JACKSON, MO
WASTEWATER SYSTEM
RATE STUDY REPORT

City of Jackson, Missouri

April 2022

prepared by:

HORNER SHIFRIN

JACKSON WASTEWATER RATE STUDY REPORT

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Executive Summary

This wastewater rate study analysis was commissioned by the City to update the 2020 rate study and evaluate new rate structures to ensure the continued successful operation and maintenance of the wastewater system.

This study analyzed the following rate increase scenarios:

- Scenario #1 - One rate increase in 2023 to cover proposed Phase 1 projects at the City's wastewater treatment plant financed by a $10.1M SRF loan.
- Scenario #2 – Looks to finance $22.4M in improvements to the wastewater treatment plant and sanitary collection system (Phases 1, 2 and 3). The City would receive three SRF loans to fund these projects and close on loans in 2023, 2026 and 2029. Phased-funding options were evaluated for this scenario.

For this study, we updated wastewater operations and maintenance costs and proprietary fund contributions based on the 2021 and 2022 budgets and the 2020 final audit report. For revenue projections, we adjusted rates by the Consumer Price Index (CPI) of 5.0% (close to recent historical data) for those years when not closing on a new SRF loan. On years when adding new SRF funding (2023 for Scenario #1 and 2023, 2026 and 2029 for Scenario #2), we tested various percentage increases to produce adequate revenue to fund the wastewater system. Customer and usage data were updated based on the City's Missouri Public Utility Alliance (MPUA) Data Sheets from the last four years (2019-2022).

Using this methodology, under Scenario #1, a rate increase of 25.2% in 2023 consisting of a monthly minimum charge of $17.74 per month with a user unit charge of $4.32 per 1,000 gallons of usage would fully fund the wastewater system. For a 5,000-gallon user, this works out to a monthly fee of $39.34. This will fully fund the wastewater system with no yearly deficits.

Under this scenario, upon retirement of the City's existing long-term debt (2024 and 2029), the wastewater department will see large increases in net revenue under the recommended rate schedule. These net revenue surpluses could be offset by foregoing the annual CPI increases in any given year or by adjusting the amount of money allocated to the proprietary fund accounts.

Horner & Shifrin also evaluated a scenario where the rate structure and revenues from Scenario 1 (that resulted in the surplus net revenue) were applied to the expenses for the wastewater system that include the Phase 2 and Phase 3 projects. That evaluation indicated that using the proposed schedule of rate increases recommended for Scenario #1 (the 25.2% increase) would also be sufficient to fund the wastewater system, including all Phase 1, Phase 2 and Phase 3 projects.

Note that anything less than the 25.2% rate increase for the first SRF loan will result in the wastewater system running at a deficit in some years. The duration and amount of the deficits will be dependent on the actual rate increases that are implemented by the City.

In regard to the phased-funding options, one includes three equal rate increases of 7% that would occur in years corresponding with the SRF loan closings (2023, 2026 and 2029). All other years would be subject to the annual CPI rate adjustment. According to this proposed schedule of rate increases, the system revenues will show deficits in years 2023 through 2026 and 2029-2030. In all other years, revenues will be sufficient to fund the wastewater system for the projected period.

For the second phased-funding option, there would be three rate increases. A 10% rate increase would occur with the loan closing in 2023 and a 7% increase that would occur with the SRF loan closings in 2026 and 2029. All other years would be subject to the annual CPI rate adjustment. According to this proposed schedule of rate increases, the system revenues will show deficits in years 2023, 2024 and 2029. In all other years, revenues will be sufficient to fund the wastewater system for the projected period.

However, given the uncertainty surrounding the economy, including inflation and interest rates, changing rules and regulations surrounding state and federal infrastructure funding, Congressional mid-term elections this year and a Presidential election in 2024, it may be prudent for the City to take a short-term look at funding the wastewater system.

By taking a short-term approach, the City can reevaluate conditions at the end of the period to determine their next steps in funding the system. Also at that time, it should be clearer how ARPA (American Rescue Plan Act) and/or IIJA (Infrastructure Investment and Jobs Act) grants may be available to supplement project funding.

1.0 BACKGROUND INFORMATION

1.1 Rate Study History

In 2013, the City's sewer rates were adjusted to raise the minimum charge for all customers to $12.26 with a monthly user unit charge of $2.98 per 1,000 gallons. At that time, the City's ordinances were also revised to allow an annual increase tied to the consumer price index. Table 2 shows the City's rate structure since 2012.

Table 1 – Rate Structure 2012 – 2022

Year	Minimum charge	User Unit Charge	5K gallon user pays
2012	$4.62	$2.98	$19.52
2013	$12.26	$2.98	$27.16
2014	$12.47	$3.03	$27.62
2015	$12.66	$3.08	$28.06
2016	$12.76	$3.10	$28.26
2017	$12.85	$3.12	$28.45
2018	$13.12	$3.19	$29.07
2020	$13.65	$3.32	$30.25
2021	$13.96	$3.39	$30.91
2022	$14.16	$3.45	$31.41

2.0 BASIS OF SEWER USER RATE ASSESSMENT

Sewer user rates are required to be structured so as to completely finance the municipal wastewater system operation, maintenance, debt, and debt reserve payments.

2.1 Wastewater Plant Operation and Maintenance Costs

An essential component of the City's overall wastewater system budget is the wastewater plant operation and maintenance costs. For the purposes of this study, the 2022 budget total of $1,122,802 was used as a basis for future projections.

2.2 Distributions to Water/Sewer Surplus & Wastewater Replacement Accounts

The Waterworks and Sewerage System Fund and Wastewater System Fund are proprietary funds used for the acquisition, operation, and maintenance of the City's sewer utility facilities and services. The Waterworks and Sewerage System Fund is also used for the acquisition, operation, and maintenance of the City's water utility.

After all required payments have been made, distributions from the remaining net operating revenue of the utilities are allocated to the proprietary fund accounts. Both the water and wastewater utility contribute to the Waterworks and Sewerage Fund while the Wastewater System Fund receives contributions only from the wastewater utility. Presently, the City has a balance in the wastewater replacement account which meets the requirements dictated by law. The following table shows the distributions to both of these accounts for the past nine years.

Table 2 – Yearly Distribution to Proprietary Funds

	Proprietary Funds	
Year	**Water/Sewer Surplus**	**Wastewater Replacement**
2014	$530,076	$51,000
2015	$636,951	$46,058
2016	$593,949	$51,050
2017	$507,962	$51,100
2018	$569,053	$51,100
2019	$611,174	($14,859)
2020	$653,295	--
2021	$824,734*	--
2022	$860,652*	--

*budget

2.3 Debt Service – Existing Loan Paybacks

In fiscal year 2020, the City was obligated to pay on SRF loans from 2002 (2002A) and a 2013 COPS loan for the UV disinfection system. The 2002A is payable through January 2023 and the 2013 COPS through November 2028.

The Series 2002A had an original amount of $4,245,000 and was dated May 1, 2002. The outstanding balance due as of December 31, 2020 was $745,000. The remaining payment stream is shown in the following table.

Table 3 – Series 2002A Loan Payback Schedule

Due Date	Rate	Principal	Interest	Total
01/01/21	5.000%	240,000	18,941	258,941
07/01/21			12,941	12,941
01/01/22	5.100%	250,000	12,941	262,941
07/01/22			6,566	6,566
01/01/23	5.150%	255,000	6,566	261,566
		$745,000	$57,955	$802,955

The 2013 COPS had an original amount of $1,550,000 and was dated April 17, 2013. The outstanding balance due as of December 31, 2020 was $890,000. The remaining payment stream is shown in the following table.

Table 4 – 2013 COPS Loan Payback Schedule

Due Date	Rate	Principal	Interest	Total
05/01/21			13,512	13,512
11/01/21	2.500%	100,000	13,512	113,512
05/01/22			12,262	12,262
11/01/22	2.500%	105,000	12,262	117,262
05/01/23			10,950	10,950
11/01/23	3.000%	105,000	10,950	115,950
05/01/24			9,375	9,375
11/01/24	3.000%	110,000	9,375	119,375
05/01/25			7,725	7,725
11/01/25	3.000%	110,000	7,725	117,725
05/01/26			6,075	6,075
11/01/26	3.375%	115,000	6,075	121,075
05/01/27			4,134	4,134
11/01/27	3.375%	120,000	4,134	124,134
05/01/28			2,109	2,109
11/01/28	3.375%	125,000	2,109	127,109
		$890,000	$132,284	$1,022,284

2.4 Capital Improvement Plan

The Wastewater Department's 10-year plan calls for the following projects split into three phases for SRF funding, as shown in Table 5 on the next page.

Table 5 – Proposed Capital Improvement Plan

Proposed Project Cost Phasing				
City of Jackson, MO Wastewater Facility Plan Implementation Program				
Project No.	Project Name	System	Funding Year	2022 FP Update
Projects to be Funded Under SRF - Phase 1:				
C21	Sludge Treatment Upgrade	WWTP	2023	$ 4,233,500
	Digester 1 Equip. Build. Expansion	WWTP	2023	$ 325,000
	Fine Screen Structure	WWTP	2023	$ 132,000
	Digester Blower Replacement	WWTP	2023	$ 769,000
C22	Screen Building Modifications	WWTP	2023	$ 142,000
C23	Admin. (Control) Building	WWTP	2023	$ 756,000
C24	Plant SCADA	WWTP	2023	$ 65,000
C25	Plant Structural Rehab.	WWTP	2023	$ 279,000
C26	Oxidation Ditch Basic Upgrade	WWTP	2023	$ 1,772,000
C27	Screw Pump Rehab.	WWTP	2023	$ 1,133,000
C32	Splitter Box Weir	WWTP	2023	$ 40,000
C33	Clarifier Rehab.	WWTP	2023	$ 1,104,000
C4	Flow Monitoring (Completed)	WWTP	2023	$ 100,000
C23B	Administrative Building Upgrades	WWTP	2023	$ 420,000
	Lab. Build. Elect. Room Modifications	WWTP	2023	$ 50,000
	8" Waterline Extension - Admin Build.	WWTP	2023	$ 370,000
	Facility Plan Amendment Letter	WWTP	2023	$ 15,000
	Subtotal SRF Phase 1 =			**$ 10,059,500**
Projects to be Funded Under SRF - Phase 2:				
C1	Klaus Park Forcemain Improvements	Collection	2026	$ 1,391,000
C5	Pump Station SCADA	Collection	2026	$ 74,000
C6	I&I Inspections-Elwanda Watershed	Collection	2026	$ 369,000
C7	I&I Inspections-Goose Creek Watershed	Collection	2026	$ 1,030,000
	Subtotal SRF Phase 2 =			**$ 2,864,000**
Projects to be Funded Under SRF - Phase 3:				
C8	I&I Rehab. Elwanda Watershed	Collection	2029	$ 2,376,000
C9	I&I Rehab. Goose Creek Watershed	Collection	2029	$ 3,642,000
C13	Old Toll Road Interceptor	Collection	2029	$ 1,758,000
C10	Hubble Creek Interceptor Reach A Ph 1	Collection	2029	$ 1,559,000
	Subtotal SRF Phase 3 =			**$ 9,335,000**
Total Project Cost for SRF Phases 2 and 3 =				**$ 12,199,000**
Total Project Cost for SRF Phases 1, 2 and 3 =				**$ 22,258,500**

3.0 FUNDING SCENARIOS

Large-scale funding associated with future capital needs would be addressed through the SRF loan program. For a uniform repayment schedule the sewer rates established must ensure that the existing customer base can generate revenues that can satisfy the City's total wastewater system budget.

Payment of SRF loans do not require an actual debt reserve payment to be made, but rather an operating reserve (or equipment replacement fund) must be established based on an itemized 20-year repair and replacement schedule that must be part of the application. In addition, this fund must be at a minimum of 10% of the SRF loan payback amount.

Other requirements of the SRF program are that the money must be spent within three years of loan closing and that approved projects can only stay on the funding list for two years. According to Joan Doerhoff at MoDNR, the current rate for an SRF loan is 0.89%, but rates are trending up. Therefore, to be conservative, we calculated the SRF loans at a 1.5% interest rate.

As mentioned in the Executive Summary, we evaluated two scenarios, and each are described in more detail below.

3.1 Scenario #1 – Implement Phase 1 Projects Financed with an SRF Loan

The first scenario includes one rate increase in 2023 to cover projects at the City's wastewater treatment plant financed by a $10.1M SRF loan.

The following table shows the proposed debt service for all of the existing and proposed future loans.

Table 6 – Debt Service for Scenario #1

					future	
	existing debt service				debt service	
Year	2002A	2013 COPS	Total		SRF 1	Total
2022	$269,507	$129,524	$399,031		$0	$399,031
2023	$261,566	$126,900	$388,466		$582,466	$970,932
2024	$0	$128,750	$128,750		$582,466	$711,216
2025	$0	$125,450	$125,450		$582,466	$707,916
2026	$0	$127,150	$127,150		$582,466	$709,616
2027	$0	$128,268	$128,268		$582,466	$710,734
2028	$0	$129,218	$129,218		$582,466	$711,684
2029	$0	$0	$0		$582,466	$582,466
2030	$0	$0	$0		$582,466	$582,466
2031	$0	$0	$0		$582,466	$582,466
2032	$0	$0	$0		$582,466	$582,466
2033	$0	$0	$0		$582,466	$582,466
2034	$0	$0	$0		$582,466	$582,466
2035	$0	$0	$0		$582,466	$582,466

3.1.1 Scenario #1 Rate Structure

For revenue projections, we adjusted rates by the Consumer Price Index (CPI) of 5.0% (close to recent historical data) for those years when not closing on a new SRF loan.

Using this methodology, to be fully funded, a rate increase of 25.2% in 2023 would be required that consists of a monthly minimum charge of $17.74 per month with a user unit charge of $4.32 per 1,000 gallons of usage. For a 5,000-gallon user, this works out to a monthly fee of $39.34.

Table 7 – Proposed Rate Schedule for Scenario #1

year	base rate	user charge	5K gallons	monthly fee
2022	$14.16	$3.45	$17.25	$31.41
2023 (RI)	$17.74	$4.32	$21.60	$39.34
2024 (CPI)	$18.63	$4.54	$22.68	$41.31
2025 (CPI)	$19.56	$4.76	$23.81	$43.37
2026 (CPI)	$20.54	$5.00	$25.00	$45.54
2027 (CPI)	$21.56	$5.25	$26.25	$47.82
2028 (CPI)	$22.64	$5.51	$27.57	$50.21
2029 (CPI)	$23.77	$5.79	$28.95	$52.72
2030 (CPI)	$24.96	$6.08	$30.39	$55.36
2031 (CPI)	$26.21	$6.38	$31.91	$58.12
2032 (CPI)	$27.52	$6.70	$33.51	$61.03

According to this proposed schedule of rate increases, the system revenues will be sufficient to fund the wastewater system for the projected period as shown in Table 8.

Table 8 – Projected Costs vs. Revenue for Scenario #1

Year	O&M	debt service	proprietary fund contributions	Total Expenses	Revenue	Net Revenue
2022	$1,122,802.00	$399,031.00	$860,652.00	**$2,382,485.00**	**$2,403,774.72**	$21,289.72
2023	$1,178,942.10	$970,932.00	$860,652.00	**$3,010,526.10**	**$3,010,684.08**	$157.98
2024	$1,237,889.21	$711,216.00	$860,652.00	**$2,809,757.21**	**$3,162,927.96**	$353,170.76
2025	$1,299,783.67	$707,916.00	$860,652.00	**$2,868,351.67**	**$3,318,383.52**	$450,031.85
2026	$1,364,772.85	$709,616.00	$860,652.00	**$2,935,040.85**	**$3,485,197.68**	$550,156.83
2027	$1,433,011.49	$710,734.00	$860,652.00	**$3,004,397.49**	**$3,658,895.52**	$654,498.03
2028	$1,504,662.07	$711,684.00	$860,652.00	**$3,076,998.07**	**$3,841,082.88**	$764,084.81
2029	$1,579,895.17	$582,466.00	$860,652.00	**$3,023,013.17**	**$4,034,628.84**	$1,011,615.67
2030	$1,658,889.93	$582,466.00	$860,652.00	**$3,102,007.93**	**$4,236,664.32**	$1,134,656.39
2031	$1,741,834.42	$582,466.00	$860,652.00	**$3,184,952.42**	**$4,447,189.32**	$1,262,236.90
2032	$1,828,926.14	$582,466.00	$860,652.00	**$3,272,044.14**	**$4,669,875.84**	$1,397,831.70

Note that in addition to the above costs, there will be administrative costs (by MoDNR) which will need to be accounted for in assessing the overall project costs. We do not anticipate any insurance of loan costs to be added given Jackson's solid credit rating.

Also note that upon retirement of the City's existing long-term debt (2024 and 2029) the wastewater department will see large increases in net revenue under the proposed rate schedule. These net revenue surpluses could potentially be offset by foregoing the annual CPI increases in any given year or by adjusting the amount of money allocated to the proprietary fund accounts.

3.2 Scenario #2 – Implement Phase 1, 2, and 3 Projects Financed with Three SRF Loans

The second scenario includes three SRF loans to fund $22.4M in improvements to the wastewater treatment plant and the sanitary collection system. This would necessitate three loan closings to fund all of the City's projects listed in the projected capital improvement plan (CIP).

If we assume that three loans are taken out to pay for all of the CIP projects (20-year term at 1.5% interest) the annual debt service to be added for the first loan (loan amount = $10,059,500) would be $582,466. For the second (loan amount = $2,864,000), annual debt service would be $165,841. For the third (loan amount = $9,335,000), annual debt service would be $540,547. (Note that the loan amounts for the second and third SRF loans include adjustment factors to account for increased project costs due to inflation from the latest facility plan cost estimates).

The following table shows the proposed debt service for all of the existing and proposed future loans.

Table 9 – Debt Service for Scenario #2

	existing debt service				future debt service			
Year	2002A	2013 COPS	Total	SRF 1	SRF 2	SRF 3	Total
2022	$269,507	$129,524	$399,031	$0	$0	$0	$399,031
2023	$261,566	$126,900	$388,466	$582,466	$0	$0	$970,932
2024	$0	$128,750	$128,750	$582,466	$0	$0	$711,216
2025	$0	$125,450	$125,450	$582,466	$0	$0	$707,916
2026	$0	$127,150	$127,150	$582,466	$165,841	$0	$875,457
2027	$0	$128,268	$128,268	$582,466	$165,841	$0	$876,575
2028	$0	$129,218	$129,218	$582,466	$165,841	$0	$877,525
2029	$0	$0	$0	$582,466	$165,841	$540,547	$1,288,854
2030	$0	$0	$0	$582,466	$165,841	$540,547	$1,288,854
2031	$0	$0	$0	$582,466	$165,841	$540,547	$1,288,854
2032	$0	$0	$0	$582,466	$165,841	$540,547	$1,288,854
2033	$0	$0	$0	$582,466	$165,841	$540,547	$1,288,854
2034	$0	$0	$0	$582,466	$165,841	$540,547	$1,288,854
2035	$0	$0	$0	$582,466	$165,841	$540,547	$1,288,854

3.2.1 Scenario #2 Rate Structure

As noted in the previous section, implementing one single rate increase of 25.2% that results in yearly positive net revenues for the wastewater system also results in large surpluses when existing long-term debt expires in 2024 and 2029.

Horner & Shifrin evaluated a scenario where the rate structure and revenues from Scenario 1 (refer to Table 7) were applied to the expenses for the wastewater system that include the Phase 2 and Phase 3 projects.

That evaluation indicated that using the proposed schedule of rate increases recommended for Scenario #1 would also be sufficient to fund the wastewater system, including all Phase 1, Phase 2 and Phase 3 projects for the projected period as shown in Table 10.

Table 10 – Projected Costs vs. Revenue (1 rate increase)

Year	O&M	debt service	proprietary fund contributions	Total Expenses	Revenue	Net Revenue
2022	$1,122,802.00	$399,031.00	$860,652.00	**$2,382,485.00**	**$2,403,774.72**	$21,289.72
2023	$1,178,942.10	$970,932.00	$860,652.00	**$3,010,526.10**	**$3,010,684.08**	$157.98
2024	$1,237,889.21	$711,216.00	$860,652.00	**$2,809,757.21**	**$3,162,927.96**	$353,170.76
2025	$1,299,783.67	$707,916.00	$860,652.00	**$2,868,351.67**	**$3,318,383.52**	$450,031.85
2026	$1,364,772.85	$875,457.00	$860,652.00	**$3,100,881.85**	**$3,485,197.68**	$384,315.83
2027	$1,433,011.49	$876,575.00	$860,652.00	**$3,170,238.49**	**$3,658,895.52**	$488,657.03
2028	$1,504,662.07	$877,525.00	$860,652.00	**$3,242,839.07**	**$3,841,082.88**	$598,243.81
2029	$1,579,895.17	$1,288,854.00	$860,652.00	**$3,729,401.17**	**$4,034,628.84**	$305,227.67
2030	$1,658,889.93	$1,288,854.00	$860,652.00	**$3,808,395.93**	**$4,236,664.32**	$428,268.39
2031	$1,741,834.42	$1,288,854.00	$860,652.00	**$3,891,340.42**	**$4,447,189.32**	$555,848.90
2032	$1,828,926.14	$1,288,854.00	$860,652.00	**$3,978,432.14**	**$4,669,875.84**	$691,443.70

If the City prefers not to implement one single rate increase, we also present two additional rate scenarios. These phased-funding scenarios include three rate increases in 2023, 2026 and 2029. For these scenarios we also calculated system revenues by adjusting rates by the Consumer Price Index (CPI) of 5.0% (close to recent historical data) for those years when not closing on a new SRF loan and in years when adding new SRF funding, we tested various percentage increases to determine the effect on wastewater system revenue.

Note that anything less than the 25.2% rate increase for the first SRF loan will result in the wastewater system running at a deficit in some years. The duration and amount of the deficits will be dependent on the actual rate increases that are implemented by the City.

3.2.1.1 Three Equal Rate Increases of 7% Each

Under this rate scenario, there would be three equal rate increases of 7% that would occur in years corresponding with the SRF loan closings (2023, 2026 and 2029). All other years would be subject to the annual CPI rate adjustment. For the purposes of this study, we used a CPI of 5%. That rate schedule is shown in Table 11.

Table 11 – Three Equal Increases (7%) Rate Schedule

year	base rate	user charge	5K gallons	monthly fee
2022	$14.16	$3.45	$17.25	$31.41
2023 (RI)	$15.15	$3.69	$18.46	$33.61
2024 (CPI)	$15.91	$3.88	$19.38	$35.29
2025 (CPI)	$16.70	$4.07	$20.35	$37.05
2026 (RI)	$17.87	$4.35	$21.77	$39.65
2027 (CPI)	$18.77	$4.57	$22.86	$41.63
2028 (CPI)	$19.71	$4.80	$24.01	$43.71
2029 (RI)	$21.08	$5.14	$25.69	$46.77
2030 (CPI)	$22.14	$5.39	$26.97	$49.11
2031 (CPI)	$23.25	$5.66	$28.32	$51.57
2032 (CPI)	$24.41	$5.95	$29.73	$54.14

According to this proposed schedule of rate increases, the system revenues will show deficits in years 2023 through 2026 and 2029-2030. In all other years, revenues will be sufficient to fund the wastewater system for the projected period as shown in Table 12.

Table 12 – Projected Costs vs. Revenue (Three Equal Rate Increases Scenario)

Year	O&M	debt service	proprietary fund contributions	Total Expenses	Revenue	Net Revenue
2022	$1,122,802.00	$399,031.00	$860,652.00	**$2,382,485.00**	**$2,403,774.72**	$21,289.72
2023	$1,178,942.10	$970,932.00	$860,652.00	**$3,010,526.10**	**$2,571,391.80**	($439,134.30)
2024	$1,237,889.21	$711,216.00	$860,652.00	**$2,809,757.21**	**$2,702,181.72**	($107,575.49)
2025	$1,299,783.67	$707,916.00	$860,652.00	**$2,868,351.67**	**$2,835,380.40**	($32,971.27)
2026	$1,364,772.85	$875,457.00	$860,652.00	**$3,100,881.85**	**$3,032,138.04**	($68,743.81)
2027	$1,433,011.49	$876,575.00	$860,652.00	**$3,170,238.49**	**$3,185,184.84**	$14,946.35
2028	$1,504,662.07	$877,525.00	$860,652.00	**$3,242,839.07**	**$3,345,115.32**	$102,276.25
2029	$1,579,895.17	$1,288,854.00	$860,652.00	**$3,729,401.17**	**$3,579,963.36**	($149,437.81)
2030	$1,658,889.93	$1,288,854.00	$860,652.00	**$3,808,395.93**	**$3,756,872.88**	($51,523.05)
2031	$1,741,834.42	$1,288,854.00	$860,652.00	**$3,891,340.42**	**$3,945,141.00**	$53,800.58
2032	$1,828,926.14	$1,288,854.00	$860,652.00	**$3,978,432.14**	**$4,144,767.72**	$166,335.58

3.2.1.2 Three Rate Increases of 10%/7%/7%

Under this rate scenario, there would be three rate increases. A 10% rate increase would occur with the loan closing in 2023 and a 7% increase that would occur with the SRF loan closings in 2026 and 2029. All other years would be subject to the annual CPI rate adjustment. For the purposes of this study, we used a CPI of 5%. That rate schedule is shown in Table 13.

Table 13 – Three Rate Increases (10%/7%/7%) Rate Schedule

year	base rate	user charge	5K gallons	monthly fee
2022	$14.16	$3.45	$17.25	$31.41
2023 (RI-10%)	$15.58	$3.80	$18.98	$34.55
2024 (CPI)	$16.35	$3.98	$19.92	$36.28
2025 (CPI)	$17.17	$4.18	$20.92	$38.09
2026 (RI-7%)	$18.37	$4.48	$22.38	$40.76
2027 (CPI)	$19.29	$4.70	$23.50	$42.80
2028 (CPI)	$20.26	$4.94	$24.68	$44.94
2029 (RI-7%)	$21.68	$5.28	$26.41	$48.08
2030 (CPI)	$22.76	$5.55	$27.73	$50.49
2031 (CPI)	$23.90	$5.82	$29.11	$53.01
2032 (CPI)	$25.09	$6.11	$30.57	$55.66

According to this proposed schedule of rate increases, the system revenues will show deficits in years 2023, 2024 and 2029. In all other years, revenues will be sufficient to fund the wastewater system for the projected period as shown in Table 14.

Table 14 – Projected Costs vs. Revenue (Three Rate Increases 10%/7%/7% Scenario)

Year	O&M	debt service	proprietary fund contributions	Total Expenses	Revenue	Net Revenue
2022	$1,122,802.00	$399,031.00	$860,652.00	**$2,382,485.00**	**$2,403,774.72**	$21,289.72
2023	$1,178,942.10	$970,932.00	$860,652.00	**$3,010,526.10**	**$2,646,309.36**	($364,216.74)
2024	$1,237,889.21	$711,216.00	$860,652.00	**$2,809,757.21**	**$2,774,230.20**	($35,527.00)
2025	$1,299,783.67	$707,916.00	$860,652.00	**$2,868,351.67**	**$2,913,509.64**	$45,157.97
2026	$1,364,772.85	$875,457.00	$860,652.00	**$3,100,881.85**	**$3,120,020.04**	$19,138.19
2027	$1,433,011.49	$876,575.00	$860,652.00	**$3,170,238.49**	**$3,274,672.68**	$104,434.19
2028	$1,504,662.07	$877,525.00	$860,652.00	**$3,242,839.07**	**$3,440,683.92**	$197,844.85
2029	$1,579,895.17	$1,288,854.00	$860,652.00	**$3,729,401.17**	**$3,679,546.56**	($49,854.61)
2030	$1,658,889.93	$1,288,854.00	$860,652.00	**$3,808,395.93**	**$3,865,405.92**	$57,009.99
2031	$1,741,834.42	$1,288,854.00	$860,652.00	**$3,891,340.42**	**$4,056,082.80**	$164,742.38
2032	$1,828,926.14	$1,288,854.00	$860,652.00	**$3,978,432.14**	**$4,258,118.23**	$279,686.09

3.3 Short-term (3-Year) Outlook

Given the uncertainty surrounding the economy, including inflation and interest rates, changing rules and regulations surrounding state and federal infrastructure funding, Congressional mid-term elections this year and a Presidential election in 2024, it may be prudent for the City to take a short-term look at funding the wastewater system. Table 15 shows the projected costs and revenues for the three-year period after this current year for a $10.1M SRF loan to fund the Phase 1 projects at the treatment plant.

Table 15 – Projected Costs vs. Revenue (Three-year Outlook, 10% Rate Increase)

Year	O&M	debt service	proprietary fund contributions	Total Expenses	Revenue	Net Revenue
2022	$1,122,802.00	$399,031.00	$860,652.00	**$2,382,485.00**	**$2,403,774.72**	$21,289.72
2023	$1,178,942.10	$970,932.00	$860,652.00	**$3,010,526.10**	**$2,646,309.36**	($364,216.74)
2024	$1,237,889.21	$711,216.00	$860,652.00	**$2,809,757.21**	**$2,774,230.20**	($35,527.00)
2025	$1,299,783.67	$707,916.00	$860,652.00	**$2,868,351.67**	**$2,913,509.64**	$45,157.97

By taking a short-term approach, the City can reevaluate conditions at the end of the period to determine their next steps in funding the system. Also at that time, it should be clearer how ARPA (American Rescue Plan Act) and/or IIJA (Infrastructure Investment and Jobs Act) grants may be available to supplement project funding.

4.0 WHAT IF? REVENUE INCREASES WITH GROWTH

For all of the previous scenarios, a conservative no-growth approach was used as trends in water conservation make growth scenarios somewhat risky. However, similar to the last rate study, we examined growth scenarios where the number of customers and water usage increased as predicted in the City's facility plan (1.8% annually) and those conditions are presented in the following tables.

4.1 Scenario #1 With Growth Projections

Table 16 - Projected Costs vs. Revenue (Customer and Usage Growth)

Year	O&M	debt service	proprietary fund contributions	Total Expenses	Revenue	Net Revenue
2022	$1,122,802.00	$399,031.00	$860,652.00	**$2,382,485.00**	**$2,403,774.72**	$21,289.72
2023	$1,178,942.10	$970,932.00	$860,652.00	**$3,010,526.10**	**$3,064,792.52**	$54,266.42
2024	$1,237,889.21	$711,216.00	$860,652.00	**$2,809,757.21**	**$3,277,834.80**	$468,077.60
2025	$1,299,783.67	$707,916.00	$860,652.00	**$2,868,351.67**	**$3,500,836.32**	$632,484.65
2026	$1,364,772.85	$709,616.00	$860,652.00	**$2,935,040.85**	**$3,742,985.28**	$807,944.43
2027	$1,433,011.49	$710,734.00	$860,652.00	**$3,004,397.49**	**$4,000,201.80**	$995,804.31
2028	$1,504,662.07	$711,684.00	$860,652.00	**$3,076,998.07**	**$4,275,049.80**	$1,198,051.73
2029	$1,579,895.17	$582,466.00	$860,652.00	**$3,023,013.17**	**$4,571,276.04**	$1,548,262.87
2030	$1,658,889.93	$582,466.00	$860,652.00	**$3,102,007.93**	**$4,886,446.08**	$1,784,438.15
2031	$1,741,834.42	$582,466.00	$860,652.00	**$3,184,952.42**	**$5,221,669.92**	$2,036,717.50
2032	$1,828,926.14	$582,466.00	$860,652.00	**$3,272,044.14**	**$5,689,744.08**	$2,417,699.94

As shown above, this analysis indicates that the net revenue would be more than sufficient to fund the wastewater system for the projected period and create even greater surpluses that the non-growth scenario.

4.2 Scenario #2 With Growth Projections

Table 17 - Projected Costs vs. Revenue – 3 Equal Rate Increases of 7% (Customer and Usage Growth)

Year	O&M	debt service	proprietary fund contributions	Total Expenses	Revenue	Net Revenue
2022	$1,122,802.00	$399,031.00	$860,652.00	**$2,382,485.00**	**$2,403,774.72**	$21,289.72
2023	$1,178,942.10	$970,932.00	$860,652.00	**$3,010,526.10**	**$2,617,606.08**	($392,920.02)
2024	$1,237,889.21	$711,216.00	$860,652.00	**$2,809,757.21**	**$2,800,350.00**	($9,407.21)
2025	$1,299,783.67	$707,916.00	$860,652.00	**$2,868,351.67**	**$2,991,276.48**	$122,924.81
2026	$1,364,772.85	$875,457.00	$860,652.00	**$3,100,881.85**	**$3,256,414.44**	$155,532.59
2027	$1,433,011.49	$876,575.00	$860,652.00	**$3,170,238.49**	**$3,482,302.80**	$312,064.31
2028	$1,504,662.07	$877,525.00	$860,652.00	**$3,242,839.07**	**$3,723,047.64**	$480,208.57
2029	$1,579,895.17	$1,288,854.00	$860,652.00	**$3,729,401.17**	**$4,056,135.36**	$326,734.19
2030	$1,658,889.93	$1,288,854.00	$860,652.00	**$3,808,395.93**	**$4,333,068.48**	$524,672.55
2031	$1,741,834.42	$1,288,854.00	$860,652.00	**$3,891,340.42**	**$4,715,683.92**	$824,343.50
2032	$1,828,926.14	$1,288,854.00	$860,652.00	**$3,978,432.14**	**$5,043,533.64**	$1,065,101.50

As shown above, this analysis shows that system revenues will result in deficits in years 2023 and 2024. In all other years, revenues will be sufficient to fund the wastewater system for the projected period.

Table 18 - Projected Costs vs. Revenue – 3 Rate Increases 10%/7%/7% (Customer and Usage Growth)

Year	O&M	debt service	proprietary fund contributions	Total Expenses	Revenue	Net Revenue
2022	$1,122,802.00	$399,031.00	$860,652.00	**$2,382,485.00**	**$2,403,774.72**	$21,289.72
2023	$1,178,942.10	$970,932.00	$860,652.00	**$3,010,526.10**	**$2,693,870.16**	($316,655.94)
2024	$1,237,889.21	$711,216.00	$860,652.00	**$2,809,757.21**	**$2,875,015.92**	$65,258.71
2025	$1,299,783.67	$707,916.00	$860,652.00	**$2,868,351.67**	**$3,073,701.48**	$205,349.81
2026	$1,364,772.85	$875,457.00	$860,652.00	**$3,100,881.85**	**$3,350,796.72**	$249,914.87
2027	$1,433,011.49	$876,575.00	$860,652.00	**$3,170,238.49**	**$3,580,138.20**	$409,899.71
2028	$1,504,662.07	$877,525.00	$860,652.00	**$3,242,839.07**	**$3,829,413.60**	$586,574.53
2029	$1,579,895.17	$1,288,854.00	$860,652.00	**$3,729,401.17**	**$4,168,964.16**	$439,562.99
2030	$1,658,889.93	$1,288,854.00	$860,652.00	**$3,808,395.93**	**$4,458,247.44**	$649,851.51
2031	$1,741,834.42	$1,288,854.00	$860,652.00	**$3,891,340.42**	**$4,762,452.00**	$871,111.58
2032	$1,828,926.14	$1,288,854.00	$860,652.00	**$3,978,432.14**	**$5,089,790.16**	$1,111,358.02

As shown above, this analysis shows that system revenues will result in a deficit in 2023. In all other years, revenues will be sufficient to fund the wastewater system for the projected period.

7.0 SUMMARY AND CONCLUSIONS

Based on the data provided, it will be necessary to increase the existing sewer rates in order to fully fund the sewer system. The scenarios presented in the study give the City viable options to meet their goals. It is recommended that the City review the material provided and to discuss its contents with Horner & Shifrin staff. Subsequently, a decision can be made to select the option that best meets the City's needs.