facilities construction. Availability fees (i.e. an upfront fee paid when a new connection is added to the system) are often associated with capital expenses though most future capital expenses will not be due to growth, but instead recapitalization, resiliency and quality improvements.

2.4. Fiscal Policies

The Town of Round Hill manages public funds according to an adopted fiscal policy, most recently updated in November of 2022. There are four policies that set financial guardrails to assess sufficiency of reserves and exposure to debt. The rate study predicts future financial statements of the utility system and compares them to the requirements of our fiscal policy. Policies are guidelines, not absolute thresholds, but they are also public promises. Any deviation from an adopted fiscal policy should be brief and with a plan to restore system financial performance in a short period of time.

Town of Round Hill Water and Sewer Rate Study

- Section II (Reserve Benchmark). 1. *The Town shall maintain, at the end of each fiscal year, unrestricted reserves in the General and Utility Funds equal to their annual operating and debt service expenses. a. Utility Fund reserve is calculated as operating expenses without depreciation plus General Fund transfers. Debt service costs are included but other capital expenses are not included.*
- Section III (Debt Ratio Benchmark). 1. *The Town shall keep debt servicing costs below 30% of total Utility Fund expenditures, not including any transfers to reserves. Expenditures include both operating and capital expenses, as well as any transfers to the General Fund.*
- Section IV (Debt Level Benchmark). 2. *The Town shall carry pro-rated bonded debt in the Utility Fund that is no greater than 2% of real property assessments. This benchmark shall be calculated by pro-rating the total Utility Fund debt by the portion of utility customers within Town boundaries.*
- Section V (Financing of Capital Improvements). 1. *The goal of the Town is to finance at least 25% of Utility Fund capital improvements (in excess of proffers) from non-debt resources.*

2.5. Debt Financing and Reserve Benchmark

Currently, the Town carries relatively little utility fund debt (the last major new borrowing was twenty years ago, though the very substantial 2001 VRA and 2003 VRA loans have been refinanced multiple times). Most current infrastructure was provided or funded as a result of availability fees and proffered facilities from the Consent Decree with Round Hill Investors.

The provided infrastructure and availability fees, while significant, have also been inadequate and the Town has used cash from operating surpluses to fund other capital needs (such as required upgrades to those same facilities) for the last 20 years. This circumstance was a result of the Town being enjoined from raising availability fees on new Consent Decree connections (which constituted most growth in the system). With most incoming users paying availability fees that cannot be adjusted for insufficient infrastructure, rising construction costs and increasing state and federal mandates, funding ongoing capital improvements through usage fees became the only method of ensuring growth paid for growth.

The Town has secured approval for new debt to fund the proposed Southern Water Tank (but not yet closed) and is seeking approval for approximately \$2.6M in new bank placement debt to fund other near-term capital projects. Finally a third new loan to fund the Evening Star Treatment Plant (ESTP) is proposed in this study. Debt servicing for these new loans will be paid primarily by operating surpluses, not availability fees.

Despite planning three major borrowings in the next several years, the Town will still be well below its fiscal policy benchmarks on total debt and debt ratio, and the primary determinant of sufficient rates will be the 12 month reserve level benchmark.

2.6. System Growth Model and the Multiplier

In previous rate studies the system growth model (anticipated new connections per year) was important. But in the last decade the Round Hill system has rapidly approached buildout (it is now at 94% of total future connections), and therefore only a modest annual increase in users is expected.

Round Hill receives different revenue from different users, so its model must include the different categories of users:

- In-Town Users: In-Town users pay the nominal rates and fees.
- Out-of-Town Users: Out-of-Town users who are not part of the consent decree pay 1.5x the availability fees and 1.5x the usage fees of in-town users. The 1.5 factor is known as the “multiplier”. Multipliers in other systems are as high as 2x, but other localities have no multiplier. There is a longer discussion of the multiplier later in this report.
- Consent-Decree Users: Round Hill Investors (RHI) and the Town of Round Hill entered into a 2000 legal agreement (the “consent decree”) that set aside a number of connections at pre-determined availability fees. These connections have been established in the following areas (all outside town limits): Villages of Round Hill, Mountain Valley, Greenwood Commons, Lake Point East, and the Bluffs (formerly known as Lake Point West and Upper Lakes). In 2022 the final residential consent-decree lot was built and so for the purposes of this and future rate studies consent-decree users can be treated as equivalent to out-of-town users.

The projected buildout is based on a lot-by-lot analysis of all possible connections in the Round Hill service area. For commercial and civic users, an equivalent number of residential connections (ERC) for each is allocated and included in the analysis.

2.7. Setting Availability and Usage Fees

System revenue comes from two primary sources: bi-monthly fees based on metered usage, and availability fees from new construction. The approach for setting rates for Round Hill usually began with determining fair availability fees on new construction based on the anticipated cost of growth (demand for new facilities, then setting usage fees after so that adequate reserve levels are maintained using an annual cash-flow analysis.

Because availability fees could only be adjusted for non-consent-decree users, the growth costs and fee revenues were segregated into two pools – consent decree and non-consent decree. Availability fees were then set to balance growth costs in the non-consent decree pool while leaving a large deficit in the consent decree pool (due to the inability to adjust consent decree availability fees) that was left to be paid for by raising usage fees.

The method for computing growth costs was very complex and not robust because the number of upcoming future connections and the estimates for future construction costs are both significant unknowns that cannot be predicted well. This topic is discussed more

fully in previous rate studies, but the ‘correct’ rate from the calculation is constantly changing even without the complications in Round Hill posed by the Consent Decree.

It is essentially impossible for any utility system to fairly charge the same (inflation adjusted) availability fee to every incoming user while also properly setting that fee to represent the best information available, since that information is constantly changing. Since the Round Hill system is almost built out, and availability fees represent a shrinking portion of future revenue, a growth-based re-evaluation of availability fees was not conducted. For this study it was decided to apply any required rate increases to existing usage and availability fees in equal proportion to meet required reserve levels.

Usage fees are based on metered usage of water (sewer usage is billed at the metered water usage, and sewer-only users have meters installed on their wells or pay a flat rate). Usage fees and availability fees are adjusted in tandem (equal rate increases) to equalize total system costs with total system revenues. This is depicted in Figure 3 below, where the connection income, the usage income and other income (minor) is balanced against O&M expenses, Capital Improvements Plan expenses, and debt expenses.

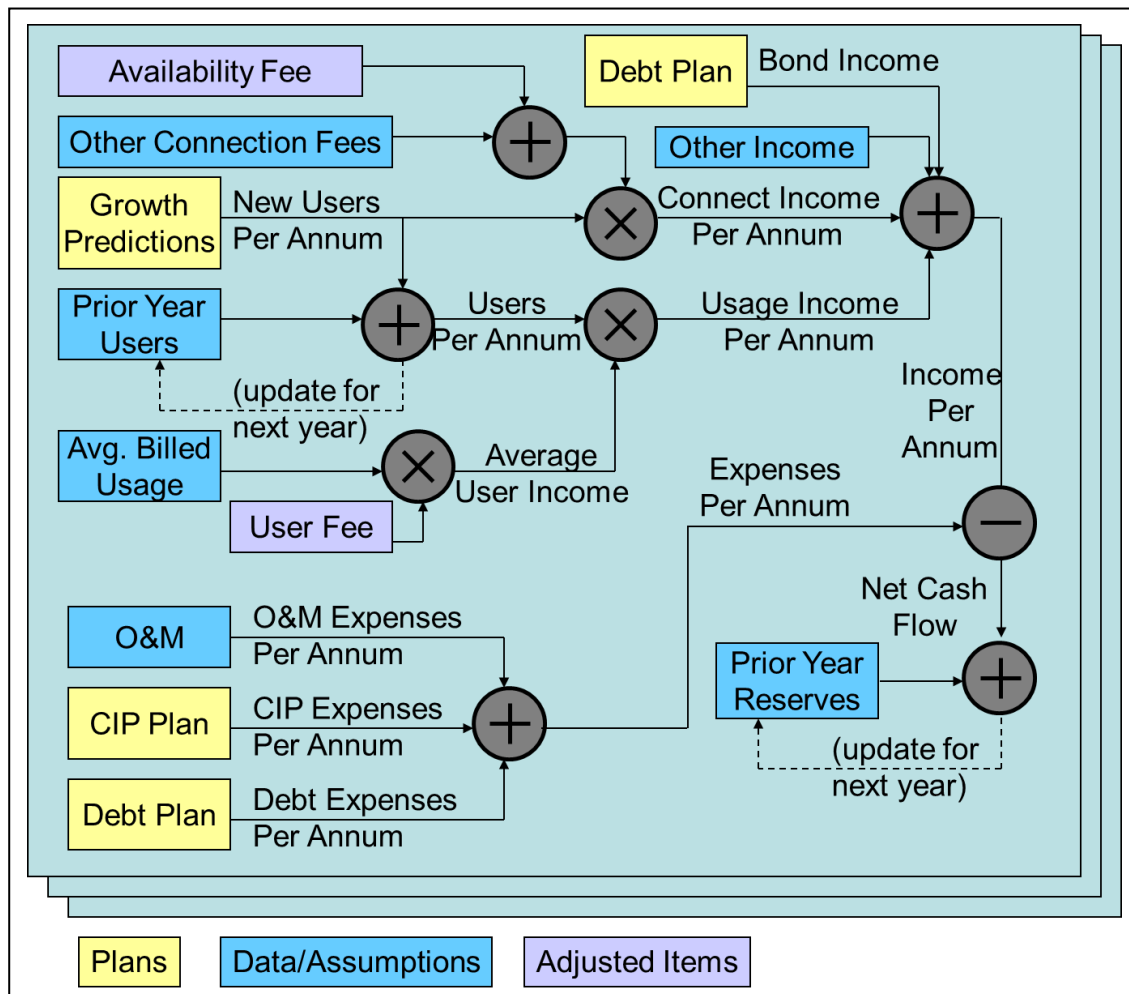


Figure 3. Setting Availability and Usage Fees

3. System Users and Growth Model

The current system users as of January 2023, and the potential number at 100% buildout are shown in Table 3 below by neighborhood (new users off Airmont Road, West Loudoun Street, etc. are included in the Town Streets neighborhood even if they are out-of-town). The Town Streets value also includes 50 equivalent residential connections for the Eastern Commercial District. Both Out-of-Town and Consent Users pay out-of-town rates – the distinction is that Consent users paid reduced availability fees.

Note that as of January 2023, 86% of users were out-of-town, and 14% are in-town. At system buildout, this proportion will be the same unless the Town were to enlarge via annexation or boundary line adjustments (a minor boundary line adjustment approved in December 2022 was incorporated into this analysis). Another change in boundaries was not considered by this report, but if significant would require a rate re-evaluation.

Table 3. System Users Current and Maximum Buildout by Neighborhood

	In-Town				Out-of-Town				Consent				Total			
	Current		Buildout		Current		Buildout		Current		Buildout		Current		Buildout	
	Wtr	Swr	Wtr	Swr	Wtr	Swr	Wtr	Swr	Wtr	Swr	Wtr	Swr	Wtr	Swr	Wtr	Swr
Totals By Neighborhood																
Town Streets	235	235	344	344	17	12	30	28	0	0	0	0	252	247	374	372
Brentwood Springs	0	0	0	0	95	95	95	95	0	0	0	0	95	95	95	95
Hillwood Estates	20	20	20	20	69	46	75	55	0	0	0	0	89	66	95	75
Fallswood/Poplar Hill	0	0	0	0	55	55	55	55	0	0	0	0	55	55	55	55
Stoneleigh	0	1	1	1	145	115	154	126	0	0	0	0	145	116	155	127
Villages	0	0	0	0	18	18	18	18	436	436	436	436	454	454	454	454
Mountain Valley	0	0	0	0	0	0	0	0	222	222	222	222	222	222	222	222
Greenwood Commons	0	0	0	0	0	0	0	0	40	40	40	40	40	40	40	40
Lake Point East	0	0	0	0	0	0	0	0	303	303	303	303	303	303	303	303
Lake Point West	0	0	0	0	0	0	0	0	77	77	77	77	77	77	77	77
Upper Lakes	0	0	0	0	0	0	0	0	87	87	87	87	87	87	87	87
Overall Total	255	256	365	365	399	341	427	377	1165	1165	1165	1165	1819	1762	1957	1907

Table 4. Growth Model

	Water				Sewer			
	In	Out	Con	Total	In	Out	Con	Total
Users in Start Year	255	399	1165	1819	256	341	1165	1762
Remaining Possible Lots	110	28	0	138	109	36	0	145
Ratio of Remaining Lots Expected	80%	90%	100%	82%	80%	90%	100%	82%
Final Buildout	343	424	1165	1932	343	373	1165	1881
New Users Per Year	2	3	0	5	2	3	0	5

The final buildout is assumed to be slightly below the maximum buildout (by approximately 25 lots) because not every by-right lot will be developed.

The historical growth of the system over the past six and a half years is shown in the figure below. Nearly 400 users have been added to the system in that time, and there are approximately 120 connections remaining. Round Hill is at 94% of projected buildout.

Annual average daily usage (over the past 12 months, or 6 billing periods) rose from 134 gallons-per-day to 149 gallons-per-day during the coronavirus pandemic (due to newer

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homes and more residents in their homes during the daytime hours). Daily usage has since dropped back down to approximately 142 gallons per day and stabilized, and this is the assumption used for the rate study.

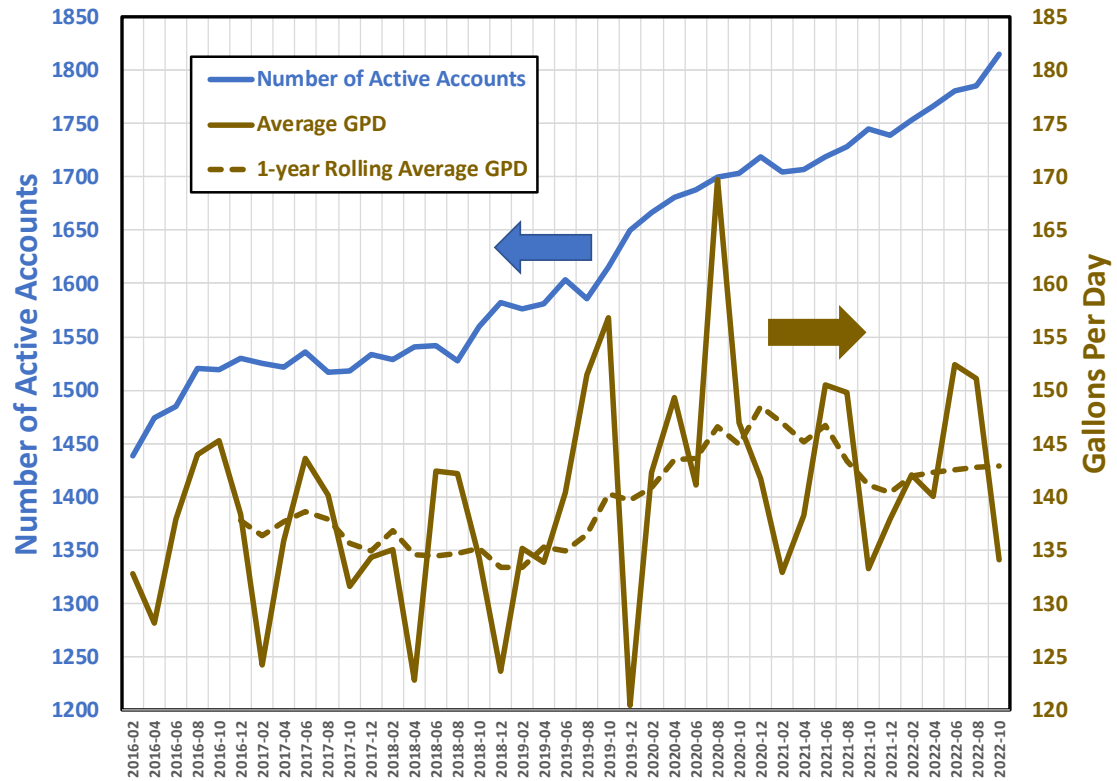


Figure 4. Recent History of User Accounts and Usage Per Account

4. Revenue Model

There are six categories of revenue that are covered by the current model:

Usage Fees: System users at the start of the fiscal year are each assumed to use 142 gal/day. All users are expected to pay their bills in full (unrecoverable accounts are assumed to be offset by late fees and penalties). The consumption of 142 gal/day only represents the amount of system water that is billed. The water system must be able to generate more to allow for seasonal variations, system waste, fire suppression, and unmetered connections. The sewer system must also be able to treat more than billed usage to allow for seasonal variations, infiltration, system return, and unmetered use.

Availability Fees: New users in a given fiscal year are assumed to pay the going availability fee and begin usage a year later.

Connection Fees: All users will pay a water connection fee of \$500 and a sewer connection fee of \$825. These fees recover actual costs (such as purchasing a meter) incurred by the town to connect the user to the system. The model currently does not assume these amounts to increase over time – if they did increase it would be only to offset additional costs incurred by the Town.

Other Income: An interest rate of 3% per year on cash reserves and bond escrow balance is assumed to account for Town investment of those funds per the fiscal policy.

Balance Forward: These are the existing cash reserves of the utility fund, totaling approximately \$4.9M, as projected for the end of the current fiscal year. Any annual surplus adds to these reserves, and annual deficits draw from them. Approximately \$1.8M of this reserve balance was assigned as a starting water fund balance, and \$3.2M as the starting sewer fund balance, based on accruals since the 2019 Rate Study.

Bond Revenue: This report assumes proceeds from three major new borrowings to pay for new capital construction: a \$2.6M bank placement in 2024 for near-term projects (Well D and WWTP Tertiary Filters primarily), a \$3.8M loan in 2025 to build the Southern Water Tank, and a \$3.2M loan in 2027 to rebuild the Evening Star Water Treatment Plant (ESTP). Finally, while it is beyond the 5-year window used to assess near-term fiscal policy compliance, a generic \$2.5M bond for future unspecified CIP costs was assumed in 2029 to show a possible funding mechanism for unspecified CIP costs in the 5- to 10-year window.

5. Expenses

There are three categories of utility expenses for both the water and sewer fund: O&M costs, CIP expenses, and debt expenses. CIP expenses can be further subdivided into specified CIP (named projects) and unspecified CIP (unnamed projects).

5.1. O&M Costs

Projected FY24 O&M costs are approximately \$1,090,000 for water and \$1,240,000 for sewer, including transfers to the General Fund (which are primarily repayments for labor performed by General Fund employees) but neglecting transfers to and from reserves. These costs are assumed to increase at 5% per year. This is below recent historical cost inflation of 8% per year, so tracking future growth in operating expenses will be necessary to verify this assumption.

Currently, 54% of O&M costs are salaries and benefits for utility system employees and time spent by general fund staff on utility matters. Another 15% are maintenance costs of utility buildings, easements, wells and lift stations, 8% are for supplies and equipment, 8% are energy costs, 3% are chemicals, and the remaining 12% are professional services, administrative costs, postage, insurance, and other miscellaneous expenditures.

The most important assumptions in driving required rates in the long term are the cost to construct major capital facilities in future years and the annual inflation in O&M costs. In order to track potential changes in O&M costs of 5% annually, this rate study assumes system rates are also increased 5% annually after any step adjustments.

However, if the national inflation environment returns to 2-3% then it would be possible to do the same with annual system rate increases as they are intended to track costs. If costs for utility service turn out to be greater or less, so will future rates, as they are only set to recover actual costs of service (the Town takes no profit from utility revenues and all income is put back into running the system).

5.2. Capital Improvements Plan (CIP) Costs

The projects in the Utility Capital Improvements Plan are listed in Table 5 below. The % Water shows what portion of the project is attributed to water vs. sewer costs.

Table 5. Capital Improvements 5-Year Plan Project List

Project	% Water	Description
Airmont Tank	100%	New storage tank in southern part of main zone.
Well D	100%	Well RND-D development costs.
Sewer Upgrades	0%	Upgrades to the WWTP (including relining SBRs)
Sewer Repairs	0%	Safety and critical upgrades to 719 Lift Station.
Water Repairs	100%	Miscellaneous well repairs and valve replacements.
ESTP	100%	Rebuild Evening Star Treatment Plant and expand.
Wells	100%	New source exploration and rights acquisition.
NewOfficeBldg	50%	Downscoped to only meet near-term storage needs.
Fleet	50%	New dump truck and backhoe.
TertiaryFilters	0%	Remaining costs to purchase/install new WWTP filters.
Stoneleigh	100%	Upgrades to Stoneleigh well vaults for safety.
Water Meters	100%	Replace water meter software and deploy radio readers.
Unspecified	50%	Miscellaneous or unknown future CIP expenses.

The costs for each fiscal year used for this report are shown in Table 6 below. Note that these costs only include FY24 and beyond projected actual expenses. The total project cost may be higher if FY23 and earlier expenditures are included. As shown, most major projects on the horizon are water system projects, not sewer.

Table 6. Projected Capital Costs By Year

Project	% Water	5-year Total	2024	2025	2026	2027	2028
Airmont Tank	100%	\$ 4,100,000	\$ 300,000	\$ 1,800,000	\$ 2,000,000		
Well D	100%	\$ 570,000	\$ 570,000				
Sewer Upgrades	0%	\$ 400,000	\$ 400,000				
Sewer Repairs	0%	\$ 150,000	\$ 150,000				
Water Repairs	100%	\$ 540,000	\$ 326,000	\$ 74,000	\$ 70,000	\$ 70,000	
ESTP	100%	\$ 3,390,000	\$ 200,000	\$ 50,000	\$ 50,000	\$ 2,400,000	\$ 690,000
Wells	100%	\$ 60,000	\$ 60,000				
NewOfficeBldg	50%	\$ 250,000	\$ 250,000				
Fleet	50%	\$ 235,000	\$ 100,000	\$ 135,000			
TertiaryFilters	0%	\$ 615,000	\$ 615,000				
Stoneleigh	100%	\$ 130,000	\$ 130,000				
Water Meters	100%	\$ 125,000	\$ 125,000				
Unspecified	50%	\$ 1,700,000	\$ 100,000	\$ 200,000	\$ 350,000	\$ 450,000	\$ 600,000
Total CIP	82%	\$12,265,000	\$ 3,326,000	\$ 2,259,000	\$ 2,470,000	\$ 2,920,000	\$ 1,290,000

In addition to the named projects, there are unspecified CIP expenses for years beyond that shown in the Tables above. For the water fund, unspecified CIP expenses were estimated at \$300K/year starting in 2029. This accounts for developing new water sources as needed, replacement and upgrading of water lines and treatment facilities, and other unknown future capital costs. For the sewer fund, unspecified CIP expenses were estimated at \$300K/year starting in 2029. This accounts for future treatment plant and lift station upgrades, replacing major equipment, and sewer line maintenance projects.

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There are two major CIP projects beginning construction in the summer of 2023 (Well D and Tertiary Filters), and two others planned for construction in FY2025 or beyond.

- Southern (Airmont) Water Tank: This project will construct a 0.5 MGD water storage tank (same capacity and elevation as the existing Evening Star Tank) in the southern part of the main pressure zone near the Bluffs neighborhood. This will provide redundant storage in the event of a tank pressure failure or required maintenance, help fire flow pressure south of the bypass, and provide more balanced pressures throughout the main zone. Secondary benefits include another site for cellular antennas and potentially allowing extension of the main pressure zone into the lower elevations of the Stoneleigh neighborhood. Concrete and steel construction prices have escalated dramatically in recent years (cost estimates for this project have increased from \$2.8M to \$4.2M) leading to delays but the project is still necessary to solve long-term system problems.
- Evening Star Water Treatment Plant (ESTP): This project will replace the existing aging Evening Star plant with a new facility with added capacity to treat the new Well D being developed behind Kedleston Court. Until the new plant is online, Well D will only be able to be operated in lieu of other northern wells, and switchover will be manual. In order to stagger the construction of major projects to avoid overloading staff, this project is planned for construction after the Southern Tank. For the report this was assumed in 2027 but it may be constructed any time after the Southern Tank is online.

5.3. Debt Costs

The costs to service debt are the third major expense category. The town currently has one outstanding utility bond, which was a restructured bond from two separate earlier bonds (2001 VRA in the amount of \$5.5M and 2003 VRA in the amount of \$2.6M, which 2003 VRA bond included debt from an even earlier GMAC sewer bond). The Town recently refinanced this bond to take advantage of lower interest rates, though it is still referred to here as the 2009 VRA Bond for continuity reasons.

- **2009 VRA Bond:** Originally a \$6.9M loan, with annual payments of approximately \$500K/year until 2034, this bond was refinanced in 2021 (same term) to reduce annual payments to \$410K/year. The principal balance was reduced from \$5.1M to \$4.0M in the refinancing. The bulk of the 2003 VRA water bond monies were repurposed (with VRA concurrence) for WWTP improvements, and combined with the GMAC and 2001 sewer bond loans, makes this single merged bond 85% sewer/15% water. This split determines to which pool of users (sewer vs. water) the interest payments are charged.
- **2024 Bank Placement:** Projected 20-year \$2.6M loan for upcoming projects, in particular the new Well D and replacement of the Tertiary Filters. This loan is being negotiated during the preparation of this rate study. An interest rate of 5.5% was assumed with annual payments of \$218K/year, with 60% of the debt servicing assigned to water expenses and 40% assigned to sewer expenses.
- **2025 VRDW Loan:** Projected 30-year \$3.8M loan from the Virginia Revolving Drinking Water Fund. An earlier version of this loan (at \$3.0M) was previously approved to build the Southern Water Tank but the Town has not yet closed and projected costs have increased considerably. A closing interest rate of 5.0% was assumed in this study based on the most recent projections. Annual payments are assumed to be \$250K/year.
- **2027 Water Bond:** Projected 20-year \$3.2M loan for replacement of the Evening Star Water Treatment Plant. A rate of 5.5% was assumed in this study. Annual payments are assumed to be \$270K/year.
- **2029 Unspecified CIP Bond:** Projected 20-year \$2.5M loan for unspecified future CIP expenses. A rate of 5.5% was assumed in this study. Annual payments are assumed to be \$210K/year. This is a placeholder for 75% debt financing of unspecified CIP expenses during the 2029-2033 window, and the debt servicing costs are split equally between water and sewer.
- All other future capital projects are assumed to be funded from cash reserves

Table 7. Projected Future Debt

	Year	Principal	Term	Rate	%Water	%Sewer
Bank Placement Bond	2024	\$ 2.6M	20	5.5%	60%	40%
Southern Tank Bond	2025	\$ 3.8M	30	5.0%	100%	0%
ESTP Bond	2027	\$ 3.2M	20	5.5%	100%	0%
Unspecified CIP Bond	2029	\$ 2.5M	20	5.5%	50%	50%

6. Usage and Availability Fee Analysis

Usage and availability fees are set based on a cash-flow analysis over 5-year and 10-year windows to ensure reserve levels are met. The primary target is the reserve ratio, which is the ratio of the end-of-year cash reserves of the system relative to its operating costs plus debt servicing costs. Other fiscal policies as described earlier are also tracked.

6.1. Historical Cash Flow Analysis

The cash flow analysis from the previous three audited fiscal years, along with estimates for the current FY2023 fiscal year is shown in Table 8 below.

Table 8. Historical Cash Flow Analysis

	Actual 2020	Actual 2021	Actual 2022	Projected 2023
Combined Usage Rate Increase	-3%	3%	0%	3%
Water Operating Receipts	\$ 893,153	\$ 952,513	\$ 980,521	\$ 1,021,424
Sewer Operating Receipts	\$ 1,293,471	\$ 1,374,895	\$ 1,419,678	\$ 1,522,787
Operating Receipts	\$ 2,186,624	\$ 2,327,408	\$ 2,400,199	\$ 2,544,211
Water Operating Payments	\$ (708,089)	\$ (1,040,905)	\$ (971,460)	\$ (1,039,463)
Sewer Operating Payments	\$ (1,196,139)	\$ (1,136,757)	\$ (1,100,245)	\$ (1,177,262)
Operating Payments	\$ (1,904,228)	\$ (2,177,662)	\$ (2,071,705)	\$ (2,216,724)
Operating Surplus/(Deficit)	\$ 282,396	\$ 149,746	\$ 328,494	\$ 327,487
Total Debt Service (P+I)	\$ (493,073)	\$ (415,176)	\$ (409,846)	\$ (422,141)
Acquisition and Construction	\$ (300,561)	\$ (525,167)	\$ (813,779)	\$ (630,000)
Bond Contributions	\$ -	\$ -	\$ -	\$ -
Cash-funded capital	\$ (300,561)	\$ (525,167)	\$ (813,779)	\$ (630,000)
Availability fees	\$ 787,100	\$ 992	\$ 1,038,124	\$ 200,000
Other Non-Operating Income	\$ 39,322	\$ 5,410	\$ 17,740	\$ 60,000
Non-Operating Surplus/(Deficit)	\$ 32,788	\$ (933,941)	\$ (167,761)	\$ (792,141)
Total Cash Surplus/(Deficit)	\$ 315,184	\$ (784,195)	\$ 160,733	\$ (464,655)
Water Cash Reserves	\$ 2,849,557	\$ 2,334,424	\$ 2,188,388	\$ 1,754,528
Sewer Cash Reserves	\$ 3,161,022	\$ 2,891,960	\$ 3,198,729	\$ 3,167,934
Total Cash Reserves	\$ 6,010,582	\$ 5,226,387	\$ 5,387,120	\$ 4,922,465
Reserve Target (Op Pmts + Debt)	\$ 2,397,301	\$ 2,592,838	\$ 2,481,551	\$ 2,638,866
Months of Reserve (>12)	30.1	24.2	26.1	22.4
Total Expenditures (Pmts+Debt+Const)	\$ 2,697,862	\$ 3,118,005	\$ 3,295,330	\$ 3,268,866
Debt Servicing Ratio (<30%)	18%	13%	12%	13%
CIP Expenses (5-year annual avg)	\$ (323,034)	\$ (384,533)	\$ (499,389)	\$ (574,354)
Debt Funded CIP (5-year annual avg)	\$ 15,084	\$ 5,294	\$ 4,639	\$ -
Non-debt funded CIP (>25%)	95%	99%	99%	100%
Total Debt	\$ 5,130,000	\$ 3,965,000	\$ 3,740,000	\$ 3,510,000
Pro-Rata Debt	\$ 769,500	\$ 594,750	\$ 561,000	\$ 491,400
Pro-Rata Debt vs. Assessments (<2%)	0.7%	0.6%	0.5%	0.4%

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Combined Usage Rate Increase: The average usage rate increase for water/sewer users.

Operating Receipts: Income from usage fees, connection fees, and other operations.

Operating Payments: Payments to employees, suppliers, contractors, etc. for operations.

Total Debt Service: Total principal and interest paid on debt.

Acquisition and Construction: New capital expenses

Bond Contributions: Income from Bond escrow (new debt) for capital expenses

Cash-funded Capital: Portion of capital expenses not paid from bond contributions.

Availability Fees: Income from availability fees paid by new users.

Other Non-Operating Income: Investment income from reserves, sale of property, etc.

Water Cash Reserves: Portion of cash reserves attributed to the virtual water fund.

Sewer Cash Reserves: Portion of cash reserves attributed to the virtual sewer fund.

Total Cash Reserves: Unassigned fund balances, including certificates of deposit. Does not include escrow accounts or customer deposits.

Reserve Target: 12 months operating costs plus debt service costs.

Months of Reserve: Cash reserves expressed as the number of months of operating costs.

Total expenditures: Total operating and non-operating costs for debt ratio calculation.

Debt Ratio: Debt servicing expenses as a ratio of total expenses (target <30%).

CIP expenses: Five-year rolling average of total CIP expenditures.

Debt funded CIP: Five-year rolling average of CIP spending paid from debt sources.

Non-debt-funded CIP Ratio: Ratio of CIP paid from non-debt sources (target >25%)

Total Debt: Principal value of outstanding debt.

Pro-Rata Debt: Total debt pro-rated to the in-town user population.

Debt vs. Assessments: Ratio of Pro-rata debt to the in-town property assessment valuation (target <2%).

As shown above, the utility system has significant margins against all fiscal policies, even though user rates have barely changed over the past 4 years. The current combined usage rate of \$18.48/kgal is only 3.2% higher than the rate had been in FY2020 (\$17.91/kgal) despite an increase in the Consumer Price Index of nearly 20% over that same period. This was because in FY2020 the Town Council reduced rates 3% instead of raising them 3%, and in FY2022 the planned 3% rate increase was skipped due to higher than expected reserve levels from an unexpected increase in connections (the effect of construction and operating cost inflation from the Covid pandemic was not yet evident).

The rise in inflation the last few years has affected system operating costs and especially projected construction costs for new facilities, and the impact of these now substantially higher costs on the rate structure is shown next.

6.2. Analysis of Current Water and Sewer Fees With 5% Escalator

To illustrate the need to adjust the rate structure, the 5-year projection under the current water and sewer fees with annual 5% increases (including FY2024) using the proposed baseline debt and baseline capital improvement plan is shown below:

Table 9. Five-Year Cash Flow Forecast (Current Fees w/5% escalator)

	5-year Projection				
	Projected 2024	Projected 2025	Projected 2026	Projected 2027	Projected 2028
Combined Usage Rate Increase	5%	5%	5%	5%	5%
Water Operating Receipts	\$ 1,048,624	\$ 1,104,352	\$ 1,162,240	\$ 1,223,934	\$ 1,287,826
Sewer Operating Receipts	\$ 1,521,428	\$ 1,601,149	\$ 1,685,583	\$ 1,773,979	\$ 1,866,363
Operating Receipts	\$ 2,570,052	\$ 2,705,501	\$ 2,847,823	\$ 2,997,913	\$ 3,154,189
Water Operating Payments	\$ (1,091,436)	\$ (1,146,008)	\$ (1,203,308)	\$ (1,263,473)	\$ (1,326,647)
Sewer Operating Payments	\$ (1,236,125)	\$ (1,297,931)	\$ (1,362,828)	\$ (1,430,969)	\$ (1,502,517)
Operating Payments	\$ (2,327,561)	\$ (2,443,939)	\$ (2,566,136)	\$ (2,694,442)	\$ (2,829,164)
Operating Surplus/(Deficit)	\$ 242,491	\$ 261,562	\$ 281,688	\$ 303,471	\$ 325,025
Total Debt Service (P+I)	\$ (406,959)	\$ (626,585)	\$ (875,071)	\$ (875,128)	\$ (1,137,036)
Acquisition and Construction	\$ (3,326,000)	\$ (2,259,000)	\$ (2,470,000)	\$ (2,920,000)	\$ (1,290,000)
Bond Contributions	\$ 2,522,000	\$ 1,843,000	\$ 1,843,000	\$ 2,328,000	\$ 776,000
Cash-funded capital	\$ (804,000)	\$ (416,000)	\$ (627,000)	\$ (592,000)	\$ (514,000)
Availability fees	\$ 178,906	\$ 187,857	\$ 197,249	\$ 207,116	\$ 217,445
Other Non-Operating Income	\$ 147,674	\$ 183,707	\$ 116,133	\$ 112,203	\$ 63,593
Non-Operating Surplus/(Deficit)	\$ (884,379)	\$ (671,022)	\$ (1,188,688)	\$ (1,147,808)	\$ (1,369,998)
Total Cash Surplus/(Deficit)	\$ (641,888)	\$ (409,459)	\$ (907,001)	\$ (844,337)	\$ (1,044,973)
Water Cash Reserves	\$ 1,361,713	\$ 1,061,073	\$ 250,087	\$ (470,950)	\$ (1,345,388)
Sewer Cash Reserves	\$ 2,918,861	\$ 2,810,042	\$ 2,714,028	\$ 2,590,727	\$ 2,420,192
Total Cash Reserves	\$ 4,280,577	\$ 3,871,118	\$ 2,964,117	\$ 2,119,780	\$ 1,074,807
Reserve Target (Op Pmts + Debt)	\$ 2,734,520	\$ 3,070,524	\$ 3,441,206	\$ 3,569,570	\$ 3,966,200
Months of Reserve (>12)	18.8	15.1	10.3	7.1	3.3
Total Expenditures (Pmts+Debt+Const)	\$ 6,060,520	\$ 5,329,524	\$ 5,911,206	\$ 6,489,570	\$ 5,256,200
Debt Servicing Ratio (<30%)	7%	12%	15%	13%	22%
CIP Expenses (5-year annual avg)	\$ (1,119,101)	\$ (1,510,789)	\$ (1,899,756)	\$ (2,321,000)	\$ (2,453,000)
Debt Funded CIP (5-year annual avg)	\$ 504,400	\$ 873,000	\$ 1,241,600	\$ 1,707,200	\$ 1,862,400
Non-debt funded CIP (>25%)	55%	42%	35%	26%	24%
Total Debt	\$ 5,865,000	\$ 9,330,434	\$ 8,919,571	\$ 11,691,522	\$ 11,144,131
Pro-Rata Debt	\$ 836,921	\$ 1,338,116	\$ 1,285,548	\$ 1,693,344	\$ 1,621,916
Pro-Rata Debt vs. Assessments (<2%)	0.7%	1.0%	0.9%	1.2%	1.1%

As shown above the system reserves drop to 3 months of operating expenses by 2028 (and reserves become insolvent in 2030), even with extensive borrowing. Rate increases could be delayed by several approaches which were all rejected by the Town Council:

- Additional borrowing: The current debt plan foresees borrowing over \$12M in the next 6 years. To borrow any more funds than shown would violate the 25% non-debt-funded CIP policy (which is already slightly exceeded). Additional debt would also not prevent eventual insolvency due to inadequate operating revenues.

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- Reduced Capital Improvement Plan: The system reserves could stay in balance if both the Southern Water Tank and Evening Star Treatment Plant projects were abandoned or delayed indefinitely. While neither project is a current emergency, both projects were deemed vital for the long-term sustainability of the utility system. Delaying only one of them would not be enough to keep the system in structural financial balance with only 5% annual increases, and not building them could result in other required capital improvements to make up for their absence.
- Reduced Reserve Benchmark and Interest-only Debt Instruments: There are forms of financial juggling such as relaxing required reserve levels or pursuing debt financing that delays principal payments (e.g. backloaded or balloon payments) that could delay required rate increases for several years without actually making the system solvent (and increasing final rates necessary to reach solvency). These approaches like extra debt can only treat symptoms of a cost/revenue mismatch and make any eventual reckoning even worse.
- Reduced Operating Costs: A significant (30%) and sustained reduction in operating expenses would remove the need for a substantial rate increase. This could not be done without deferring most system maintenance and upgrades, reducing staff below mandated levels and replacing experienced staff with inexperienced operators, and other short-term measures. The Town will continue to pursue operational efficiencies and as they are achieved then future rate increases might be delayed or prevented, but the current need as our facilities are aging is to improve standards for maintenance, not relax them.
- Ignore Financial Projections: As shown the system does not become insolvent for another 5 years under present rates (though reserve policies will be violated in 3 years). The financial imbalance could be ignored for several more years without obvious impact. Instead the Town Council has requested recommended rates that balance system revenues to costs. This will allow staff and Council to focus on improving operations and construction of necessary facilities.

Generally, rates in public utility systems do not drive costs, though they can conceal them temporarily by forcing systems to defer maintenance and required upgrades or ‘borrow from the future’ excessively with unusual debt structures. Instead, actual costs drive rates. The most important function of a rate study is to design a rate structure that distributes those costs fairly between different classes of users (water only, sewer only or both; in-town or out-of-town; residential or commercial/institutional; low-usage or high-usage).

A rate study should distribute costs fairly across time as well – are rates set too high so current users are paying for costs that are due to future users? Or are rates set too low so that current users are underinvesting in the system and future users will have to pay even more to make up for growing deficits in maintenance and reserves? Systems will often optimistically set rates too low in order to shift costs for maintenance and renewal onto future users or in expectation of assistance from outside parties.

6.3. Analysis of 24% Step Increase With 5% Escalator (Five-Year Forecast)

If rates were fixed in one year, then a step increase of 24% is necessary to keep the system in financial balance with a 5% escalator in future years, as shown in Table 10:

Table 10. Five-Year Cash Flow Forecast (24% Step Increase)

	5-year Projection				
	Projected 2024	Projected 2025	Projected 2026	Projected 2027	Projected 2028
Combined Usage Rate Increase	24%	5%	5%	5%	5%
Water Operating Receipts	\$ 1,237,358	\$ 1,302,611	\$ 1,370,885	\$ 1,443,963	\$ 1,519,294
Sewer Operating Receipts	\$ 1,796,861	\$ 1,891,279	\$ 1,990,483	\$ 2,095,426	\$ 2,206,150
Operating Receipts	\$ 3,034,220	\$ 3,193,891	\$ 3,361,367	\$ 3,539,389	\$ 3,725,443
Water Operating Payments	\$ (1,091,436)	\$ (1,146,008)	\$ (1,203,308)	\$ (1,263,473)	\$ (1,326,647)
Sewer Operating Payments	\$ (1,236,125)	\$ (1,297,931)	\$ (1,362,828)	\$ (1,430,969)	\$ (1,502,517)
Operating Payments	\$ (2,327,561)	\$ (2,443,939)	\$ (2,566,136)	\$ (2,694,442)	\$ (2,829,164)
Operating Surplus/(Deficit)	\$ 706,659	\$ 749,952	\$ 795,232	\$ 844,947	\$ 896,279
Total Debt Service (P+I)	\$ (406,959)	\$ (626,585)	\$ (875,071)	\$ (875,128)	\$ (1,137,036)
Acquisition and Construction	\$ (3,326,000)	\$ (2,259,000)	\$ (2,470,000)	\$ (2,920,000)	\$ (1,290,000)
Bond Contributions	\$ 2,522,000	\$ 1,843,000	\$ 1,843,000	\$ 2,328,000	\$ 776,000
Cash-funded capital	\$ (804,000)	\$ (416,000)	\$ (627,000)	\$ (592,000)	\$ (514,000)
Availability fees	\$ 211,283	\$ 221,852	\$ 232,947	\$ 244,660	\$ 256,926
Other Non-Operating Income	\$ 147,674	\$ 198,604	\$ 147,148	\$ 160,626	\$ 130,839
Non-Operating Surplus/(Deficit)	\$ (852,003)	\$ (622,130)	\$ (1,121,976)	\$ (1,061,842)	\$ (1,263,271)
Total Cash Surplus/(Deficit)	\$ (145,344)	\$ 127,822	\$ (326,744)	\$ (216,895)	\$ (366,992)
Water Cash Reserves	\$ 1,565,143	\$ 1,484,297	\$ 910,857	\$ 446,715	\$ (150,798)
Sewer Cash Reserves	\$ 3,211,975	\$ 3,420,643	\$ 3,667,340	\$ 3,914,587	\$ 4,145,108
Total Cash Reserves	\$ 4,777,122	\$ 4,904,943	\$ 4,578,200	\$ 4,361,305	\$ 3,994,313
Reserve Target (Op Pmts + Debt)	\$ 2,734,520	\$ 3,070,524	\$ 3,441,206	\$ 3,569,570	\$ 3,966,200
Months of Reserve (>12)	21.0	19.2	16.0	14.7	12.1
Total Expenditures (Pmts+Debt+Const)	\$ 6,060,520	\$ 5,329,524	\$ 5,911,206	\$ 6,489,570	\$ 5,256,200
Debt Servicing Ratio (<30%)	7%	12%	15%	13%	22%
CIP Expenses (5-year annual avg)	\$ (1,119,101)	\$ (1,510,789)	\$ (1,899,756)	\$ (2,321,000)	\$ (2,453,000)
Debt Funded CIP (5-year annual avg)	\$ 504,400	\$ 873,000	\$ 1,241,600	\$ 1,707,200	\$ 1,862,400
Non-debt funded CIP (>25%)	55%	42%	35%	26%	24%
Total Debt	\$ 5,865,000	\$ 9,330,434	\$ 8,919,571	\$ 11,691,522	\$ 11,144,131
Pro-Rata Debt	\$ 836,921	\$ 1,338,116	\$ 1,285,548	\$ 1,693,344	\$ 1,621,916
Pro-Rata Debt vs. Assessments (<2%)	0.7%	1.0%	0.9%	1.2%	1.1%

The non-debt-funded CIP policy does dip slightly below the threshold of 25% (e.g. 76% of the 5-year rolling average of CIP Expenses is funded by debt instead of 75%). This is a very minor deviation in 5 years based on estimated rates of borrowing and construction, and as the 10-year projection will show is corrected quickly and not a concern.

If construction costs, borrowing costs or future O&M inflation do come in below estimates, or additional sources of grant funding are found, then the future 5% annual increases could be skipped in order to adjust rates to the new correct level, or rates could be lowered (as was done in 2019 when the Town Council not only skipped a planned 3% increase but lowered rates by 3%).

6.4. Analysis of 24% Step Increase With 5% Escalator (Ten-Year Forecast)

The forecast for the 24% step increase is extended out to ten years in Table 11 below:

Table 11. Ten-Year Cash Flow Forecast (24% Step Increase)

	10-year Projection				
	Projected 2029	Projected 2030	Projected 2031	Projected 2032	Projected 2033
Combined Usage Rate Increase	5%	5%	5%	5%	5%
Water Operating Receipts	\$ 1,599,483	\$ 1,684,565	\$ 1,771,968	\$ 1,865,104	\$ 1,960,689
Sewer Operating Receipts	\$ 2,322,693	\$ 2,445,098	\$ 2,573,404	\$ 2,709,379	\$ 2,852,281
Operating Receipts	\$ 3,922,177	\$ 4,129,664	\$ 4,345,373	\$ 4,574,484	\$ 4,812,971
Water Operating Payments	\$ (1,392,979)	\$ (1,462,628)	\$ (1,535,760)	\$ (1,612,548)	\$ (1,693,175)
Sewer Operating Payments	\$ (1,577,643)	\$ (1,656,525)	\$ (1,739,352)	\$ (1,826,319)	\$ (1,917,635)
Operating Payments	\$ (2,970,623)	\$ (3,119,154)	\$ (3,275,111)	\$ (3,438,867)	\$ (3,610,810)
Operating Surplus/(Deficit)	\$ 951,554	\$ 1,010,510	\$ 1,070,261	\$ 1,135,617	\$ 1,202,160
Total Debt Service (P+I)	\$ (1,137,036)	\$ (1,346,234)	\$ (1,346,234)	\$ (1,346,234)	\$ (1,346,234)
Acquisition and Construction	\$ (600,000)	\$ (630,000)	\$ (661,500)	\$ (694,575)	\$ (729,304)
Bond Contributions	\$ 388,000	\$ 436,500	\$ 485,000	\$ 533,500	\$ 582,000
Cash-funded capital	\$ (212,000)	\$ (193,500)	\$ (176,500)	\$ (161,075)	\$ (147,304)
Availability fees	\$ 269,770	\$ 283,257	\$ 297,421	\$ 246,866	\$ 224,860
Other Non-Operating Income	\$ 180,939	\$ 169,441	\$ 152,595	\$ 136,517	\$ 119,407
Non-Operating Surplus/(Deficit)	\$ (898,327)	\$ (1,087,036)	\$ (1,072,718)	\$ (1,123,927)	\$ (1,149,270)
Total Cash Surplus/(Deficit)	\$ 53,227	\$ (76,526)	\$ (2,457)	\$ 11,690	\$ 52,890
Water Cash Reserves	\$ (607,994)	\$ (1,159,246)	\$ (1,705,110)	\$ (2,309,966)	\$ (2,950,388)
Sewer Cash Reserves	\$ 4,655,531	\$ 5,130,257	\$ 5,673,665	\$ 6,290,210	\$ 6,983,522
Total Cash Reserves	\$ 4,047,540	\$ 3,971,014	\$ 3,968,557	\$ 3,980,247	\$ 4,033,137
Reserve Target (Op Pmts + Debt)	\$ 4,107,658	\$ 4,465,388	\$ 4,621,345	\$ 4,785,101	\$ 4,957,044
Months of Reserve (>12)	11.8	10.7	10.3	10.0	9.8
Total Expenditures (Pmts+Debt+Const)	\$ 4,707,658	\$ 5,095,388	\$ 5,282,845	\$ 5,479,676	\$ 5,686,348
Debt Servicing Ratio (<30%)	24%	26%	25%	25%	24%
CIP Expenses (5-year annual avg)	\$ (1,907,800)	\$ (1,582,000)	\$ (1,220,300)	\$ (775,215)	\$ (663,076)
Debt Funded CIP (5-year annual avg)	\$ 1,435,600	\$ 1,154,300	\$ 882,700	\$ 523,800	\$ 485,000
Non-debt funded CIP (>25%)	25%	27%	28%	32%	27%
Total Debt	\$ 13,073,724	\$ 12,397,903	\$ 11,693,684	\$ 10,950,072	\$ 10,166,021
Pro-Rata Debt	\$ 1,911,911	\$ 1,821,719	\$ 1,726,348	\$ 1,624,116	\$ 1,515,621
Pro-Rata Debt vs. Assessments (<2%)	1.2%	1.1%	1.0%	0.9%	0.8%

As shown in the ten-year forecast, system reserves slowly dwindle until at the end of ten years there are only 10 months of reserve instead of the target 12 months. This is a minor variation relative to the long range and simplifying assumptions used. As mentioned above the non-debt-funded CIP policy moves back into conformance by 2030.

Forecasting beyond 5 years is guesswork at best, due to required assumptions about inflation and required capital projects that will almost certainly be wrong. But no obvious financial cliffs or dangerous trends are evident as had been seen in the forecast using current rates and fees without a step adjustment.

6.5. Analysis of Consecutive 15% Increases With 5% Escalator (Five-Year Forecast)

As an alternative, the step increase of 24% could be replaced with two consecutive 15% increases for a similar outcome, as shown in Table 12 below:

Table 12. Five-Year Cash Flow Forecast (Two 15% Step Increases)

	5-year Projection				
	Projected 2024	Projected 2025	Projected 2026	Projected 2027	Projected 2028
Combined Usage Rate Increase	15%	15%	5%	5%	5%
Water Operating Receipts	\$ 1,148,384	\$ 1,324,235	\$ 1,394,324	\$ 1,466,645	\$ 1,543,802
Sewer Operating Receipts	\$ 1,666,509	\$ 1,920,031	\$ 2,021,011	\$ 2,126,953	\$ 2,239,468
Operating Receipts	\$ 2,814,893	\$ 3,244,266	\$ 3,415,334	\$ 3,593,598	\$ 3,783,270
Water Operating Payments	\$ (1,091,436)	\$ (1,146,008)	\$ (1,203,308)	\$ (1,263,473)	\$ (1,326,647)
Sewer Operating Payments	\$ (1,236,125)	\$ (1,297,931)	\$ (1,362,828)	\$ (1,430,969)	\$ (1,502,517)
Operating Payments	\$ (2,327,561)	\$ (2,443,939)	\$ (2,566,136)	\$ (2,694,442)	\$ (2,829,164)
Operating Surplus/(Deficit)	\$ 487,332	\$ 800,327	\$ 849,199	\$ 899,156	\$ 954,105
Total Debt Service (P+I)	\$ (406,959)	\$ (626,585)	\$ (875,071)	\$ (875,128)	\$ (1,137,036)
Acquisition and Construction	\$ (3,326,000)	\$ (2,259,000)	\$ (2,470,000)	\$ (2,920,000)	\$ (1,290,000)
Bond Contributions	\$ 2,522,000	\$ 1,843,000	\$ 1,843,000	\$ 2,328,000	\$ 776,000
Cash-funded capital	\$ (804,000)	\$ (416,000)	\$ (627,000)	\$ (592,000)	\$ (514,000)
Availability fees	\$ 195,943	\$ 225,329	\$ 236,600	\$ 248,404	\$ 260,852
Other Non-Operating Income	\$ 147,674	\$ 191,564	\$ 141,513	\$ 156,550	\$ 128,379
Non-Operating Surplus/(Deficit)	\$ (867,343)	\$ (625,693)	\$ (1,123,958)	\$ (1,062,174)	\$ (1,261,805)
Total Cash Surplus/(Deficit)	\$ (380,011)	\$ 174,634	\$ (274,759)	\$ (163,018)	\$ (307,699)
Water Cash Reserves	\$ 1,469,207	\$ 1,408,686	\$ 858,074	\$ 416,727	\$ (155,403)
Sewer Cash Reserves	\$ 3,073,244	\$ 3,308,400	\$ 3,584,253	\$ 3,862,582	\$ 4,127,013
Total Cash Reserves	\$ 4,542,455	\$ 4,717,089	\$ 4,442,330	\$ 4,279,312	\$ 3,971,612
Reserve Target (Op Pmts + Debt)	\$ 2,734,520	\$ 3,070,524	\$ 3,441,206	\$ 3,569,570	\$ 3,966,200
Months of Reserve (>12)	19.9	18.4	15.5	14.4	12.0
Total Expenditures (Pmts+Debt+Const)	\$ 6,060,520	\$ 5,329,524	\$ 5,911,206	\$ 6,489,570	\$ 5,256,200
Debt Servicing Ratio (<30%)	7%	12%	15%	13%	22%
CIP Expenses (5-year annual avg)	\$ (1,119,101)	\$ (1,510,789)	\$ (1,899,756)	\$ (2,321,000)	\$ (2,453,000)
Debt Funded CIP (5-year annual avg)	\$ 504,400	\$ 873,000	\$ 1,241,600	\$ 1,707,200	\$ 1,862,400
Non-debt funded CIP (>25%)	55%	42%	35%	26%	24%
Total Debt	\$ 5,865,000	\$ 9,330,434	\$ 8,919,571	\$ 11,691,522	\$ 11,144,131
Pro-Rata Debt	\$ 836,921	\$ 1,338,116	\$ 1,285,548	\$ 1,693,344	\$ 1,621,916
Pro-Rata Debt vs. Assessments (<2%)	0.7%	1.0%	0.9%	1.2%	1.1%

The final resulting rates from two 15% increases are slightly higher than a single 24% increase but this is needed due to the extra year of delay. There would need to be two consecutive years of advertising and discussing major rate increases, which could lead to confusion with customers who might assume any problem had been solved with the first rate increase. But it also eases the transition in household bills for those customers.

6.6. Analysis of Consecutive 15% Increases With 5% Escalator (Ten-Year Forecast)

The forecast for the two 15% increases is extended out to ten years in Table 13 below:

Table 13. Ten-Year Cash Flow Forecast (24% Step Increase)

	10-year Projection				
	Projected 2029	Projected 2030	Projected 2031	Projected 2032	Projected 2033
Combined Usage Rate Increase	5%	5%	5%	5%	5%
Water Operating Receipts	\$ 1,625,826	\$ 1,710,153	\$ 1,799,402	\$ 1,893,569	\$ 1,990,980
Sewer Operating Receipts	\$ 2,357,023	\$ 2,481,234	\$ 2,612,286	\$ 2,749,294	\$ 2,893,233
Operating Receipts	\$ 3,982,849	\$ 4,191,387	\$ 4,411,688	\$ 4,642,862	\$ 4,884,214
Water Operating Payments	\$ (1,392,979)	\$ (1,462,628)	\$ (1,535,760)	\$ (1,612,548)	\$ (1,693,175)
Sewer Operating Payments	\$ (1,577,643)	\$ (1,656,525)	\$ (1,739,352)	\$ (1,826,319)	\$ (1,917,635)
Operating Payments	\$ (2,970,623)	\$ (3,119,154)	\$ (3,275,111)	\$ (3,438,867)	\$ (3,610,810)
Operating Surplus/(Deficit)	\$ 1,012,227	\$ 1,072,234	\$ 1,136,577	\$ 1,203,995	\$ 1,273,403
Total Debt Service (P+I)	\$ (1,137,036)	\$ (1,346,234)	\$ (1,346,234)	\$ (1,346,234)	\$ (1,346,234)
Acquisition and Construction	\$ (600,000)	\$ (630,000)	\$ (661,500)	\$ (694,575)	\$ (729,304)
Bond Contributions	\$ 388,000	\$ 436,500	\$ 485,000	\$ 533,500	\$ 582,000
Cash-funded capital	\$ (212,000)	\$ (193,500)	\$ (176,500)	\$ (161,075)	\$ (147,304)
Availability fees	\$ 273,897	\$ 287,593	\$ 301,971	\$ 250,650	\$ 228,312
Other Non-Operating Income	\$ 180,258	\$ 170,684	\$ 155,857	\$ 142,002	\$ 127,222
Non-Operating Surplus/(Deficit)	\$ (894,880)	\$ (1,081,458)	\$ (1,064,906)	\$ (1,114,657)	\$ (1,138,003)
Total Cash Surplus/(Deficit)	\$ 117,347	\$ (9,224)	\$ 71,670	\$ 89,339	\$ 135,400
Water Cash Reserves	\$ (584,528)	\$ (1,107,532)	\$ (1,622,357)	\$ (2,195,108)	\$ (2,801,097)
Sewer Cash Reserves	\$ 4,673,484	\$ 5,187,264	\$ 5,773,760	\$ 6,435,848	\$ 7,177,237
Total Cash Reserves	\$ 4,088,959	\$ 4,079,735	\$ 4,151,405	\$ 4,240,744	\$ 4,376,144
Reserve Target (Op Pmts + Debt)	\$ 4,107,658	\$ 4,465,388	\$ 4,621,345	\$ 4,785,101	\$ 4,957,044
Months of Reserve (>12)	11.9	11.0	10.8	10.6	10.6
Total Expenditures (Pmts+Debt+Const)	\$ 4,707,658	\$ 5,095,388	\$ 5,282,845	\$ 5,479,676	\$ 5,686,348
Debt Servicing Ratio (<30%)	24%	26%	25%	25%	24%
CIP Expenses (5-year annual avg)	\$ (1,907,800)	\$ (1,582,000)	\$ (1,220,300)	\$ (775,215)	\$ (663,076)
Debt Funded CIP (5-year annual avg)	\$ 1,435,600	\$ 1,154,300	\$ 882,700	\$ 523,800	\$ 485,000
Non-debt funded CIP (>25%)	25%	27%	28%	32%	27%
Total Debt	\$ 13,073,724	\$ 12,397,903	\$ 11,693,684	\$ 10,950,072	\$ 10,166,021
Pro-Rata Debt	\$ 1,911,911	\$ 1,821,719	\$ 1,726,348	\$ 1,624,116	\$ 1,515,621
Pro-Rata Debt vs. Assessments (<2%)	1.2%	1.1%	1.0%	0.9%	0.8%

The phasing in of the step adjustment could be spread further across three years (with 12%, 12%, and 12% increases followed by 5% increases thereafter) or four years (with 11%, 11%, 11%, 11% increases followed by 5% increases thereafter).

Prolonging the interval of rate adjustments has diminishing returns in a high-inflation economy. Choices become a single 24% year, or two 15% years, or three 12% years, or four 11% years, or five 10% years when the base rate of inflation is 5%. The underlying problem is a structural deficit that is created when debt payments for CIP projects begin, and the sooner a structural deficit is fixed the better it is for the system financial health.

7. Additional Scenarios: Balancing Water and Sewer Costs

Current rates (FY2023) are shown in Table 14 below. For combined users, 40% of usage rates and 45% of availability fees are designated for water service, with 60% of usage rates and 55% of availability fees designated for sewer service. These ratios were set in previous rate studies based on the relative costs of water and sewer service at the time.

Table 14. Current Water and Sewer Rates Showing Balance

General	Water	Sewer	Total In	Total Out	% Water	% Sewer
Current User Rates/kgal	\$7.39	\$11.09	\$18.48	\$27.72	40.0%	60.0%
Current Availability Fee	\$11,898	\$14,315	\$26,213	\$39,320	45.4%	54.6%

As of January 2023, there were 1737 active accounts with both water and sewer service (95.2%), there were 74 active accounts with water service only (4.1%), and 14 active accounts with sewer service only (0.8%).

The issue of how to balance water and sewer rates against each other only affects the 88 system users (5%) with partial service. All other users have combined (water+sewer) service and which portion of the bill is water and which portion of the bill is sewer does not affect their total bill. But for those users who are only getting water service, or only getting sewer service, fair and reasonable rates would be to set those individual rates in proportion to the cost to provide each individual service.

Town of Round Hill Water and Sewer Rate Study

7.1. Balancing Availability Fees

The approach is to first calculate the correct balance of availability fees by comparing the next 20 years of projected water and sewer system non-operating costs (including debt service and cash-funded capital). A present worth factor of 3% is used to add up all debt and CIP costs over the next 20 years into a single dollar amount.

A 20-year time window was used because of the importance of debt servicing expenses. This is shown in Table 15 below, which shows the availability fee balance should be 59.4% water and 40.6% sewer due to the upcoming water capital projects (vs. the current 45.6%/54.6% split).

Table 15. Calculating Appropriate Availability Fee Balance

Availability Fee Cost Balance								
Water Non-operating Costs		59.39%		Sewer Non-operating Costs		40.61%		
		Total	Total PW			Total	Total PW	
Year	Debt Service	Cash CIP			Debt Service	Cash CIP		
2024	\$ (61,044)	\$ (422,800)	\$ (483,844)	\$ (483,844)	\$ (345,915)	\$ (381,200)	\$ (727,115)	\$ (727,115)
2025	\$ (191,893)	\$ (248,500)	\$ (440,393)	\$ (427,566)	\$ (434,693)	\$ (167,500)	\$ (602,193)	\$ (584,653)
2026	\$ (439,282)	\$ (452,000)	\$ (891,282)	\$ (840,118)	\$ (435,789)	\$ (175,000)	\$ (610,789)	\$ (575,727)
2027	\$ (439,290)	\$ (367,000)	\$ (806,290)	\$ (737,870)	\$ (435,838)	\$ (225,000)	\$ (660,838)	\$ (604,760)
2028	\$ (706,184)	\$ (214,000)	\$ (920,184)	\$ (817,572)	\$ (430,852)	\$ (300,000)	\$ (730,852)	\$ (649,352)
2029	\$ (706,184)	\$ (106,000)	\$ (812,184)	\$ (700,597)	\$ (430,852)	\$ (106,000)	\$ (536,852)	\$ (463,093)
2030	\$ (810,783)	\$ (96,750)	\$ (907,533)	\$ (760,045)	\$ (535,451)	\$ (96,750)	\$ (632,201)	\$ (529,458)
2031	\$ (810,783)	\$ (88,250)	\$ (899,033)	\$ (730,996)	\$ (535,451)	\$ (88,250)	\$ (623,701)	\$ (507,126)
2032	\$ (810,783)	\$ (80,538)	\$ (891,321)	\$ (703,617)	\$ (535,451)	\$ (80,538)	\$ (615,988)	\$ (486,267)
2033	\$ (810,783)	\$ (73,652)	\$ (884,435)	\$ (677,846)	\$ (535,451)	\$ (73,652)	\$ (609,103)	\$ (466,826)
2034	\$ (810,818)	\$ (382,884)	\$ (1,193,703)	\$ (888,227)	\$ (535,650)	\$ (382,884)	\$ (918,534)	\$ (683,476)
2035	\$ (750,108)	\$ (402,029)	\$ (1,152,137)	\$ (832,328)	\$ (191,626)	\$ (402,029)	\$ (593,654)	\$ (428,869)
2036	\$ (750,108)	\$ (422,130)	\$ (1,172,238)	\$ (822,184)	\$ (191,626)	\$ (422,130)	\$ (613,756)	\$ (430,476)
2037	\$ (750,108)	\$ (443,237)	\$ (1,193,345)	\$ (812,610)	\$ (191,626)	\$ (443,237)	\$ (634,862)	\$ (432,310)
2038	\$ (750,108)	\$ (465,398)	\$ (1,215,507)	\$ (803,593)	\$ (191,626)	\$ (465,398)	\$ (657,024)	\$ (434,370)
2039	\$ (750,108)	\$ (488,668)	\$ (1,238,777)	\$ (795,124)	\$ (191,626)	\$ (488,668)	\$ (680,294)	\$ (436,655)
2040	\$ (750,108)	\$ (513,102)	\$ (1,263,210)	\$ (787,191)	\$ (191,626)	\$ (513,102)	\$ (704,727)	\$ (439,163)
2041	\$ (750,108)	\$ (538,757)	\$ (1,288,865)	\$ (779,785)	\$ (191,626)	\$ (538,757)	\$ (730,383)	\$ (441,893)
2042	\$ (750,108)	\$ (565,695)	\$ (1,315,803)	\$ (772,896)	\$ (191,626)	\$ (565,695)	\$ (757,320)	\$ (444,846)
2043	\$ (750,108)	\$ (593,979)	\$ (1,344,088)	\$ (766,514)	\$ (191,626)	\$ (593,979)	\$ (785,605)	\$ (448,020)

So while the current balance is 45% for water availability and 55% for sewer availability, the fair balance going forward would be 59% for water availability and 41% for sewer availability. This is a very significant change and it is because the system has a lot of major water capital projects on the horizon and few major sewer capital projects on the horizon. It does have ongoing debt repayments for past sewer capital projects, but those are outweighed in this analysis by the new water projects that are needed.

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7.2. Balancing Usage Fees

The remaining system net costs (after accounting for non-operating income) are then added up to determine the portion of net costs that must be met with usage fees. A present worth factor of 3% is again used to add up costs over a 20-year interval. The result is shown in Table 16 below, which shows the usage fee balance should be 51.8% water and 48.2% sewer (vs. the current 40%/60% split).

Table 16. Calculating Appropriate Usage Fee Balance

	User Rates Cost Balance							
	Water Net Costs		51.79%	\$(39,376,420)	Sewer Net Costs		48.21%	\$(36,652,014)
	Oper Exp	Non-oper Net	Total	Total PW	Oper Exp	Non-oper Net	Total	Total PW
2024	\$ (1,091,436)	\$ (335,307)	\$ (1,426,743)	\$ (1,426,743)	\$ (1,236,125)	\$ (516,696)	\$ (1,752,820)	\$ (1,752,820)
2025	\$ (1,146,008)	\$ (231,678)	\$ (1,377,686)	\$ (1,337,559)	\$ (1,297,931)	\$ (390,452)	\$ (1,688,383)	\$ (1,639,207)
2026	\$ (1,203,308)	\$ (724,865)	\$ (1,928,173)	\$ (1,817,488)	\$ (1,362,828)	\$ (382,181)	\$ (1,745,008)	\$ (1,644,838)
2027	\$ (1,263,473)	\$ (621,589)	\$ (1,885,063)	\$ (1,725,099)	\$ (1,430,969)	\$ (423,915)	\$ (1,854,884)	\$ (1,697,482)
2028	\$ (1,326,647)	\$ (756,907)	\$ (2,083,554)	\$ (1,851,211)	\$ (1,502,517)	\$ (488,467)	\$ (1,990,984)	\$ (1,768,963)
2029	\$ (1,392,979)	\$ (616,577)	\$ (2,009,557)	\$ (1,733,461)	\$ (1,577,643)	\$ (262,075)	\$ (1,839,718)	\$ (1,586,957)
2030	\$ (1,462,628)	\$ (711,117)	\$ (2,173,745)	\$ (1,820,477)	\$ (1,656,525)	\$ (354,379)	\$ (2,010,904)	\$ (1,684,101)
2031	\$ (1,535,760)	\$ (703,929)	\$ (2,239,688)	\$ (1,821,072)	\$ (1,739,352)	\$ (345,321)	\$ (2,084,673)	\$ (1,695,030)
2032	\$ (1,612,548)	\$ (770,074)	\$ (2,382,622)	\$ (1,880,864)	\$ (1,826,319)	\$ (336,416)	\$ (2,162,735)	\$ (1,707,283)
2033	\$ (1,693,175)	\$ (806,899)	\$ (2,500,074)	\$ (1,916,099)	\$ (1,917,635)	\$ (327,643)	\$ (2,245,279)	\$ (1,720,819)
2034	\$ (1,777,834)	\$ (1,114,130)	\$ (2,891,963)	\$ (2,151,892)	\$ (2,013,517)	\$ (668,926)	\$ (2,682,444)	\$ (1,995,990)
2035	\$ (1,866,726)	\$ (1,078,379)	\$ (2,945,104)	\$ (2,127,606)	\$ (2,114,193)	\$ (435,419)	\$ (2,549,612)	\$ (1,841,894)
2036	\$ (1,960,062)	\$ (1,101,753)	\$ (3,061,814)	\$ (2,147,495)	\$ (2,219,903)	\$ (451,068)	\$ (2,670,970)	\$ (1,873,365)
2037	\$ (2,058,065)	\$ (1,125,343)	\$ (3,183,408)	\$ (2,167,746)	\$ (2,330,898)	\$ (467,234)	\$ (2,798,132)	\$ (1,905,392)
2038	\$ (2,160,968)	\$ (1,149,115)	\$ (3,310,083)	\$ (2,188,355)	\$ (2,447,443)	\$ (483,939)	\$ (2,931,382)	\$ (1,937,989)
2039	\$ (2,269,017)	\$ (1,173,010)	\$ (3,442,026)	\$ (2,209,306)	\$ (2,569,815)	\$ (501,214)	\$ (3,071,029)	\$ (1,971,177)
2040	\$ (2,382,467)	\$ (1,197,007)	\$ (3,579,475)	\$ (2,230,610)	\$ (2,698,305)	\$ (519,079)	\$ (3,217,385)	\$ (2,004,968)
2041	\$ (2,501,591)	\$ (1,221,089)	\$ (3,722,679)	\$ (2,252,282)	\$ (2,833,221)	\$ (537,536)	\$ (3,370,757)	\$ (2,039,363)
2042	\$ (2,626,670)	\$ (1,245,200)	\$ (3,871,871)	\$ (2,274,316)	\$ (2,974,882)	\$ (556,597)	\$ (3,531,478)	\$ (2,074,371)
2043	\$ (2,758,004)	\$ (1,269,343)	\$ (4,027,347)	\$ (2,296,740)	\$ (3,123,626)	\$ (576,284)	\$ (3,699,909)	\$ (2,110,007)

So while the current usage fee balance is 40% for water usage fees, and 60% for sewer usage fees, the fair balance is 52% for water usage fees, and 48% for sewer usage fees.

7.3. Transitioning Rate Balance

Rather than try to adjust the imbalance in water and sewer rates relative to the cost of service all at once, the Town Council has requested recommended rates that transition the balance of water and sewer costs to a fair allocation more gradually over a 5-year interval.

This can be done by only raising water rates (and holding sewer rates flat) during the subsequent years of 5% combined rate increases (for example raising water rates 11% and sewer rates 0% for a combined rate increase of 5%). The rates that achieve this transition are shown in Section 8 later in this report.

As a matter of policy, it was decided for usage rates to not begin this balancing process until after the first two years of 15% step increases, which would be applied equally to both water and sewer rates. After those two years of step increases, any further revenue increases to adjust for inflation would be achieved by raising water rates but not sewer rates such that the two types of service rates over time balance to the fair level calculated in Section 7.2.

For availability fees, it was decided by the Town Council that the balancing process could begin in FY24. Therefore the 15% planned step increase in availability fees is shown as being implemented with a 24% water increase and a 7.5% sewer increase, and further increases in availability are similarly recommended to be skewed towards water rate increases such that the two types of availability fees over time balance to the fair level calculated in Section 7.1.

7.4. Additional Scenario Definitions for Rate Adjustments

Four rate scenarios were prepared in this study for consideration by Town Council. The recommended scenario after extensive discussion by the Town Council was Scenario D, and that scenario is the one that was adopted for FY2024.

- Scenario A (24% Not Balanced): 24% step increase in rates, followed by 5% increases. All increases applied equally to water and sewer rates (rate balance not adjusted). The financial summaries for this scenario were already shown above.
- Scenario B (24% Balanced): 24% step increase in rates, followed by 5% increases that only raise water rates while holding sewer rates flat until the desired balance in rates is achieved (by 2028 for usage fees, by 2030 for availability).
- Scenario C (15%/15% Not Balanced): Two consecutive 15% step increases in rates, followed by 5% increases, with increases applied equally to water and sewer rates (rate balance not adjusted). Financial summary already shown above.
- Scenario D (15%/15% Balanced): Two consecutive 15% step increases in rates (achieved with 20% water/12% sewer increase), followed by 5% increases that only raise water rates while holding sewer rates flat until the desired balance in rates is achieved (by 2028 for both usage and availability fees).

The financial performance of all four scenarios is nearly equivalent (though final rates end up slightly higher in Scenarios C and D due to the phasing in of rates). All four scenarios are consistent with the Town fiscal policy. The only differences are in how rate adjustments are phased in over time and whether water/sewer rates are rebalanced.

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8. Scenario Detailed Rates and Analysis

For each scenario, the calculated rate increases are in Table 17 and Table 18, and the resulting rates in Table 19 and Table 20. This rate study recommends Scenario D.

Table 17. Usage Rate Increases by Year for Each Scenario

Usage Rate Increases	2024 Rate Increase			2025 Rate Increase			2026 Rate Increase			2027 Rate Increase			2028 Rate Increase			2029+	
	Water	Sewer	Total	Water	Sewer	Total	Water	Sewer	Total	Water	Sewer	Total	Water	Sewer	Total	Total	
A: 24% Not Balanced	24.0%	24.0%	24.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
B: 24% Balanced	24.0%	24.0%	24.0%	12.5%	0.0%	5.0%	11.7%	0.0%	5.0%	11.0%	0.0%	5.0%	10.4%	0.0%	5.0%	5.0%	5.0%
C: 15%/15% Not Balanced	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
D: 15%/15% Balanced	19.8%	11.9%	15.0%	19.8%	11.6%	15.0%	11.5%	0.0%	5.0%	10.8%	0.0%	5.0%	10.3%	0.0%	5.0%	5.0%	5.0%

Table 18. Availability Fee Increases by Year for Each Scenario

Availability Fee Increases	2024 Avail Increase			2025 Avail Increase			2026 Avail Increase			2027 Avail Increase			2028 Avail Increase			2029+	
	Water	Sewer	Total	Water	Sewer	Total	Water	Sewer	Total	Water	Sewer	Total	Water	Sewer	Total	Total	
A: 24% Not Balanced	24.0%	24.0%	24.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
B: 24% Balanced	24.0%	24.0%	24.0%	11.0%	0.0%	5.0%	10.4%	0.0%	5.0%	9.9%	0.0%	5.0%	9.5%	0.0%	5.0%	5.0%	5.0%
C: 15%/15% Not Balanced	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
D: 15%/15% Balanced	24.0%	7.5%	15.0%	24.0%	6.4%	15.0%	9.5%	0.0%	5.0%	9.1%	0.0%	5.0%	8.8%	0.0%	5.0%	5.0%	5.0%

Table 19. Usage Rates by Year for Each Scenario

Scenario Usage Rates	2024 Usage Rates			2025 Usage Rates			2026 Usage Rates			2027 Usage Rates			2028 Usage Rates		
	Water	Sewer	Total	Water	Sewer	Total	Water	Sewer	Total	Water	Sewer	Total	Water	Sewer	Total
A: 24% Not Balanced	\$9.16	\$13.75	\$22.91	\$9.62	\$14.44	\$24.06	\$10.10	\$15.16	\$25.26	\$10.61	\$15.92	\$26.53	\$11.14	\$16.72	\$27.86
B: 24% Balanced	\$9.16	\$13.75	\$22.91	\$10.31	\$13.75	\$24.06	\$11.51	\$13.75	\$25.26	\$12.78	\$13.75	\$26.53	\$14.11	\$13.75	\$27.86
C: 15%/15% Not Balanced	\$8.50	\$12.75	\$21.25	\$9.78	\$14.66	\$24.44	\$10.27	\$15.39	\$25.66	\$10.78	\$16.16	\$26.94	\$11.32	\$16.97	\$28.29
D: 15%/15% Balanced	\$8.85	\$12.40	\$21.25	\$10.60	\$13.84	\$24.44	\$11.82	\$13.84	\$25.66	\$13.10	\$13.84	\$26.94	\$14.45	\$13.84	\$28.29

Table 20. Availability Fees by Year for Each Scenario

Scenario Avail Fees	2024 Avail Fees			2025 Avail Fees			2026 Avail Fees			2027 Avail Fees			2028 Avail Fees		
	Water	Sewer	Total	Water	Sewer	Total	Water	Sewer	Total	Water	Sewer	Total	Water	Sewer	Total
A: 24% Not Balanced	\$14,754	\$17,751	\$32,505	\$15,492	\$18,639	\$34,131	\$16,267	\$19,571	\$35,838	\$17,080	\$20,550	\$37,630	\$17,934	\$21,578	\$39,512
B: 24% Balanced	\$14,754	\$17,751	\$32,505	\$16,380	\$17,751	\$34,131	\$18,087	\$17,751	\$35,838	\$19,879	\$17,751	\$37,630	\$21,761	\$17,751	\$39,512
C: 15%/15% Not Balanced	\$13,683	\$16,462	\$30,145	\$15,735	\$18,931	\$34,666	\$16,522	\$19,878	\$36,400	\$17,348	\$20,872	\$38,220	\$18,216	\$21,916	\$40,132
D: 15%/15% Balanced	\$14,754	\$15,391	\$30,145	\$18,295	\$16,371	\$34,666	\$20,029	\$16,371	\$36,400	\$21,849	\$16,371	\$38,220	\$23,761	\$16,371	\$40,132

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The bi-monthly bills, and the change in bills each year both bi-monthly and monthly, are shown in Table 21 and Table 22.

Table 21. In-Town Bills for Each Scenario, with Bi-Monthly and Monthly Changes

In-Town Bills	In-Town User Bimonthly Bills (Typical)						Bi-Monthly Change in In-Town Bills					Monthly Change in In-Town Bills				
	2023	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028
A: 24% Not Balanced	\$159.64	\$197.90	\$207.84	\$218.20	\$229.17	\$240.66	\$ 38.27	\$ 9.93	\$ 10.37	\$ 10.97	\$ 11.49	\$ 19.13	\$ 4.97	\$ 5.18	\$ 5.49	\$ 5.74
B: 24% Balanced	\$159.64	\$197.90	\$207.84	\$218.20	\$229.17	\$240.66	\$ 38.27	\$ 9.93	\$ 10.37	\$ 10.97	\$ 11.49	\$ 19.13	\$ 4.97	\$ 5.18	\$ 5.49	\$ 5.74
C: 15%/15% Not Balanced	\$159.64	\$183.56	\$211.12	\$221.66	\$232.72	\$244.38	\$ 23.93	\$ 27.56	\$ 10.54	\$ 11.06	\$ 11.66	\$ 11.96	\$ 13.78	\$ 5.27	\$ 5.53	\$ 5.83
D: 15%/15% Balanced	\$159.64	\$183.56	\$211.12	\$221.66	\$232.72	\$244.38	\$ 23.93	\$ 27.56	\$ 10.54	\$ 11.06	\$ 11.66	\$ 11.96	\$ 13.78	\$ 5.27	\$ 5.53	\$ 5.83

Table 22. Out-of-Town Bills for Each Scenario, with Bi-Monthly and Monthly Changes

Out-of-Town Bills	Out-of-Town User Bimonthly Bills (Typical)						Bi-Monthly Change in Out-of-Town Bills					Monthly Change in Out-of-Town Bills				
	2023	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028
A: 24% Not Balanced	\$239.45	\$296.86	\$311.76	\$327.31	\$343.76	\$361.00	\$ 57.40	\$ 14.90	\$ 15.55	\$ 16.46	\$ 17.23	\$ 28.70	\$ 7.45	\$ 7.77	\$ 8.23	\$ 8.62
B: 24% Balanced	\$239.45	\$296.86	\$311.76	\$327.31	\$343.76	\$361.00	\$ 57.40	\$ 14.90	\$ 15.55	\$ 16.46	\$ 17.23	\$ 28.70	\$ 7.45	\$ 7.77	\$ 8.23	\$ 8.62
C: 15%/15% Not Balanced	\$239.45	\$275.35	\$316.68	\$332.49	\$349.08	\$366.57	\$ 35.89	\$ 41.33	\$ 15.81	\$ 16.59	\$ 17.49	\$ 17.95	\$ 20.67	\$ 7.90	\$ 8.29	\$ 8.75
D: 15%/15% Balanced	\$239.45	\$275.35	\$316.68	\$332.49	\$349.08	\$366.57	\$ 35.89	\$ 41.33	\$ 15.81	\$ 16.59	\$ 17.49	\$ 17.95	\$ 20.67	\$ 7.90	\$ 8.29	\$ 8.75

For each scenario, the ratio of water rates to sewer rates by year is shown in Table 23 and Table 24.

Table 23. Ratio of Water Usage Rates to Combined Usage Rates by Year

	User Rates %Water					
	2023	2024	2025	2026	2027	2028
A: 24% Not Balanced	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
B: 24% Balanced	40.0%	40.0%	42.9%	45.6%	48.2%	50.6%
C: 15%/15% Not Balanced	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
D: 15%/15% Balanced	40.0%	41.6%	43.4%	46.1%	48.6%	51.1%

Table 24. Ratio of Water Availability Fees to Combined Availability Fees by Year

	Availability Fees %Water					
	2023	2024	2025	2026	2027	2028
A: 24% Not Balanced	45.39%	45.39%	45.39%	45.39%	45.39%	45.39%
B: 24% Balanced	45.39%	45.39%	47.99%	50.47%	52.83%	55.07%
C: 15%/15% Not Balanced	45.39%	45.39%	45.39%	45.39%	45.39%	45.39%
D: 15%/15% Balanced	45.39%	48.94%	52.78%	55.02%	57.17%	59.21%

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Table 25. 10-Year Cash Flow Analysis for Current Rate Structure (5% Annual Increases)

Current Rates w/5% Increases	5-year Projection					10-year Projection				
	Projected 2024	Projected 2025	Projected 2026	Projected 2027	Projected 2028	Projected 2029	Projected 2030	Projected 2031	Projected 2032	Projected 2033
Combined Usage Rate Increase	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Water Operating Receipts	\$ 1,048,624	\$ 1,104,352	\$ 1,162,240	\$ 1,223,934	\$ 1,287,826	\$ 1,355,568	\$ 1,427,323	\$ 1,502,158	\$ 1,580,057	\$ 1,660,533
Sewer Operating Receipts	\$ 1,521,428	\$ 1,601,149	\$ 1,685,583	\$ 1,773,979	\$ 1,866,363	\$ 1,965,268	\$ 2,068,228	\$ 2,176,995	\$ 2,291,610	\$ 2,412,113
Operating Receipts	\$ 2,570,052	\$ 2,705,501	\$ 2,847,823	\$ 2,997,913	\$ 3,154,189	\$ 3,320,835	\$ 3,495,551	\$ 3,679,153	\$ 3,871,667	\$ 4,072,645
Water Operating Payments	\$ (1,091,436)	\$ (1,146,008)	\$ (1,203,308)	\$ (1,263,473)	\$ (1,326,647)	\$ (1,392,979)	\$ (1,462,628)	\$ (1,535,760)	\$ (1,612,548)	\$ (1,693,175)
Sewer Operating Payments	\$ (1,236,125)	\$ (1,297,931)	\$ (1,362,828)	\$ (1,430,969)	\$ (1,502,517)	\$ (1,577,643)	\$ (1,656,525)	\$ (1,739,352)	\$ (1,826,319)	\$ (1,917,635)
Operating Payments	\$ (2,327,561)	\$ (2,443,939)	\$ (2,566,136)	\$ (2,694,442)	\$ (2,829,164)	\$ (2,970,623)	\$ (3,119,154)	\$ (3,275,111)	\$ (3,438,867)	\$ (3,610,810)
Operating Surplus/(Deficit)	\$ 242,491	\$ 261,562	\$ 281,688	\$ 303,471	\$ 325,025	\$ 350,213	\$ 376,397	\$ 404,042	\$ 432,800	\$ 461,835
Total Debt Service (P+I)	\$ (406,959)	\$ (626,585)	\$ (875,071)	\$ (875,128)	\$ (1,137,036)	\$ (1,137,036)	\$ (1,346,234)	\$ (1,346,234)	\$ (1,346,234)	\$ (1,346,234)
Acquisition and Construction	\$ (3,326,000)	\$ (2,259,000)	\$ (2,470,000)	\$ (2,920,000)	\$ (1,290,000)	\$ (600,000)	\$ (630,000)	\$ (661,500)	\$ (694,575)	\$ (729,304)
Bond Contributions	\$ 2,522,000	\$ 1,843,000	\$ 1,843,000	\$ 2,328,000	\$ 776,000	\$ 388,000	\$ 436,500	\$ 485,000	\$ 533,500	\$ 582,000
Cash-funded capital	\$ (804,000)	\$ (416,000)	\$ (627,000)	\$ (592,000)	\$ (514,000)	\$ (212,000)	\$ (193,500)	\$ (176,500)	\$ (161,075)	\$ (147,304)
Availability fees	\$ 178,906	\$ 187,857	\$ 197,249	\$ 207,116	\$ 217,445	\$ 228,313	\$ 239,727	\$ 251,713	\$ 208,929	\$ 190,306
Other Non-Operating Income	\$ 147,674	\$ 183,707	\$ 116,133	\$ 112,203	\$ 63,593	\$ 93,354	\$ 59,944	\$ 19,484	\$ (21,945)	\$ (66,031)
Non-Operating Surplus/(Deficit)	\$ (884,379)	\$ (671,022)	\$ (1,188,688)	\$ (1,147,808)	\$ (1,369,998)	\$ (1,027,369)	\$ (1,240,063)	\$ (1,251,537)	\$ (1,320,326)	\$ (1,369,263)
Total Cash Surplus/(Deficit)	\$ (641,888)	\$ (409,459)	\$ (907,001)	\$ (844,337)	\$ (1,044,973)	\$ (677,156)	\$ (863,666)	\$ (847,495)	\$ (887,526)	\$ (907,428)
Water Cash Reserves	\$ 1,361,713	\$ 1,061,073	\$ 250,087	\$ (470,950)	\$ (1,345,388)	\$ (2,101,161)	\$ (2,974,217)	\$ (3,865,095)	\$ (4,831,533)	\$ (5,854,799)
Sewer Cash Reserves	\$ 2,918,861	\$ 2,810,042	\$ 2,714,028	\$ 2,590,727	\$ 2,420,192	\$ 2,498,809	\$ 2,508,199	\$ 2,551,582	\$ 2,630,494	\$ 2,746,331
Total Cash Reserves	\$ 4,280,577	\$ 3,871,118	\$ 2,964,117	\$ 2,119,780	\$ 1,074,807	\$ 397,651	\$ (466,015)	\$ (1,313,511)	\$ (2,201,036)	\$ (3,108,465)
Reserve Target (Op Pmts + Debt)	\$ 2,734,520	\$ 3,070,524	\$ 3,441,206	\$ 3,569,570	\$ 3,966,200	\$ 4,107,658	\$ 4,465,388	\$ 4,621,345	\$ 4,785,101	\$ 4,957,044
Months of Reserve (>12)	18.8	15.1	10.3	7.1	3.3	1.2	-1.3	-3.4	-5.5	-7.5
Total Expenditures (Pmts+Debt+Const)	\$ 6,060,520	\$ 5,329,524	\$ 5,911,206	\$ 6,489,570	\$ 5,256,200	\$ 4,707,658	\$ 5,095,388	\$ 5,282,845	\$ 5,479,676	\$ 5,686,348
Debt Servicing Ratio (<30%)	7%	12%	15%	13%	22%	24%	26%	25%	25%	24%
CIP Expenses (5-year annual avg)	\$ (1,119,101)	\$ (1,510,789)	\$ (1,899,756)	\$ (2,321,000)	\$ (2,453,000)	\$ (1,907,800)	\$ (1,582,000)	\$ (1,220,300)	\$ (775,215)	\$ (663,076)
Debt Funded CIP (5-year annual avg)	\$ 504,400	\$ 873,000	\$ 1,241,600	\$ 1,707,200	\$ 1,862,400	\$ 1,435,600	\$ 1,154,300	\$ 882,700	\$ 523,800	\$ 485,000
Non-debt funded CIP (>25%)	55%	42%	35%	26%	24%	25%	27%	28%	32%	27%
Total Debt	\$ 5,865,000	\$ 9,330,434	\$ 8,919,571	\$ 11,691,522	\$ 11,144,131	\$ 13,073,724	\$ 12,397,903	\$ 11,693,684	\$ 10,950,072	\$ 10,166,021
Assessed Property (\$M)	\$ 126.0M	\$ 131.0M	\$ 136.3M	\$ 141.7M	\$ 147.4M	\$ 153.3M	\$ 159.4M	\$ 165.8M	\$ 172.4M	\$ 179.3M
Debt vs. Assessments (no pro-rating)	4.7%	7.1%	6.5%	8.2%	7.6%	8.5%	7.8%	7.1%	6.4%	5.7%
%Customers In-Town	14%	14%	14%	14%	15%	15%	15%	15%	15%	15%
Pro-Rata Debt	\$ 836,921	\$ 1,338,116	\$ 1,285,548	\$ 1,693,344	\$ 1,621,916	\$ 1,911,911	\$ 1,821,719	\$ 1,726,348	\$ 1,624,116	\$ 1,515,621
Pro-Rata Debt vs. Assessments (<2%)	0.7%	1.0%	0.9%	1.2%	1.1%	1.2%	1.1%	1.0%	0.9%	0.8%

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Table 26. 10-Year Cash Flow Analysis for Scenario A (24% Step, Not Balanced)

A: 24% Not Balanced	5-year Projection					10-year Projection				
	Projected 2024	Projected 2025	Projected 2026	Projected 2027	Projected 2028	Projected 2029	Projected 2030	Projected 2031	Projected 2032	Projected 2033
Combined Usage Rate Increase	24%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Water Operating Receipts	\$ 1,237,358	\$ 1,302,611	\$ 1,370,885	\$ 1,443,963	\$ 1,519,294	\$ 1,599,483	\$ 1,684,565	\$ 1,771,968	\$ 1,865,104	\$ 1,960,689
Sewer Operating Receipts	\$ 1,796,861	\$ 1,891,279	\$ 1,990,483	\$ 2,095,426	\$ 2,206,150	\$ 2,322,693	\$ 2,445,098	\$ 2,573,404	\$ 2,709,379	\$ 2,852,281
Operating Receipts	\$ 3,034,220	\$ 3,193,891	\$ 3,361,367	\$ 3,539,389	\$ 3,725,443	\$ 3,922,177	\$ 4,129,664	\$ 4,345,373	\$ 4,574,484	\$ 4,812,971
Water Operating Payments	\$ (1,091,436)	\$ (1,146,008)	\$ (1,203,308)	\$ (1,263,473)	\$ (1,326,647)	\$ (1,392,979)	\$ (1,462,628)	\$ (1,535,760)	\$ (1,612,548)	\$ (1,693,175)
Sewer Operating Payments	\$ (1,236,125)	\$ (1,297,931)	\$ (1,362,828)	\$ (1,430,969)	\$ (1,502,517)	\$ (1,577,643)	\$ (1,656,525)	\$ (1,739,352)	\$ (1,826,319)	\$ (1,917,635)
Operating Payments	\$ (2,327,561)	\$ (2,443,939)	\$ (2,566,136)	\$ (2,694,442)	\$ (2,829,164)	\$ (2,970,623)	\$ (3,119,154)	\$ (3,275,111)	\$ (3,438,867)	\$ (3,610,810)
Operating Surplus/(Deficit)	\$ 706,659	\$ 749,952	\$ 795,232	\$ 844,947	\$ 896,279	\$ 951,554	\$ 1,010,510	\$ 1,070,261	\$ 1,135,617	\$ 1,202,160
Total Debt Service (P+I)	\$ (406,959)	\$ (626,585)	\$ (875,071)	\$ (875,128)	\$ (1,137,036)	\$ (1,137,036)	\$ (1,346,234)	\$ (1,346,234)	\$ (1,346,234)	\$ (1,346,234)
Acquisition and Construction	\$ (3,326,000)	\$ (2,259,000)	\$ (2,470,000)	\$ (2,920,000)	\$ (1,290,000)	\$ (600,000)	\$ (630,000)	\$ (661,500)	\$ (694,575)	\$ (729,304)
Bond Contributions	\$ 2,522,000	\$ 1,843,000	\$ 1,843,000	\$ 2,328,000	\$ 776,000	\$ 388,000	\$ 436,500	\$ 485,000	\$ 533,500	\$ 582,000
Cash-funded capital	\$ (804,000)	\$ (416,000)	\$ (627,000)	\$ (592,000)	\$ (514,000)	\$ (212,000)	\$ (193,500)	\$ (176,500)	\$ (161,075)	\$ (147,304)
Availability fees	\$ 211,283	\$ 221,852	\$ 232,947	\$ 244,660	\$ 256,926	\$ 269,770	\$ 283,257	\$ 297,421	\$ 246,866	\$ 224,860
Other Non-Operating Income	\$ 147,674	\$ 198,604	\$ 147,148	\$ 160,626	\$ 130,839	\$ 180,939	\$ 169,441	\$ 152,595	\$ 136,517	\$ 119,407
Non-Operating Surplus/(Deficit)	\$ (852,003)	\$ (622,130)	\$ (1,121,976)	\$ (1,061,842)	\$ (1,263,271)	\$ (898,327)	\$ (1,087,036)	\$ (1,072,718)	\$ (1,123,927)	\$ (1,149,270)
Total Cash Surplus/(Deficit)	\$ (145,344)	\$ 127,822	\$ (326,744)	\$ (216,895)	\$ (366,992)	\$ 53,227	\$ (76,526)	\$ (2,457)	\$ 11,690	\$ 52,890
Water Cash Reserves	\$ 1,565,143	\$ 1,484,297	\$ 910,857	\$ 446,715	\$ (150,798)	\$ (607,994)	\$ (1,159,246)	\$ (1,705,110)	\$ (2,309,966)	\$ (2,950,388)
Sewer Cash Reserves	\$ 3,211,975	\$ 3,420,643	\$ 3,667,340	\$ 3,914,587	\$ 4,145,108	\$ 4,655,531	\$ 5,130,257	\$ 5,673,665	\$ 6,290,210	\$ 6,983,522
Total Cash Reserves	\$ 4,777,122	\$ 4,904,943	\$ 4,578,200	\$ 4,361,305	\$ 3,994,313	\$ 4,047,540	\$ 3,971,014	\$ 3,968,557	\$ 3,980,247	\$ 4,033,137
Reserve Target (Op Pmts + Debt)	\$ 2,734,520	\$ 3,070,524	\$ 3,441,206	\$ 3,569,570	\$ 3,966,200	\$ 4,107,658	\$ 4,465,388	\$ 4,621,345	\$ 4,785,101	\$ 4,957,044
Months of Reserve (>12)	21.0	19.2	16.0	14.7	12.1	11.8	10.7	10.3	10.0	9.8
Total Expenditures (Pmts+Debt+Const)	\$ 6,060,520	\$ 5,329,524	\$ 5,911,206	\$ 6,489,570	\$ 5,256,200	\$ 4,707,658	\$ 5,095,388	\$ 5,282,845	\$ 5,479,676	\$ 5,686,348
Debt Servicing Ratio (<30%)	7%	12%	15%	13%	22%	24%	26%	25%	25%	24%
CIP Expenses (5-year annual avg)	\$ (1,119,101)	\$ (1,510,789)	\$ (1,899,756)	\$ (2,321,000)	\$ (2,453,000)	\$ (1,907,800)	\$ (1,582,000)	\$ (1,220,300)	\$ (775,215)	\$ (663,076)
Debt Funded CIP (5-year annual avg)	\$ 504,400	\$ 873,000	\$ 1,241,600	\$ 1,707,200	\$ 1,862,400	\$ 1,435,600	\$ 1,154,300	\$ 882,700	\$ 523,800	\$ 485,000
Non-debt funded CIP (>25%)	55%	42%	35%	26%	24%	25%	27%	28%	32%	27%
Total Debt	\$ 5,865,000	\$ 9,330,434	\$ 8,919,571	\$ 11,691,522	\$ 11,144,131	\$ 13,073,724	\$ 12,397,903	\$ 11,693,684	\$ 10,950,072	\$ 10,166,021
Assessed Property (\$M)	\$ 126.0M	\$ 131.0M	\$ 136.3M	\$ 141.7M	\$ 147.4M	\$ 153.3M	\$ 159.4M	\$ 165.8M	\$ 172.4M	\$ 179.3M
Debt vs. Assessments (no pro-rating)	4.7%	7.1%	6.5%	8.2%	7.6%	8.5%	7.8%	7.1%	6.4%	5.7%
%Customers In-Town	14%	14%	14%	14%	15%	15%	15%	15%	15%	15%
Pro-Rata Debt	\$ 836,921	\$ 1,338,116	\$ 1,285,548	\$ 1,693,344	\$ 1,621,916	\$ 1,911,911	\$ 1,821,719	\$ 1,726,348	\$ 1,624,116	\$ 1,515,621
Pro-Rata Debt vs. Assessments (<2%)	0.7%	1.0%	0.9%	1.2%	1.1%	1.2%	1.1%	1.0%	0.9%	0.8%

Town of Round Hill Water and Sewer Rate Study

Table 27. 10-Year Cash Flow Analysis for Scenario B (24% Step, Balanced)

B: 24% Balanced	5-year Projection					10-year Projection				
	Projected 2024	Projected 2025	Projected 2026	Projected 2027	Projected 2028	Projected 2029	Projected 2030	Projected 2031	Projected 2032	Projected 2033
Combined Usage Rate Increase	24%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Water Operating Receipts	\$ 1,237,358	\$ 1,396,269	\$ 1,562,323	\$ 1,738,286	\$ 1,924,089	\$ 2,025,346	\$ 2,131,593	\$ 2,243,827	\$ 2,361,086	\$ 2,482,109
Sewer Operating Receipts	\$ 1,796,861	\$ 1,801,495	\$ 1,806,128	\$ 1,810,761	\$ 1,815,394	\$ 1,910,738	\$ 2,010,912	\$ 2,116,880	\$ 2,228,681	\$ 2,346,357
Operating Receipts	\$ 3,034,220	\$ 3,197,763	\$ 3,368,451	\$ 3,549,047	\$ 3,739,483	\$ 3,936,084	\$ 4,142,506	\$ 4,360,706	\$ 4,589,767	\$ 4,828,466
Water Operating Payments	\$ (1,091,436)	\$ (1,146,008)	\$ (1,203,308)	\$ (1,263,473)	\$ (1,326,647)	\$ (1,392,979)	\$ (1,462,628)	\$ (1,535,760)	\$ (1,612,548)	\$ (1,693,175)
Sewer Operating Payments	\$ (1,236,125)	\$ (1,297,931)	\$ (1,362,828)	\$ (1,430,969)	\$ (1,502,517)	\$ (1,577,643)	\$ (1,656,525)	\$ (1,739,352)	\$ (1,826,319)	\$ (1,917,635)
Operating Payments	\$ (2,327,561)	\$ (2,443,939)	\$ (2,566,136)	\$ (2,694,442)	\$ (2,829,164)	\$ (2,970,623)	\$ (3,119,154)	\$ (3,275,111)	\$ (3,438,867)	\$ (3,610,810)
Operating Surplus/(Deficit)	\$ 706,659	\$ 753,825	\$ 802,315	\$ 854,605	\$ 910,319	\$ 965,461	\$ 1,023,352	\$ 1,085,595	\$ 1,150,900	\$ 1,217,655
Total Debt Service (P+I)	\$ (406,959)	\$ (626,585)	\$ (875,071)	\$ (875,128)	\$ (1,137,036)	\$ (1,137,036)	\$ (1,346,234)	\$ (1,346,234)	\$ (1,346,234)	\$ (1,346,234)
Acquisition and Construction	\$ (3,326,000)	\$ (2,259,000)	\$ (2,470,000)	\$ (2,920,000)	\$ (1,290,000)	\$ (600,000)	\$ (630,000)	\$ (661,500)	\$ (694,575)	\$ (729,304)
Bond Contributions	\$ 2,522,000	\$ 1,843,000	\$ 1,843,000	\$ 2,328,000	\$ 776,000	\$ 388,000	\$ 436,500	\$ 485,000	\$ 533,500	\$ 582,000
Cash-funded capital	\$ (804,000)	\$ (416,000)	\$ (627,000)	\$ (592,000)	\$ (514,000)	\$ (212,000)	\$ (193,500)	\$ (176,500)	\$ (161,075)	\$ (147,304)
Availability fees	\$ 211,283	\$ 221,852	\$ 247,761	\$ 260,221	\$ 273,267	\$ 286,930	\$ 301,275	\$ 316,336	\$ 258,585	\$ 232,889
Other Non-Operating Income	\$ 147,674	\$ 198,604	\$ 147,264	\$ 161,402	\$ 132,395	\$ 183,454	\$ 172,963	\$ 157,149	\$ 142,234	\$ 126,106
Non-Operating Surplus/(Deficit)	\$ (852,003)	\$ (622,130)	\$ (1,107,046)	\$ (1,045,504)	\$ (1,245,374)	\$ (878,652)	\$ (1,065,496)	\$ (1,049,250)	\$ (1,106,490)	\$ (1,134,542)
Total Cash Surplus/(Deficit)	\$ (145,344)	\$ 131,695	\$ (304,730)	\$ (190,900)	\$ (335,055)	\$ 86,809	\$ (42,144)	\$ 36,345	\$ 44,409	\$ 83,113
Water Cash Reserves	\$ 1,565,143	\$ 1,583,726	\$ 1,217,877	\$ 1,071,100	\$ 911,636	\$ 927,424	\$ 885,272	\$ 889,411	\$ 867,874	\$ 849,909
Sewer Cash Reserves	\$ 3,211,975	\$ 3,325,087	\$ 3,386,206	\$ 3,342,083	\$ 3,166,493	\$ 3,237,513	\$ 3,237,521	\$ 3,269,728	\$ 3,335,674	\$ 3,436,752
Total Cash Reserves	\$ 4,777,122	\$ 4,908,816	\$ 4,604,086	\$ 4,413,186	\$ 4,078,131	\$ 4,164,940	\$ 4,122,796	\$ 4,159,142	\$ 4,203,551	\$ 4,286,664
Reserve Target (Op Pmts + Debt)	\$ 2,734,520	\$ 3,070,524	\$ 3,441,206	\$ 3,569,570	\$ 3,966,200	\$ 4,107,658	\$ 4,465,388	\$ 4,621,345	\$ 4,785,101	\$ 4,957,044
Months of Reserve (>12)	21.0	19.2	16.1	14.8	12.3	12.2	11.1	10.8	10.5	10.4
Total Expenditures (Pmts+Debt+Const)	\$ 6,060,520	\$ 5,329,524	\$ 5,911,206	\$ 6,489,570	\$ 5,256,200	\$ 4,707,658	\$ 5,095,388	\$ 5,282,845	\$ 5,479,676	\$ 5,686,348
Debt Servicing Ratio (<30%)	7%	12%	15%	13%	22%	24%	26%	25%	25%	24%
CIP Expenses (5-year annual avg)	\$ (1,119,101)	\$ (1,510,789)	\$ (1,899,756)	\$ (2,321,000)	\$ (2,453,000)	\$ (1,907,800)	\$ (1,582,000)	\$ (1,220,300)	\$ (775,215)	\$ (663,076)
Debt Funded CIP (5-year annual avg)	\$ 504,400	\$ 873,000	\$ 1,241,600	\$ 1,707,200	\$ 1,862,400	\$ 1,435,600	\$ 1,154,300	\$ 882,700	\$ 523,800	\$ 485,000
Non-debt funded CIP (>25%)	55%	42%	35%	26%	24%	25%	27%	28%	32%	27%
Total Debt	\$ 5,865,000	\$ 9,330,434	\$ 8,919,571	\$ 11,691,522	\$ 11,144,131	\$ 13,073,724	\$ 12,397,903	\$ 11,693,684	\$ 10,950,072	\$ 10,166,021
Assessed Property (\$M)	\$ 126.0M	\$ 131.0M	\$ 136.3M	\$ 141.7M	\$ 147.4M	\$ 153.3M	\$ 159.4M	\$ 165.8M	\$ 172.4M	\$ 179.3M
Debt vs. Assessments (no pro-rating)	4.7%	7.1%	6.5%	8.2%	7.6%	8.5%	7.8%	7.1%	6.4%	5.7%
%Customers In-Town	14%	14%	14%	14%	15%	15%	15%	15%	15%	15%
Pro-Rata Debt	\$ 836,921	\$ 1,338,116	\$ 1,285,548	\$ 1,693,344	\$ 1,621,916	\$ 1,911,911	\$ 1,821,719	\$ 1,726,348	\$ 1,624,116	\$ 1,515,621
Pro-Rata Debt vs. Assessments (<2%)	0.7%	1.0%	0.9%	1.2%	1.1%	1.2%	1.1%	1.0%	0.9%	0.8%

Town of Round Hill Water and Sewer Rate Study

Table 28. 10-Year Cash Flow Analysis for Scenario C (Two 15% Steps, Not Balanced)

C: 15%/15% Not Balanced	5-year Projection					10-year Projection				
	Projected 2024	Projected 2025	Projected 2026	Projected 2027	Projected 2028	Projected 2029	Projected 2030	Projected 2031	Projected 2032	Projected 2033
Combined Usage Rate Increase	15%	15%	5%	5%	5%	5%	5%	5%	5%	5%
Water Operating Receipts	\$ 1,148,384	\$ 1,324,235	\$ 1,394,324	\$ 1,466,645	\$ 1,543,802	\$ 1,625,826	\$ 1,710,153	\$ 1,799,402	\$ 1,893,569	\$ 1,990,980
Sewer Operating Receipts	\$ 1,666,509	\$ 1,920,031	\$ 2,021,011	\$ 2,126,953	\$ 2,239,468	\$ 2,357,023	\$ 2,481,234	\$ 2,612,286	\$ 2,749,294	\$ 2,893,233
Operating Receipts	\$ 2,814,893	\$ 3,244,266	\$ 3,415,334	\$ 3,593,598	\$ 3,783,270	\$ 3,982,849	\$ 4,191,387	\$ 4,411,688	\$ 4,642,862	\$ 4,884,214
Water Operating Payments	\$ (1,091,436)	\$ (1,146,008)	\$ (1,203,308)	\$ (1,263,473)	\$ (1,326,647)	\$ (1,392,979)	\$ (1,462,628)	\$ (1,535,760)	\$ (1,612,548)	\$ (1,693,175)
Sewer Operating Payments	\$ (1,236,125)	\$ (1,297,931)	\$ (1,362,828)	\$ (1,430,969)	\$ (1,502,517)	\$ (1,577,643)	\$ (1,656,525)	\$ (1,739,352)	\$ (1,826,319)	\$ (1,917,635)
Operating Payments	\$ (2,327,561)	\$ (2,443,939)	\$ (2,566,136)	\$ (2,694,442)	\$ (2,829,164)	\$ (2,970,623)	\$ (3,119,154)	\$ (3,275,111)	\$ (3,438,867)	\$ (3,610,810)
Operating Surplus/(Deficit)	\$ 487,332	\$ 800,327	\$ 849,199	\$ 899,156	\$ 954,105	\$ 1,012,227	\$ 1,072,234	\$ 1,136,577	\$ 1,203,995	\$ 1,273,403
Total Debt Service (P+I)	\$ (406,959)	\$ (626,585)	\$ (875,071)	\$ (875,128)	\$ (1,137,036)	\$ (1,137,036)	\$ (1,346,234)	\$ (1,346,234)	\$ (1,346,234)	\$ (1,346,234)
Acquisition and Construction	\$ (3,326,000)	\$ (2,259,000)	\$ (2,470,000)	\$ (2,920,000)	\$ (1,290,000)	\$ (600,000)	\$ (630,000)	\$ (661,500)	\$ (694,575)	\$ (729,304)
Bond Contributions	\$ 2,522,000	\$ 1,843,000	\$ 1,843,000	\$ 2,328,000	\$ 776,000	\$ 388,000	\$ 436,500	\$ 485,000	\$ 533,500	\$ 582,000
Cash-funded capital	\$ (804,000)	\$ (416,000)	\$ (627,000)	\$ (592,000)	\$ (514,000)	\$ (212,000)	\$ (193,500)	\$ (176,500)	\$ (161,075)	\$ (147,304)
Availability fees	\$ 195,943	\$ 225,329	\$ 236,600	\$ 248,404	\$ 260,852	\$ 273,897	\$ 287,593	\$ 301,971	\$ 250,650	\$ 228,312
Other Non-Operating Income	\$ 147,674	\$ 191,564	\$ 141,513	\$ 156,550	\$ 128,379	\$ 180,258	\$ 170,684	\$ 155,857	\$ 142,002	\$ 127,222
Non-Operating Surplus/(Deficit)	\$ (867,343)	\$ (625,693)	\$ (1,123,958)	\$ (1,062,174)	\$ (1,261,805)	\$ (894,880)	\$ (1,081,458)	\$ (1,064,906)	\$ (1,114,657)	\$ (1,138,003)
Total Cash Surplus/(Deficit)	\$ (380,011)	\$ 174,634	\$ (274,759)	\$ (163,018)	\$ (307,699)	\$ 117,347	\$ (9,224)	\$ 71,670	\$ 89,339	\$ 135,400
Water Cash Reserves	\$ 1,469,207	\$ 1,408,686	\$ 858,074	\$ 416,727	\$ (155,403)	\$ (584,528)	\$ (1,107,532)	\$ (1,622,357)	\$ (2,195,108)	\$ (2,801,097)
Sewer Cash Reserves	\$ 3,073,244	\$ 3,308,400	\$ 3,584,253	\$ 3,862,582	\$ 4,127,013	\$ 4,673,484	\$ 5,187,264	\$ 5,773,760	\$ 6,435,848	\$ 7,177,237
Total Cash Reserves	\$ 4,542,455	\$ 4,717,089	\$ 4,442,330	\$ 4,279,312	\$ 3,971,612	\$ 4,088,959	\$ 4,079,735	\$ 4,151,405	\$ 4,240,744	\$ 4,376,144
Reserve Target (Op Pmts + Debt)	\$ 2,734,520	\$ 3,070,524	\$ 3,441,206	\$ 3,569,570	\$ 3,966,200	\$ 4,107,658	\$ 4,465,388	\$ 4,621,345	\$ 4,785,101	\$ 4,957,044
Months of Reserve (>12)	19.9	18.4	15.5	14.4	12.0	11.9	11.0	10.8	10.6	10.6
Total Expenditures (Pmts+Debt+Const)	\$ 6,060,520	\$ 5,329,524	\$ 5,911,206	\$ 6,489,570	\$ 5,256,200	\$ 4,707,658	\$ 5,095,388	\$ 5,282,845	\$ 5,479,676	\$ 5,686,348
Debt Servicing Ratio (<30%)	7%	12%	15%	13%	22%	24%	26%	25%	25%	24%
CIP Expenses (5-year annual avg)	\$ (1,119,101)	\$ (1,510,789)	\$ (1,899,756)	\$ (2,321,000)	\$ (2,453,000)	\$ (1,907,800)	\$ (1,582,000)	\$ (1,220,300)	\$ (775,215)	\$ (663,076)
Debt Funded CIP (5-year annual avg)	\$ 504,400	\$ 873,000	\$ 1,241,600	\$ 1,707,200	\$ 1,862,400	\$ 1,435,600	\$ 1,154,300	\$ 882,700	\$ 523,800	\$ 485,000
Non-debt funded CIP (>25%)	55%	42%	35%	26%	24%	25%	27%	28%	32%	27%
Total Debt	\$ 5,865,000	\$ 9,330,434	\$ 8,919,571	\$ 11,691,522	\$ 11,144,131	\$ 13,073,724	\$ 12,397,903	\$ 11,693,684	\$ 10,950,072	\$ 10,166,021
Assessed Property (\$M)	\$ 126.0M	\$ 131.0M	\$ 136.3M	\$ 141.7M	\$ 147.4M	\$ 153.3M	\$ 159.4M	\$ 165.8M	\$ 172.4M	\$ 179.3M
Debt vs. Assessments (no pro-rating)	4.7%	7.1%	6.5%	8.2%	7.6%	8.5%	7.8%	7.1%	6.4%	5.7%
%Customers In-Town	14%	14%	14%	14%	15%	15%	15%	15%	15%	15%
Pro-Rata Debt	\$ 836,921	\$ 1,338,116	\$ 1,285,548	\$ 1,693,344	\$ 1,621,916	\$ 1,911,911	\$ 1,821,719	\$ 1,726,348	\$ 1,624,116	\$ 1,515,621
Pro-Rata Debt vs. Assessments (<2%)	0.7%	1.0%	0.9%	1.2%	1.1%	1.2%	1.1%	1.0%	0.9%	0.8%

Town of Round Hill Water and Sewer Rate Study

Table 29. 10-Year Cash Flow Analysis for Scenario D (Two 15% Steps, Balanced) (RECOMMENDED SCENARIO)

D: 15%/15% Balanced	5-year Projection					10-year Projection				
	Projected 2024	Projected 2025	Projected 2026	Projected 2027	Projected 2028	Projected 2029	Projected 2030	Projected 2031	Projected 2032	Projected 2033
Combined Usage Rate Increase	15%	15%	5%	5%	5%	5%	5%	5%	5%	5%
Water Operating Receipts	\$ 1,195,972	\$ 1,435,055	\$ 1,603,916	\$ 1,781,749	\$ 1,970,383	\$ 2,073,528	\$ 2,182,631	\$ 2,297,733	\$ 2,417,874	\$ 2,541,726
Sewer Operating Receipts	\$ 1,620,495	\$ 1,812,866	\$ 1,817,528	\$ 1,822,191	\$ 1,826,853	\$ 1,923,016	\$ 2,024,149	\$ 2,130,151	\$ 2,241,986	\$ 2,359,695
Operating Receipts	\$ 2,816,468	\$ 3,247,921	\$ 3,421,445	\$ 3,603,940	\$ 3,797,236	\$ 3,996,543	\$ 4,206,780	\$ 4,427,884	\$ 4,659,860	\$ 4,901,421
Water Operating Payments	\$ (1,091,436)	\$ (1,146,008)	\$ (1,203,308)	\$ (1,263,473)	\$ (1,326,647)	\$ (1,392,979)	\$ (1,462,628)	\$ (1,535,760)	\$ (1,612,548)	\$ (1,693,175)
Sewer Operating Payments	\$ (1,236,125)	\$ (1,297,931)	\$ (1,362,828)	\$ (1,430,969)	\$ (1,502,517)	\$ (1,577,643)	\$ (1,656,525)	\$ (1,739,352)	\$ (1,826,319)	\$ (1,917,635)
Operating Payments	\$ (2,327,561)	\$ (2,443,939)	\$ (2,566,136)	\$ (2,694,442)	\$ (2,829,164)	\$ (2,970,623)	\$ (3,119,154)	\$ (3,275,111)	\$ (3,438,867)	\$ (3,610,810)
Operating Surplus/(Deficit)	\$ 488,907	\$ 803,982	\$ 855,309	\$ 909,497	\$ 968,072	\$ 1,025,921	\$ 1,087,627	\$ 1,152,772	\$ 1,220,993	\$ 1,290,611
Total Debt Service (P+I)	\$ (406,959)	\$ (626,585)	\$ (875,071)	\$ (875,128)	\$ (1,137,036)	\$ (1,137,036)	\$ (1,346,234)	\$ (1,346,234)	\$ (1,346,234)	\$ (1,346,234)
Acquisition and Construction	\$ (3,326,000)	\$ (2,259,000)	\$ (2,470,000)	\$ (2,920,000)	\$ (1,290,000)	\$ (600,000)	\$ (630,000)	\$ (661,500)	\$ (694,575)	\$ (729,304)
Bond Contributions	\$ 2,522,000	\$ 1,843,000	\$ 1,843,000	\$ 2,328,000	\$ 776,000	\$ 388,000	\$ 436,500	\$ 485,000	\$ 533,500	\$ 582,000
Cash-funded capital	\$ (804,000)	\$ (416,000)	\$ (627,000)	\$ (592,000)	\$ (514,000)	\$ (212,000)	\$ (193,500)	\$ (176,500)	\$ (161,075)	\$ (147,304)
Availability fees	\$ 195,943	\$ 225,329	\$ 251,245	\$ 263,783	\$ 276,998	\$ 290,875	\$ 305,448	\$ 320,756	\$ 254,786	\$ 224,473
Other Non-Operating Income	\$ 147,674	\$ 191,611	\$ 141,671	\$ 157,336	\$ 129,960	\$ 182,790	\$ 174,211	\$ 160,488	\$ 147,822	\$ 133,850
Non-Operating Surplus/(Deficit)	\$ (867,343)	\$ (625,645)	\$ (1,109,155)	\$ (1,046,009)	\$ (1,244,078)	\$ (875,371)	\$ (1,060,074)	\$ (1,041,490)	\$ (1,104,701)	\$ (1,135,214)
Total Cash Surplus/(Deficit)	\$ (378,436)	\$ 178,337	\$ (253,846)	\$ (136,512)	\$ (276,006)	\$ 150,550	\$ 27,552	\$ 111,282	\$ 116,292	\$ 155,396
Water Cash Reserves	\$ 1,523,758	\$ 1,592,333	\$ 1,282,023	\$ 1,194,960	\$ 1,100,546	\$ 1,185,992	\$ 1,219,249	\$ 1,304,778	\$ 1,362,375	\$ 1,424,798
Sewer Cash Reserves	\$ 3,020,269	\$ 3,130,030	\$ 3,186,494	\$ 3,137,045	\$ 2,955,454	\$ 3,020,558	\$ 3,014,853	\$ 3,040,605	\$ 3,099,300	\$ 3,192,273
Total Cash Reserves	\$ 4,544,030	\$ 4,722,366	\$ 4,468,520	\$ 4,332,008	\$ 4,056,002	\$ 4,206,553	\$ 4,234,105	\$ 4,345,387	\$ 4,461,678	\$ 4,617,075
Reserve Target (Op Pmts + Debt)	\$ 2,734,520	\$ 3,070,524	\$ 3,441,206	\$ 3,569,570	\$ 3,966,200	\$ 4,107,658	\$ 4,465,388	\$ 4,621,345	\$ 4,785,101	\$ 4,957,044
Months of Reserve (>12)	19.9	18.5	15.6	14.6	12.3	12.3	11.4	11.3	11.2	11.2
Total Expenditures (Pmts+Debt+Const)	\$ 6,060,520	\$ 5,329,524	\$ 5,911,206	\$ 6,489,570	\$ 5,256,200	\$ 4,707,658	\$ 5,095,388	\$ 5,282,845	\$ 5,479,676	\$ 5,686,348
Debt Servicing Ratio (<30%)	7%	12%	15%	13%	22%	24%	26%	25%	25%	24%
CIP Expenses (5-year annual avg)	\$ (1,119,101)	\$ (1,510,789)	\$ (1,899,756)	\$ (2,321,000)	\$ (2,453,000)	\$ (1,907,800)	\$ (1,582,000)	\$ (1,220,300)	\$ (775,215)	\$ (663,076)
Debt Funded CIP (5-year annual avg)	\$ 504,400	\$ 873,000	\$ 1,241,600	\$ 1,707,200	\$ 1,862,400	\$ 1,435,600	\$ 1,154,300	\$ 882,700	\$ 523,800	\$ 485,000
Non-debt funded CIP (>25%)	55%	42%	35%	26%	24%	25%	27%	28%	32%	27%
Total Debt	\$ 5,865,000	\$ 9,330,434	\$ 8,919,571	\$ 11,691,522	\$ 11,144,131	\$ 13,073,724	\$ 12,397,903	\$ 11,693,684	\$ 10,950,072	\$ 10,166,021
Assessed Property (\$M)	\$ 126.0M	\$ 131.0M	\$ 136.3M	\$ 141.7M	\$ 147.4M	\$ 153.3M	\$ 159.4M	\$ 165.8M	\$ 172.4M	\$ 179.3M
Debt vs. Assessments (no pro-rating)	4.7%	7.1%	6.5%	8.2%	7.6%	8.5%	7.8%	7.1%	6.4%	5.7%
%Customers In-Town	14%	14%	14%	14%	15%	15%	15%	15%	15%	15%
Pro-Rata Debt	\$ 836,921	\$ 1,338,116	\$ 1,285,548	\$ 1,693,344	\$ 1,621,916	\$ 1,911,911	\$ 1,821,719	\$ 1,726,348	\$ 1,624,116	\$ 1,515,621
Pro-Rata Debt vs. Assessments (<2%)	0.7%	1.0%	0.9%	1.2%	1.1%	1.2%	1.1%	1.0%	0.9%	0.8%

9. Multiplier Analysis

The Town currently has a 1.5x multiplier for calculating out-of-town rates and fees. While this report has not studied in detail what the true value of the multiplier should be, it appears far more significant than it is for out-of-town water bills. Any changes in the multiplier would have a minor impact on out-of-town water bills due to the unusual nature of the Round Hill utility system (having 86% of users outside town limits).

Reasons for having a multiplier include: uncompensated subsidies from the Town general fund, the use of the Town general fund to “float” utility system balances when reserves are low, the additional risk to the Town associated with securing debt for the system (utility bonds, while repaid by usage revenues, are general obligation bonds that are guaranteed by the town taxing authority), the inadequate availability fees that were provided from consent-decree users, the increased costs to deliver service to dispersed out-of-town areas, and the additional effort expended by Town residents.

But most importantly, the utility system derives more financial benefits from in-town users than it derives from out-of-town users in the form of state and federal aid to localities. Recent examples include the Coronavirus Aid, Relief and Economic Security Act (CARES) and the American Rescue Plan Act (ARPA). In both cases the Town was provided aid intended to assist localities but only for its in-town user population, though it spent monies from those grants to aid both in-town and out-of-town users.

Because of the growing importance of state and federal aid to localities, the system will derive significant financial benefits if out-of-town users shifted to become in-town users. The users themselves would financially benefit as it would provide significant new sources of revenue to the Round Hill community, not just from federal grants like CARES and ARPA, but also in the form of state sales taxes and other state revenues that are distributed to localities like Round Hill based on official population.

Increasing official Town population can benefit the Town and its utility system financially even if all that changes is a line on a map and there are no changes in cost of service or system facilities.

For FY24, the projected user revenue is approximately \$2.8M. Using the current proportion of in-town to out-of-town plus consent decree users, the usage revenue from each pool can be calculated, as shown in the first row of Table 30 below.

Table 30. Out-of-Town Multiplier Financial Impact

Multiplier	In-town		Out-of-town		In-town	Out-of-Town	Multiplier Annual Revenue	Multiplier Cost %	Out-of-Town Annual Cost	In-Town Annual Savings
	Combined Rate	% Change	Combined Rate	% Change	Annual Revenue	Annual Revenue				
1.50	\$21.25	0.0%	\$31.88	0.0%	\$281,537	\$2,528,306	\$120,621	4.8%	\$79	\$472
1.40	\$22.61	6.4%	\$31.65	-0.7%	\$299,503	\$2,510,339	\$102,655	4.1%	\$67	\$402
1.30	\$24.15	13.6%	\$31.39	-1.5%	\$319,919	\$2,489,924	\$82,239	3.3%	\$54	\$322
1.20	\$25.91	21.9%	\$31.10	-2.4%	\$343,321	\$2,466,521	\$58,837	2.4%	\$38	\$230
1.10	\$27.96	31.6%	\$30.75	-3.5%	\$370,418	\$2,439,425	\$31,740	1.3%	\$21	\$124
1.00	\$30.35	42.8%	\$30.35	-4.8%	\$402,158	\$2,407,684	\$0	0.0%	\$0	\$0

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The rates that would be required to raise the same amount of revenue for each value of the multiplier is also shown. For example, while the combined rate in FY2024 would be \$21.25 with a 1.5x multiplier, if the multiplier were eliminated the combined rate would need to be increased to \$30.35 to produce the same revenue. While all users would pay the same rate, that common rate would be very close to the existing out-of-town rate of \$31.88. Out-of-town rates are mostly set by actual cost of service, not by the multiplier.

As shown above, eliminating the multiplier would cause a one-time reduction in out-of-town rates of 4.8% and a one-time increase in in-town rates of 42.8%. It serves as a reduction for in-town water rates but it does not increase out-of-town rates much at all.

The total dollar value of the multiplier (in shifting revenues from one pool of users to another) is shown in the right-hand column. For next fiscal year, the multiplier would raise an additional \$121K from out-of-town users and reduces in-town revenues by the same amount. Averaging this value across the number of current households in each pool gives an average annual household cost of the multiplier of \$79 per out-of-town household (\$13/bi-monthly bill, or only \$6.58 per month of cost), and a \$472 benefit per in-town household (\$79/bi-monthly bill, or \$39.33 per month of savings).

The average monthly cost of service in FY24 is \$131.12. Rather than charge all users \$131.12, the multiplier creates a system of rates where out-of-town users instead pay an additional \$6.57 for a total of \$137.69. And the much smaller pool of in-town users get a large discount, only paying \$91.80 for a monthly savings of \$39.33. If it were instead expressed as a surcharge on out-of-town users and a rebate for in-town users, each out-of-town customer has an effective surcharge of \$13 per bi-monthly bill and each in-town customer has an effective bi-monthly rebate of \$79.

Stated another way, of the payments made by out-of-town users, 95% are for their equal share of operating and capital costs, and 5% are used to fund the multiplier (and therefore lower in-town rates) to recompense in-town users who assume ownership risk of the system, guarantee the general obligation bonds, take responsibility for managing the system, and bring significant additional revenues to the system in the form of state and federal aid that out-of-town users do not bring. The multiplier compensates for only some of these missing revenues and management services provided by in-town users, and a more complete analysis might justify an even higher multiplier.

Town of Round Hill Water and Sewer Rate Study

10. Availability Fees for Large Meters

Table 31. Availability Fees for All Meter Sizes (Scenarios A, B, C and D)

Scen	2024 Availability Fees				2025 Availability Fees				2026 Availability Fees				2027 Availability Fees				2028 Availability Fees			
	Water		Sewer		Water		Sewer		Water		Sewer		Water		Sewer		Water		Sewer	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
3/4"	\$14,754	\$22,131	\$17,751	\$26,627	\$15,492	\$23,238	\$18,639	\$27,959	\$16,267	\$24,401	\$19,571	\$29,357	\$17,080	\$25,620	\$20,550	\$30,825	\$17,934	\$26,901	\$21,578	\$32,367
1"	\$24,654	\$36,981	\$31,162	\$46,743	\$25,887	\$38,831	\$32,721	\$49,082	\$27,182	\$40,773	\$34,357	\$51,536	\$28,541	\$42,812	\$36,076	\$54,114	\$29,968	\$44,952	\$37,881	\$56,822
1.5"	\$49,278	\$73,917	\$57,389	\$86,084	\$51,743	\$77,615	\$60,260	\$90,390	\$54,332	\$81,498	\$63,273	\$94,910	\$57,047	\$85,571	\$66,438	\$99,657	\$59,900	\$89,850	\$69,762	\$104,643
2"	\$78,860	\$118,290	\$91,820	\$137,730	\$82,805	\$124,208	\$96,414	\$144,621	\$86,947	\$130,421	\$101,235	\$151,853	\$91,293	\$136,940	\$106,299	\$159,449	\$95,857	\$143,786	\$111,616	\$167,424
3"	\$147,865	\$221,798	\$172,164	\$258,246	\$155,261	\$232,892	\$180,777	\$271,166	\$163,028	\$244,542	\$189,816	\$284,724	\$171,176	\$256,764	\$199,311	\$298,967	\$179,735	\$269,603	\$209,282	\$313,923
4"	\$246,923	\$370,385	\$287,515	\$431,273	\$259,274	\$388,911	\$301,898	\$452,847	\$272,245	\$408,368	\$316,994	\$475,491	\$285,851	\$428,777	\$332,851	\$499,277	\$300,143	\$450,215	\$349,501	\$524,252
6"	\$493,846	\$740,769	\$575,030	\$862,545	\$518,548	\$777,822	\$603,796	\$905,694	\$544,489	\$816,734	\$633,987	\$950,981	\$571,702	\$857,553	\$665,701	\$998,552	\$600,287	\$900,431	\$699,003	\$1,048,505

Scen	2024 Availability Fees				2025 Availability Fees				2026 Availability Fees				2027 Availability Fees				2028 Availability Fees			
	Water		Sewer		Water		Sewer		Water		Sewer		Water		Sewer		Water		Sewer	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
3/4"	\$14,754	\$22,131	\$17,751	\$26,627	\$16,380	\$24,570	\$17,751	\$26,627	\$18,087	\$27,131	\$17,751	\$26,627	\$19,879	\$29,819	\$17,751	\$26,627	\$21,761	\$32,642	\$17,751	\$26,627
1"	\$24,654	\$36,981	\$31,162	\$46,743	\$27,371	\$41,057	\$31,162	\$46,743	\$30,223	\$45,335	\$31,162	\$46,743	\$33,218	\$49,827	\$31,162	\$46,743	\$36,363	\$54,545	\$31,162	\$46,743
1.5"	\$49,278	\$73,917	\$57,389	\$86,084	\$54,709	\$82,064	\$57,389	\$86,084	\$60,411	\$90,617	\$57,389	\$86,084	\$66,396	\$99,594	\$57,389	\$86,084	\$72,682	\$109,023	\$57,389	\$86,084
2"	\$78,860	\$118,290	\$91,820	\$137,730	\$87,551	\$131,327	\$91,820	\$137,730	\$96,675	\$145,013	\$91,820	\$137,730	\$106,253	\$159,380	\$91,820	\$137,730	\$116,313	\$174,470	\$91,820	\$137,730
3"	\$147,865	\$221,798	\$172,164	\$258,246	\$164,160	\$246,240	\$172,164	\$258,246	\$181,268	\$271,902	\$172,164	\$258,246	\$199,227	\$298,841	\$172,164	\$258,246	\$218,089	\$327,134	\$172,164	\$258,246
4"	\$246,923	\$370,385	\$287,515	\$431,273	\$274,136	\$411,204	\$287,515	\$431,273	\$302,704	\$454,056	\$287,515	\$431,273	\$332,695	\$499,043	\$287,515	\$431,273	\$364,192	\$546,288	\$287,515	\$431,273
6"	\$493,846	\$740,769	\$575,030	\$862,545	\$548,271	\$822,407	\$575,030	\$862,545	\$605,408	\$908,112	\$575,030	\$862,545	\$665,390	\$998,085	\$575,030	\$862,545	\$728,384	\$1,092,576	\$575,030	\$862,545

Scen	2024 Availability Fees				2025 Availability Fees				2026 Availability Fees				2027 Availability Fees				2028 Availability Fees			
	Water		Sewer		Water		Sewer		Water		Sewer		Water		Sewer		Water		Sewer	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
3/4"	\$13,683	\$20,525	\$16,462	\$24,693	\$15,735	\$23,603	\$18,931	\$28,397	\$16,522	\$24,783	\$19,878	\$29,817	\$17,348	\$26,022	\$20,872	\$31,308	\$18,216	\$27,324	\$21,916	\$32,874
1"	\$22,864	\$34,296	\$28,899	\$43,349	\$26,293	\$39,440	\$33,234	\$49,851	\$27,608	\$41,412	\$34,896	\$52,344	\$28,989	\$43,484	\$36,641	\$54,962	\$30,439	\$45,659	\$38,474	\$57,711
1.5"	\$45,701	\$68,552	\$53,222	\$79,833	\$52,555	\$78,833	\$61,204	\$91,806	\$55,183	\$82,775	\$64,266	\$96,399	\$57,942	\$86,913	\$67,479	\$101,219	\$60,841	\$91,262	\$70,854	\$106,281
2"	\$73,136	\$109,704	\$85,153	\$127,730	\$84,104	\$126,156	\$97,924	\$146,886	\$88,310	\$132,465	\$102,823	\$154,235	\$92,725	\$139,088	\$107,964	\$161,946	\$97,365	\$146,048	\$113,365	\$170,048
3"	\$137,131	\$205,697	\$159,662	\$239,493	\$157,696	\$236,544	\$183,609	\$275,414	\$165,583	\$248,375	\$192,794	\$289,191	\$173,862	\$260,793	\$202,434	\$303,651	\$182,561	\$273,842	\$212,560	\$318,840
4"	\$228,999	\$343,499	\$266,637	\$399,956	\$263,341	\$395,012	\$306,628	\$459,942	\$276,512	\$414,768	\$321,966	\$482,949	\$290,336	\$435,504	\$338,066	\$507,099	\$304,863	\$457,295	\$354,976	\$532,464
6"	\$457,997	\$686,996	\$533,274	\$799,911	\$526,682	\$790,023	\$613,255	\$919,883	\$553,024	\$829,536	\$643,932	\$965,898	\$580,672	\$871,008	\$676,132	\$1,014,198	\$609,726	\$914,589	\$709,952	\$1,064,928

Scen	2024 Availability Fees				2025 Availability Fees				2026 Availability Fees				2027 Availability Fees				2028 Availability Fees			
	Water		Sewer		Water		Sewer		Water		Sewer		Water		Sewer		Water		Sewer	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
3/4"	\$14,754	\$22,131	\$15,391	\$23,087	\$18,295	\$27,443	\$16,371	\$24,557	\$20,029	\$30,044	\$16,371	\$24,557	\$21,849	\$32,774	\$16,371	\$24,557	\$23,761	\$35,642	\$16,371	\$24,557
1"	\$24,654	\$36,981	\$27,019	\$40,529	\$30,571	\$45,857	\$28,740	\$43,110	\$33,468	\$50,202	\$28,740	\$43,110	\$36,510	\$54,765	\$28,740	\$43,110	\$39,705	\$59,558	\$28,740	\$43,110
1.5"	\$49,278	\$73,917	\$49,759	\$74,639	\$61,105	\$91,658	\$52,927	\$79,391	\$66,897	\$100,346	\$52,927	\$79,391	\$72,976	\$109,464	\$52,927	\$79,391	\$79,362	\$119,043	\$52,927	\$79,391
2"	\$78,860	\$118,290	\$79,613	\$119,420	\$97,787	\$146,681	\$84,682	\$127,023	\$107,055	\$160,583	\$84,682	\$127,023	\$116,783	\$175,175	\$84,682	\$127,023	\$127,003	\$190,505	\$84,682	\$127,023
3"	\$147,865	\$221,798	\$149,275	\$223,913	\$183,352	\$275,028	\$158,780	\$238,170	\$200,731	\$301,097	\$158,780	\$238,170	\$218,971	\$328,457	\$158,780	\$238,170	\$238,133	\$357,200	\$158,780	\$238,170
4"	\$246,923	\$370,385	\$249,290	\$373,935	\$306,185	\$459,278	\$265,163	\$397,745	\$335,205	\$502,808	\$265,163	\$397,745	\$365,665	\$548,498	\$265,163	\$397,745	\$397,664	\$596,496	\$265,163	\$397,745
6"	\$493,846	\$740,769	\$498,579	\$747,869	\$612,370	\$918,555	\$530,326	\$795,489	\$670,411	\$1,005,617	\$530,326	\$795,489	\$731,330	\$1,096,995	\$530,326	\$795,489	\$795,328	\$1,192,992	\$530,326	\$795,489

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