CITY OF JOPLIN
COUNCIL AGENDA ITEM

ITEM
Council Bill 2024-151 New Rate Structure for Joplin Sewer Utilities.

MEETING DATE
November 18, 2024

ORIGINATING DEPARTMENT
Public Works - Operations

ATTACHMENTS
CB2024-151, Sewer Rate Study Report the City of Joplin MO Sewer Rate Study 169660

REVIEWED BY
Director of Public Works, Daniel Johnson; Director of Finance, Leslie Haase; City Attorney, Peter C. Edwards; Assistant City Manager, Tony Robyn; City Manager, Nicholas Edwards

SUMMARY
This Council Bill approves a New Rate Structure for all customers inside and outside the city limits for sewer utilities per guidance set by the Sewer Rate Study Report the City of Joplin MO Sewer Rate Study 169660 performed by Burns and McDonnell.

BACKGROUND
The current sewer rates were established by a rate study conducted in 2019 and became effective April 1, 2020. Council Bill 2019-161 authorized the incorporation of the City's current rate structure for the customers of Joplin. Those rates were set for a five-year period that will end March 31, 2025. On March 19, 2024, the City of Joplin hired Burns and McDonnell (Council Bill 2024-111) to convene a rate study analysis to determine what rates are needed to fund the city's wastewater treatment and maintenance programs. That study is the basis for the recommended action. Staff and representatives of Burns and McDonnell presented the council with the proposed new rate structure on August 12, 2024, during a Council work session. One priority of this 5-year rate study is to move the rate structure to recover more costs through the volumetric fees rather than the fixed fees. This rate structure is built on that priority as users with more volume will see a larger increase than those using less volume. During the presentation, Council also sought an improved rate structure for industrial users, which has been incorporated in the final rates included in this Council Bill. While the rate study recommends an overall average increase in sewer rates of 4.0% in each of the five years from 2025 to 2029, it is not an across-the-board 4% increase for all users. Residential users with small volume usage will see increases of 2.7% to 3% each year, while residential users with larger volume usage will see increases of 4.2% to 5.4% as shown on page 1-5 of the final study. Additionally, industrial users will be assessed with a uniform fee designed to help recover costs of operating and administering the industrial pretreatment and monitoring program. This rate structure better matches the revenue generated from the service to the expenses of the system by user class, which is Commercial, Industrial and Residential as shown on Page 3-8 of the final report. As in past years, all customers served that are not within the city limits of Joplin will pay those same rates, with a multiplier of 1.3, which equals a 30% out-of-town surcharge.

After revising the rate structure to meet Council's goals, City staff proceeded with holding a public meeting and preparing the necessary council bill for consideration. Satellite jurisdictions and industries that transport their wastewater to the City of Joplin where it is treated and discharged in accordance with our NPDES permit issued by the State of Missouri were contacted by letter informing them of the proposed new rate structure. City staff and representatives of Burns and McDonnell met with local industries on October 29th, 2024, to discuss proposed changes and the new industrial user fee. On October 30, 2024, staff held an open forum public meeting at City Hall to inform stakeholders of the proposed rate changes and field any questions or comments. Approval of this rate structure will provide the City with the resources to adequately operate and maintain the wastewater collection and treatment system in a manner that will meet our permit requirements.

RECOMMENDATION

Staff recommends adoption of this Council Bill on 1st reading.

1898 & CO.
PART OF BURNS McDONNELL

SEWER RATE STUDY REPORT

THE CITY OF JOPLIN, MO

SEWER RATE STUDY

169660

FINAL

October 23, 2024

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1.0 Executive Summary

1.1 Project Background

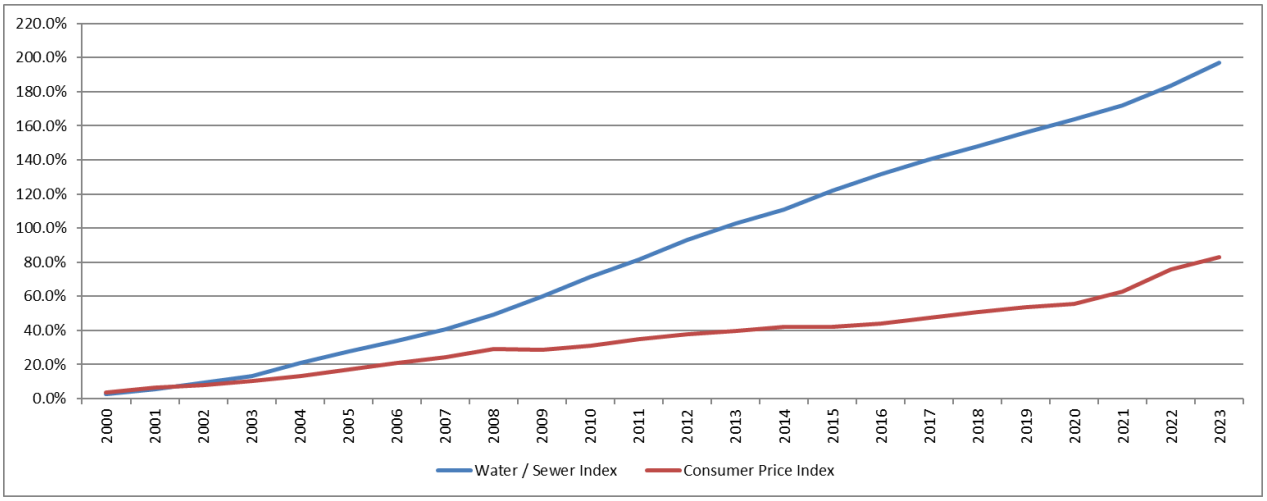
1898 & Co. was engaged by the City of Joplin (the City) to conduct a sewer rate study (the Study) that (i) evaluates financial planning of the system which will provide an indication of the adequacy of the revenue generated by current rates, and (ii) proposed rates to generate indicated revenues and recover costs for the sewer utility. This Report summarizes the results of the Study.

1.2 Industry Trends in Water and Sewer Rates

Many factors impact the cost of providing municipal sewer service. One universal challenge for most municipal sewer utilities involves implementing and sustaining adequate renewal and replacement of aging infrastructure, particularly sewer mains. Other dynamics may include compliance with regulatory requirements, inflation on operating and capital costs, and a general trend in declining consumption, which is often associated with more efficient fixtures and appliances and greater awareness of water conservation. Each utility is different, and the relative importance of these dynamics will vary by utility.

However, as shown in Figure 1-1, there is no doubt that household water and sewer rate costs have substantially outpaced general inflation in the United States. The United States Bureau of Labor Statistics (BLS) tracks many facets of inflation, including the Consumer Price Index for all Urban Consumers (CPI-U) which measures inflation at the household level. The BLS also tracks an index for combined household water and sewer costs. Figure 1-1 shows the trend in these indices since 2020.

Figure 1-1: Changes in General Inflation and Water and Sewer Costs



Since 2000 the water and sewer index has increased nearly 5 percent per year, while CPI's annual rate of change is about 2.5 percent per year.

Other industry surveys reach similar conclusions regarding water and/or sewer rates. The National Association of Clean Water (NACWA) annually updates its Cost of Clean Water Index, which specifically surveys sewer utilities nationwide regarding the cost of residential sewer service. From 1985 through 2023, the annual increase according to this survey has been 4.7 percent per year. American Water Works Association (AWWA) also conducts a broad, periodic water and sewer rate survey with results indicating

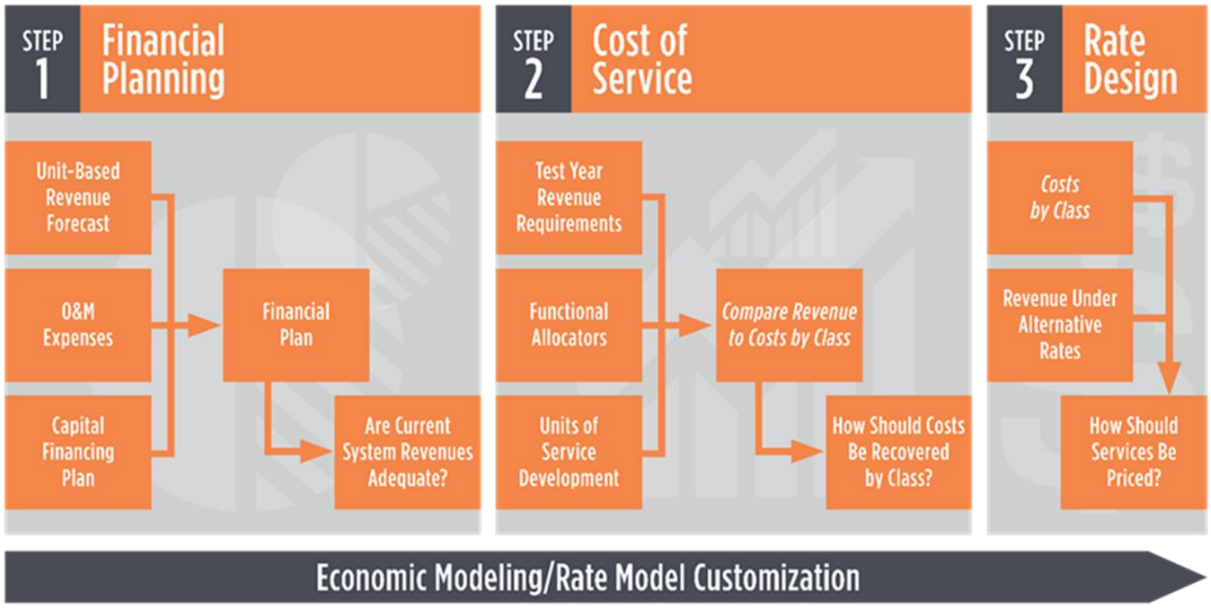
average annual rate increases of 5.1 percent per year for water and 5.6 percent per year for sewer from 1996 to 2018.

Every utility is unique, and the dynamics impacting rates can vary widely. However, when reviewing water and sewer financial plans, understanding what is happening to household water and sewer costs nationwide is helpful context.

1.3 Project Approach

To meet the project objectives, 1898 & Co. conducted the rate study in a three-step approach. This approach, depicted in Figure 1-2, is grounded in the principles established by the American Water Works Association (AWWA) M1 Rate Manual and the Water Environment Federation (WEF) Financing and Charges for Wastewater Systems.

Figure 1-2: Study Methodology



Step 1: Financial Planning provides an indication of the adequacy of the revenue generated by current rates. The results of the financial forecast analysis answer the questions "Are the existing rates adequate?" and "If not, what level of overall revenue increase is needed?" The Financial Planning Analysis is presented in Section 2.0 of this report.

Step 2: Cost of Service focuses on assigning cost responsibility to customer classes. Each customer class is allocated a share of the overall system costs commensurate with the level of service provided. The net revenue requirements (costs to be recovered from rates) identified in Step 1 are allocated to customers in accordance with industry standards and principles and system specifics. The Cost of Service Analysis is detailed in Section 3.0 of this report.

Step 3: Rate Design provides for revenue recovery. Once the overall level of revenue required is identified and customer class responsibility for that level of revenue is estimated, schedules of rates for each rate

class are developed that will generate revenues accordingly. The Rate Design Analysis is detailed in Section 4.0 of this report.

1.4 Financial Planning

Comprehensive financial planning conducted for the sewer utility indicates that revenues under existing rates are not sufficient to meet the utility's projected cash obligations over the five-year study period. The need for revenue adjustments is influenced by the following factors:

- Inflationary impacts on operation and maintenance expenses and future capital improvements.
- Large capital improvement needs within the utility's collection and distribution system.
- Sustaining reasonable reserves and debt service coverage.

Financial planning assumptions are described in Section 2.0 of this report. The proposed financial plans presented in this report were evaluated based on the following guiding principles:

- To the extent possible, minimize sudden and substantial revenue adjustments.
- Maintain projected operating reserves each year in an amount equal to a minimum of 90 days of O&M.
- Mitigate new debt issuance where possible.
- Provide adequate funding for each utility's anticipated capital improvements.

Financial planning described in Section 2.0 indicates the planned system-wide revenue increases of 4 percent per year are sufficient to fund ongoing operations and maintenance expenses and needed capital improvements.

1.5 Cost of Service

The cost of service analysis is focused on determining revenue responsibility. Once the overall need for revenue increases is identified through financial planning, cost of service analysis helps identify the cost of providing sewer collection and treatment to various customer classes.

Ultimately, the cost of service analysis compares the revenues received from each customer class under the existing schedule of rates with the allocated cost responsibility for that class, which helps inform rate design.

The cost of service analysis was developed in the following steps:

- Determine the net revenue requirements to be recovered from user charges.
- Allocate test period operating and capital costs.
- Estimate the system test period units of service.
- Develop test period unit costs of service by class.
- Assign the costs of service to customer classes.

To develop rates equitably, the utility customer classes are allocated their respective share of the total cost of service according to their use of the system. Costs are assigned through consideration of contributed volume, levels of infiltration/inflow, sewer strength loadings, customer costs, and other relevant factors.

1.6 Existing and Proposed Rates

The primary focus of Step 3, Rate Design, is to develop proposed rates for the utility to progress toward the following goals:

- Generate adequate revenues to meet the projected operating and capital costs, while maintaining sound financial performance.
- Provide revenue stability.
- Provide cost recovery that is reasonably commensurate with the cost of providing service.

Table 1-1 shows the existing and proposed sewer rates for Inside City customers. The City's sewer rates consist of a monthly volumetric charge per thousand gallons of water used and a monthly meter charge based on the size of the customer's meter. Surcharge rates for customers contributing flow greater than 350 mg/L are shown in dollars per pound of surcharge strength for BOD and TSS. An industrial pretreatment fee is developed as a result of this study and can be seen on Line 11. The development of the proposed rates is discussed further in Section 4.0 of this report.

Table 1-1: Existing and Proposed Rates

Line No.	Description	Existing 2024	Proposed 2025	2026	2027	2028	2029
	INSIDE CITY						
	Monthly Facility Charge - $/bill						
1	3/4" or smaller	$ 40.29	$ 41.20	$ 42.13	$ 43.08	$ 44.05	$ 45.04
2	1"	$ 51.71	$ 52.87	$ 54.06	$ 55.28	$ 56.52	$ 57.79
3	1.5"	$ 80.33	$ 82.14	$ 83.99	$ 85.88	$ 87.81	$ 89.79
4	2"	$ 114.64	$ 117.22	$ 119.86	$ 122.56	$ 125.32	$ 128.14
5	3"	$ 194.71	$ 199.09	$ 203.57	$ 208.15	$ 212.83	$ 217.62
6	4"	$ 309.04	$ 315.99	$ 323.10	$ 330.37	$ 337.80	$ 345.40
7	6"	$ 595.00	$ 608.39	$ 622.08	$ 636.08	$ 650.39	$ 665.02
8	**Volume Charge - $/1,000 gal**	$ 2.64	$ 2.80	$ 3.02	$ 3.26	$ 3.52	$ 3.80
9	**BOD Surcharge - $/lb**	$ 1.11	$ 1.13	$ 1.15	$ 1.17	$ 1.19	$ 1.21
10	**SS Surcharge - $/lb**	$ 0.68	$ 0.69	$ 0.70	$ 0.71	$ 0.72	$ 0.73
11	**Industrial Pretreatment Fee - $/bill**	$ -	$ 150.00	$ 156.00	$ 162.24	$ 168.73	$ 175.48

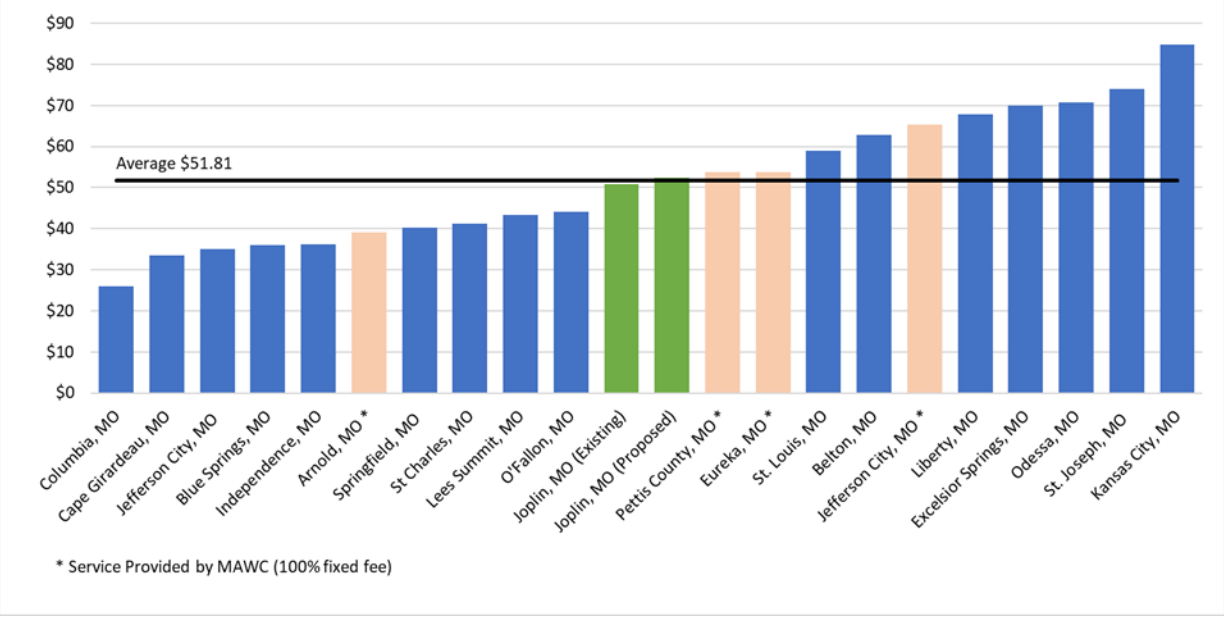
Table 1-2 shows the residential sewer bill under existing and proposed rates.

Table 1-2: Residential Bill Impact

Line No.	Billable Flow *Kgal*	Existing 2024	2025	2026	2027	2028	2029
			Proposed Monthly Bill				
1	2.0	$ 45.57	$ 46.80	$ 48.27	$ 49.70	$ 51.19	$ 52.74
2	4.0	$ 50.85	$ 52.40	$ 54.31	$ 56.22	$ 58.23	$ 60.34
3	8.0	$ 61.41	$ 63.60	$ 66.39	$ 69.26	$ 72.31	$ 75.54
4	16.0	$ 82.53	$ 86.00	$ 90.55	$ 95.34	$ 100.47	$ 105.94
			Change in Monthly Bill ($)				
5	2.0		$ 1.23	$ 1.47	$ 1.43	$ 1.49	$ 1.55
6	4.0		$ 1.55	$ 1.91	$ 1.91	$ 2.01	$ 2.11
7	8.0		$ 2.19	$ 2.79	$ 2.87	$ 3.05	$ 3.23
8	16.0		$ 3.47	$ 4.55	$ 4.79	$ 5.13	$ 5.47
			Change in Monthly Bill (%)				
9	2.0		2.7%	3.1%	3.0%	3.0%	3.0%
10	4.0		3.0%	3.6%	3.5%	3.6%	3.6%
11	8.0		3.6%	4.4%	4.3%	4.4%	4.5%
12	16.0		4.2%	5.3%	5.3%	5.4%	5.4%

A comparison of rates for twenty-one regional utilities was conducted based on rates in effect as of July 1, 2024. Figure 1-3 shows the monthly bill for a 5/8-inch meter using 4 thousand gallons a month for each of these providers. The regional typical bill ranges from $26 per month to $85 per month, with the City currently just below the average of $51.81 per month. Implementing the proposed 2025 rates does not meaningfully impact the competitive position of the City's average residential sewer bill. Note that a portion of the surveyed communities are likely to experience rate increases in 2025. As mentioned earlier, nationwide annual rate increases for water and sewer service amount to about 5 percent per year, suggesting rates for other communities will increase over time.

Figure 1-3: Residential Sewer Monthly Bill Comparison at 4 Thousand Gallons per Month



2.0 Financial Planning Analysis

2.1 Introduction

The primary issue addressed in the Financial Planning Analysis is revenue sufficiency. The results of the Financial Planning Analysis answer the questions:

- Are existing rates sufficient to fund anticipated operating and capital costs?
- If not, what level of overall revenue increase is needed?

To determine if revenues under the existing rates are sufficient to meet the City's future operating and capital costs, 1898 & Co. prepared a five-year financial projection of revenues and expenditures. A comparison of projected revenues and expenditures provides insight into the sufficiency of overall revenue levels.

Our approach to Financial Planning involves the following basic steps:

1. Project revenues under existing rates.
2. Project sewer utility expenditures, including operating and capital costs.
3. Develop a multi-year financial plan, including the budget year and a five-year forecast period.

The planning period includes the current fiscal year (FY) 2024 as a budget year and a five-year forecast period, FY 2025 through FY 2029. The City's fiscal year ends on October 31, and the projected periods in the financial plan recognize the same fiscal year.

2.2 Sewer Utility Revenues under Existing Rates

The first step in the Financial Plan Analysis was to project revenues under the existing rate schedule. To complete this step required an analysis of sewer customers, volumes, and revenues.

2.2.1 Historical and Projected Customers and Volumes

Error! Reference source not found. presents the historical and projected sewer customers and billed consumption by customer class served by the City. Based on discussion with City staff and a trend analysis of recent historical accounts, usage, and surcharge strength, the forecast of these billing determinants were assumed to be constant over the forecast period.

Table 2-1: Historical and Projected Sewer Accounts and Volume

Line No.		Historical			Projected					
		2021	2022	2023	2024	2025	2026	2027	2028	2029
	Accounts									
1	Residential - Inside	19,870	20,430	20,258	20,258	20,258	20,258	20,258	20,258	20,258
2	Residential - Outside	395	371	346	346	346	346	346	346	346
3	Commercial - Inside	2,020	2,057	2,031	2,031	2,031	2,031	2,031	2,031	2,031
4	Commercial - Outside	48	49	48	48	48	48	48	48	48
5	Industrial - Inside	100	96	89	89	89	89	89	89	89
6	Inside Meter-Related Residence	112	127	133	133	133	133	133	133	133
7	Other Public Authority - Inside	100	99	96	96	96	96	96	96	96
8	Outside Meter-Related Residence	4	3	3	3	3	3	3	3	3
9	Total Accounts	22,649	23,232	23,004	23,004	23,004	23,004	23,004	23,004	23,004
	Billed Volume *(1,000 Gallons)*									
10	Residential - Inside	868,331	904,664	887,010	887,000	887,000	887,000	887,000	887,000	887,000
11	Residential - Outside [1]	38,267	37,133	35,378	35,410	35,410	35,410	35,410	35,410	35,410
12	Commercial - Inside	594,295	612,691	604,288	604,390	604,390	604,390	604,390	604,390	604,390
13	Commercial - Outside	40,291	38,580	40,021	39,680	39,680	39,680	39,680	39,680	39,680
14	Industrial - Inside	878,079	910,508	935,764	935,760	935,760	935,760	935,760	935,760	935,760
15	Inside Meter-Related Residence	31,332	40,207	40,211	40,290	40,290	40,290	40,290	40,290	40,290
16	Other Public Authority - Inside	53,359	62,076	69,312	69,310	69,310	69,310	69,310	69,310	69,310
17	Outside Meter-Related Residence	4,247	4,459	5,725	5,890	5,890	5,890	5,890	5,890	5,890
18	Total Billed Volume	2,508,200	2,610,318	2,617,708	2,617,730	2,617,730	2,617,730	2,617,730	2,617,730	2,617,730
	Industrial Surcharge Loadings									
19	Industrial - BOD (lbs)	2,181,742	1,957,822	1,837,667	1,837,667	1,837,667	1,837,667	1,837,667	1,837,667	1,837,667
20	Industrial - SS (lbs)	310,446	199,448	357,568	357,568	357,568	357,568	357,568	357,568	357,568

2.2.2 Existing Sewer Rates

Table 2-2**Table 1-1** shows the existing sewer rates for inside City customers. The sewer rate consists of a graduating base meter charge per monthly bill and a volumetric charge per thousand gallons of usage. Surcharge rates for customers contributing flow with strengths greater than 350 mg/L are shown in dollars per pound for BOD and TSS.

Table 2-2: Existing Sewer Rates

Line No.	Description	Existing 2024
	INSIDE CITY	
	Monthly Facility Charge - $/bill	
1	3/4" or smaller	$ 40.29
2	1"	$ 51.71
3	1.5"	$ 80.33
4	2"	$ 114.64
5	3"	$ 194.71
6	4"	$ 309.04
7	6"	$ 595.00
8	**Volume Charge - $/1,000 gal**	$ 2.64
9	**BOD Surcharge - $/lb**	$ 1.11
10	**SS Surcharge - $/lb**	$ 0.68

2.2.3 User Revenues under Existing Rates

The projection of user charge revenues was estimated based on the forecasted accounts and volumes factored by the schedule of 2024 sewer rates.

Table 2-3: Historical and Projected Sewer User Revenues

Line No.		Historical			Projected					
		2021	2022	2023	2024	2025	2026	2027	2028	2029
	User Revenues Under Existing Rates									
1	Residential - Inside	$ 10,415,175	$ 11,271,214	$ 11,719,650	$ 12,309,539	$ 12,358,928	$ 12,358,928	$ 12,358,928	$ 12,358,928	$ 12,358,928
2	Residential - Outside	$ 609,741	$ 640,089	$ 702,302	$ 738,033	$ 740,964	$ 740,964	$ 740,964	$ 740,964	$ 740,964
3	Commercial - Inside	$ 2,610,364	$ 2,842,947	$ 2,952,852	$ 3,103,534	$ 3,116,115	$ 3,116,115	$ 3,116,115	$ 3,116,115	$ 3,116,115
4	Commercial - Outside	$ 178,979	$ 185,039	$ 196,147	$ 204,083	$ 204,886	$ 204,886	$ 204,886	$ 204,886	$ 204,886
5	Industrial - Inside [2]	$ 4,445,620	$ 4,408,868	$ 4,707,121	$ 4,978,782	$ 5,000,048	$ 5,000,048	$ 5,000,048	$ 5,000,048	$ 5,000,048
6	Inside Meter-Related Residence	$ 141,366	$ 191,299	$ 206,136	$ 217,032	$ 217,911	$ 217,911	$ 217,911	$ 217,911	$ 217,911
7	Other Public Authority - Inside	$ 230,182	$ 260,282	$ 288,582	$ 303,651	$ 304,533	$ 304,533	$ 304,533	$ 304,533	$ 304,533
8	Outside Meter-Related Residence	$ 17,621	$ 19,630	$ 23,494	$ 25,530	$ 25,630	$ 25,630	$ 25,630	$ 25,630	$ 25,630
9	Total User Revenues	$ 18,649,048	$ 19,819,367	$ 20,796,284	$ 21,880,184	$ 21,969,015	$ 21,969,015	$ 21,969,015	$ 21,969,015	$ 21,969,015

[1] Includes component customer volume
[2] Includes BOD and SS charges

2.3 Sewer Utility Expenditures

Typically, a municipal sewer utility's primary cash expenditures include the following direct operating and capital costs:

- Operation and Maintenance (O&M) Expenses
- Capital Improvement Program Expenditures
- Debt Service Principal and Interest Payments

Each of these cash obligations is described further below.

2.3.1 O&M Expenses

Table **2-4** presents the recent sewer O&M expense history and the projection of the sewer system O&M expenses through the 2029 planning period. Expenses summarized in

Table **2-4** reflect operating costs only; costs related to capital projects are excluded from these tables and are addressed later in this report.

Projected O&M expenses are anticipated to increase from budgeted 2024 amounts by roughly 4 percent per year.

Table 2-4: Historical and Projected Sewer Operating & Maintenance Expense

Line No.		Historical			Budgeted	Projected				
		2021	2022	2023	2024	2025	2026	2027	2028	2029
	Billing & Collection									
1	Personnel Services	203,425	192,911	265,388	279,771	293,800	308,500	323,900	340,100	357,100
2	Operational Supplies	231,318	240,389	246,758	281,358	287,100	292,900	298,800	304,800	310,900
3	Other Purchases/Services	458,889	424,220	505,683	484,956	503,000	521,800	541,200	561,600	582,700
4	Capital Outlay and Improvements	-	-	-	-	-	-	-	-	-
5	Total Billing & Collection	893,632	857,520	1,017,829	1,046,085	1,083,900	1,123,200	1,163,900	1,206,500	1,250,700
	Sewer Treatment									
6	Personnel Services	1,771,529	1,582,394	2,338,725	2,419,773	2,540,800	2,667,900	2,801,300	2,941,400	3,088,300
7	Operational Supplies	2,039,990	2,822,966	2,389,623	3,027,600	3,120,100	3,215,700	3,314,400	3,416,500	3,522,300
8	Other Purchases/Services	147,131	147,480	150,047	194,618	198,500	202,400	206,500	210,600	214,800
9	Capital Outlay and Improvements	-	-	-	-	-	-	-	-	-
10	Other Financing Uses	2,626	2,626	2,626	2,626	2,700	2,800	2,900	3,000	3,100
11	Total Sewer Treatment	3,961,276	4,555,466	4,881,021	5,644,617	5,862,100	6,088,800	6,325,100	6,571,500	6,828,500
	Sewer Maintenance									
12	Personnel Services	431,546	412,264	681,348	748,363	785,900	825,400	867,000	910,500	956,100
13	Operational Supplies	206,530	239,648	367,272	427,080	435,700	444,400	453,200	462,300	471,500
14	Other Purchases/Services	39,709	33,293	41,089	45,859	46,800	47,800	48,800	49,800	50,800
15	Capital Outlay and Improvements	-	-	-	-	-	-	-	-	-
16	Financing Uses	1,313	1,313	1,313	1,313	1,300	1,300	1,300	1,300	1,300
17	Total Sewer Maintenance	679,098	686,518	1,091,022	1,222,615	1,269,700	1,318,900	1,370,300	1,423,900	1,479,700
18	Grand Total Sewer O&M	5,534,006	6,099,504	6,989,872	7,913,317	8,215,700	8,530,900	8,859,300	9,201,900	9,558,900

2.3.2 Projected Capital Improvement Expenditures

Table **2-5** shows the projected sewer capital improvement program (CIP) expenditures for the 2024 to 2029 planning period developed in coordination with City staff. The CIP is broken into three sections including Phase 1 treatment projects, shown on Line 1 through Line 10, Phase 2 treatment projects, shown on Line 11 through Line 35, and collection system projects shown on Line 36 through Line 46. All of the costs shown through Line 47 are uninflated and are inflated in total by project type category on Line 48 through Line 50.

The City expects to spend approximately $70.2 million on inflated treatment plant projects and $50.7 million in collection system improvements. The City anticipates cash funding capital improvements, except for the Phase 2 treatment projects, which are expected to be debt-funded with a State Revolving Fund (SRF) loan of $36.5 million.

Table 2-5: Sewer Capital Improvement Program

Line No.		Budgeted 2024	Projected 2025	2026	2027	2028	2029	Total
	Phase 1 Projects (Treatment)							
1	Additional Final Clarifier and Piping	-	-	-	3,700,000	-	-	3,700,000
2	Flow Splitter Structure	-	-	-	150,000	-	-	150,000
3	Replace Tertiary Filters with Piping and Junction Box	-	-	4,000,000	-	-	-	4,000,000
4	Replace Media in Trickling Filter Towers	4,000,000	-	-	-	-	-	4,000,000
5	Replace Media in Trickling Filter Towers	-	4,000,000	-	-	-	-	4,000,000
6	Replace Trickling Filter Media in South Tower	-	-	2,000,000	-	-	-	2,000,000
7	Replace Aeration Equipment in Oxidation Ditches	-	4,000,000	-	-	-	-	4,000,000
8	Misc. Improvements	-	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	5,000,000
9	Contingency & Engineering [1]	800,000	1,800,000	1,400,000	970,000	200,000	200,000	5,370,000
10	Total	4,800,000	10,800,000	8,400,000	5,820,000	1,200,000	1,200,000	32,220,000
	Phase 2 Projects (Treatment)							
11	Flow Diversion and Screening Structure	-	-	-	-	1,200,000	-	1,200,000
12	Junction Box and Pumping Modifications	-	-	-	-	200,000	-	200,000
13	Chemical Feed Building and Equipment	-	-	-	-	1,200,000	-	1,200,000
14	Chemical Storage Facilities (Silos or Tanks)	-	-	-	-	1,000,000	-	1,000,000
15	Expansion of Final Clarifier Splitting Box	-	-	-	-	75,000	-	75,000
16	4th Final Clarifier with Piping and Road Modifications	-	-	-	-	3,800,000	-	3,800,000
17	Phase 2 Contingency & Engineering	-	-	-	-	1,868,750	-	1,868,750
18	Flow Diversion Structure	-	-	-	-	150,000	-	150,000
19	Ex. Inlet Structure Modifications and Piping Lagoon	-	-	-	-	250,000	-	250,000
20	Inlet and Screening Structure	-	-	-	-	1,800,000	-	1,800,000
21	Grit Removal	-	-	-	-	2,600,000	-	2,600,000
22	Grit and Screenings Conveyance and Loadings	-	-	-	-	600,000	-	600,000
23	Splitter Box Modifications	-	-	-	-	150,000	-	150,000
24	Additional Blowers in Ex. Ox. Ditches (4x)	-	-	-	-	2,200,000	-	2,200,000
25	Aeration Racks in Ex. Ox. Ditches (18x)	-	-	-	-	900,000	-	900,000
26	Additional Mixers in Ex. Ox. Ditches (4x)	-	-	-	-	400,000	-	400,000
27	4th Final Clarifier and Piping	-	-	-	-	3,500,000	-	3,500,000
28	RAS Pumping Structure Modifications	-	-	-	-	75,000	-	75,000
29	Tertiary Filters Flow Splitter and Bypass Juntion Boxes	-	-	-	-	200,000	-	200,000
30	Replace UV in Ex. Structure	-	-	-	-	2,000,000	-	2,000,000
31	Parallel 24" Parshall Flume	-	-	-	-	150,000	-	150,000
32	Chemical Feed Building and Equipment	-	-	-	-	1,200,000	-	1,200,000
33	Chemical Storage Facilities (Silos or Tanks)	-	-	-	-	2,300,000	-	2,300,000
34	Phase 2 Contingency & Engineering	-	-	-	-	4,618,750	-	4,618,750
35	Total	-	-	-	-	32,437,500	-	32,437,500
	Collection Projects (Cash funded - All)							
36	Swede Lane Lift Station Improvements	-	300,000	-	-	-	-	300,000
37	20th and Malang Lift Station and Force Main	-	-	5,000,000	-	-	-	5,000,000
38	Apple Road Lit Station Elimination	-	-	-	-	4,800,000	-	4,800,000
39	Short Creek Lift Station Consolidation	-	-	-	-	-	6,900,000	6,900,000
40	Tin Cup Lift Station and Force Main Improvements	5,000,000	-	-	-	-	-	5,000,000
41	Crane Drive Interceptor Sewer Improvements	2,500,000	-	-	-	-	-	2,500,000
42	Tin Cup Phase 2 Force Main	-	2,500,000	-	-	-	-	2,500,000
43	12th & Iowa	-	5,266,782	-	-	-	-	5,266,782
44	Contingency & Engineering [1]	1,500,000	1,913,356	800,000	-	1,600,000	1,380,000	7,193,356
45	Infiltration & Inflow [1]	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	9,000,000
46	Total Collection	10,500,000	11,480,138	7,300,000	1,500,000	7,900,000	9,780,000	48,460,138
47	Grand Total CIP	15,300,000	22,280,138	15,700,000	7,320,000	41,537,500	10,980,000	113,117,638
	Inflated Projects by Category [1]							
48	Phase 1 Projects (Treatment)	4,800,000	11,070,000	8,826,300	6,269,726	1,325,509	1,359,274	33,650,809
49	Phase 2 Projects (Treatment)	-	-	-	-	36,508,692	-	36,508,692
50	Collection Projects (Cash funded - All)	10,500,000	11,722,142	7,604,500	1,500,000	8,502,442	10,878,991	50,708,075
51	Total Inflated CIP	15,300,000	22,792,142	16,430,800	7,769,726	46,336,643	12,238,265	120,867,576

[1] Projects are inflated 3% per year starting in 2025, excluding Phase 1 treatment and collection contingency & engineering (Lines 9 & 44) and Infiltration and inflow (Line 45).

2.3.3 Existing and Proposed Debt Service Requirements

Table 2-6 shows the existing and proposed debt service for the City sewer utility.

Table 2-6: Existing & Proposed Debt Service

Line No.		Budgeted 2024	Projected 2025	2026	2027	2028	2029
	Existing Debt Issues [1]						
1	Series 2021	1,953,339	1,963,612	1,973,702	1,984,609	1,995,323	2,004,851
2	Total Existing Debt Service	1,953,339	1,963,612	1,973,702	1,984,609	1,995,323	2,004,851
	Proposed Debt						
3	Proposed SRF Loans	-	-	-	-	-	2,341,400
4	Total Proposed Debt	-	-	-	-	-	2,341,400
5	Total Annual Debt Service	1,953,339	1,963,612	1,973,702	1,984,609	1,995,323	4,346,251

[1] Does not include the debt administrative fee

As shown on Line 2 in Table 2-6, the City has one outstanding sewer debt series with annual debt service expense of nearly $2.0 million per year. The proposed SRF loan annual debt service payment is summarized on Line 4. For the purpose of projecting future revenue requirements, the debt service payment for the proposed SRF loan is assumed to be equal annual principal and interest expense with full payments starting the year after funds are drawn or issued and reflects a 20-year loan with 2.5 percent interest.

2.3.4 Sewer Utility Operating and Capital Flow of Funds

Table 2-7 presents the sewer utility cash flow. Line 1 of Table 2-7 shows sewer revenues under existing rates, identified previously in Table 2-3.

Lines 2 through 6 present the proposed sewer revenue increases through 2029. The system revenue increases are projected to fund future operating and capital costs, sustain reasonable reserves, and provide adequate debt service coverage. All revenue increases are assumed to be effective on November 1 of each year indicated. Total user charge revenues are summarized on Line 8.

All other revenues are summarized on Line 9 and grand total revenue is summarized on Line 10, which includes existing and proposed user charge and non-user charge revenue.

Total sewer O&M expenses are shown on Lines 11 through 13, shown previously in

Table **2-4**. Annual debt service expense is shown on Lines 14 through 17 as shown previously in Table 2-6.

Total revenue requirements are summarized on Line 18. This amount is deducted from Line 10, total revenue, to determine the annual operating cash flow on Line 19. With the proposed revenue increases the annual operating cash flow is projected to range between $10.0 million and $12.0 million per year over the study period.

Lines 20 through 24 project future operating reserves for the utility. At the beginning of 2024, the utility had approximately $24.2 million in available cash. The annual operating cash flow is added to the beginning cash balance. All cash over and above the operating reserve target is then made available for cash-funding capital projects. Line 22 represents monies in excess of the targeted operating reserve, and those funds are made available to pay for capital projects. The ending operating target balance was determined in collaboration with the City and was set to be a 270-day minimum balance, meaning the utility will maintain a minimum of 270 days of each year's operating expenses in cash on hand.

The capital flow of funds is shown starting on Line 25. Sources of funds for the capital plan include the transfer of available cash from operations, the issuance of debt, and grant funds. Grant funds shown on Line 27 are expected to pay for a portion of the 12th & Iowa project shown previously on Line 43 of Table 2-5.

Capital improvement project totals shown on Line 31 are consistent with those shown previously in

Table **2-5**. The total capital uses summarized on Line 33 are deducted from the total sources of capital funds on Line 30 resulting in the annual capital balance shown on Line 35. The operating reserve shown on Line 23 is then added to the ending capital balance resulting in the total cash at the end of each year, shown on Line 35.

The debt service coverage ratio for the utility is shown on Line 38. Debt service coverage is an indicator of financial health and resilience that measures the ability of annual cash flow to pay annual debt service. For the purpose of this analysis and in coordination with City staff the sewer utility cash flow is targeting a minimum coverage ratio of 1.50x. As shown on Line 38, the coverage ratio is anticipated to exceed the minimum target each year of the forecast.

Table 2-7: Sewer Utility Operating and Capital Flow of Funds

Line No.		Budget 2024	Projected 2025	2026	2027	2028	2029
	Sewer Utility Operating Flow of Funds						
1	Revenue Under Existing Rates	21,880,184	21,969,015	21,969,015	21,969,015	21,969,015	21,969,015
	Proposed Revenue Adjustments [1]						
	Year Month Increase						
2	2025 2 4.0%		644,400	703,000	703,000	703,000	703,000
3	2026 2 4.0%			665,000	725,500	725,500	725,500
4	2027 2 4.0%				686,300	748,700	748,700
5	2028 2 4.0%					708,300	772,700
6	2029 2 4.0%						731,000
7	Total Proposed Additional Revenue	-	644,400	1,368,000	2,114,800	2,885,500	3,680,900
8	Total Sewer User Charge Revenue	21,880,184	22,613,415	23,337,015	24,083,815	24,854,515	25,649,915
9	Other Revenue	187,500	187,500	187,500	187,500	187,500	187,500
10	**Grand Total Sewer Revenue**	**22,067,684**	**22,800,915**	**23,524,515**	**24,271,315**	**25,042,015**	**25,837,415**
	Revenue Requirements						
11	Operation and Maintenance Expense	7,913,300	8,215,700	8,530,900	8,859,300	9,201,900	9,558,900
12	Transfers Out	1,517,133	1,577,800	1,640,900	1,706,500	1,774,800	1,845,800
13	Total O&M	9,430,433	9,793,500	10,171,800	10,565,800	10,976,700	11,404,700
	Debt Service						
14	Existing Debt	1,953,300	1,963,600	1,973,700	1,984,600	1,995,300	2,004,900
15	Debt Admin Fee	100,700	91,700	82,500	73,300	63,900	54,300
16	Proposed SRF Loans	-	-	-	-	-	2,341,400
17	Total Debt Service	2,054,000	2,055,300	2,056,200	2,057,900	2,059,200	4,400,600
18	**Total Revenue Requirements**	**11,484,433**	**11,848,800**	**12,228,000**	**12,623,700**	**13,035,900**	**15,805,300**
19	**Annual Operating Balance**	**10,583,251**	**10,952,115**	**11,296,515**	**11,647,615**	**12,006,115**	**10,032,115**
20	Beginning Balance	24,229,400	7,072,851	7,345,066	7,628,781	7,924,295	8,232,510
21	Annual Operating Balance	10,583,251	10,952,115	11,296,515	11,647,615	12,006,115	10,032,115
22	Transfers to Capital	(27,739,800)	(10,679,900)	(11,012,800)	(11,352,100)	(11,697,900)	(9,711,100)
23	**Ending Balance**	7,072,851	7,345,066	7,628,781	7,924,295	8,232,510	8,553,525
24	*Op. Reserve Target [2]*	*7,072,825*	*7,345,125*	*7,628,850*	*7,924,350*	*8,232,525*	*8,553,525*
	Sewer Utility Capital Flow of Funds						
	Sources						
25	Beginning Balance Capital Funds	-	12,439,800	3,927,340	(1,490,660)	2,091,714	3,952,971
26	Transfer from Operations	27,739,800	10,679,900	11,012,800	11,352,100	11,697,900	9,711,100
27	Anticipated Grants	-	3,599,782	-	-	-	-
28	Debt Issuance (Revenue Bonds)	-	-	-	-	-	-
29	Debt Issuance (SRF)	-	-	-	-	36,500,000	-
30	**Total Capital Sources**	**27,739,800**	**26,719,482**	**14,940,140**	**9,861,440**	**50,289,614**	**13,664,071**
	Uses						
31	Capital Improvement Projects	15,300,000	22,792,142	16,430,800	7,769,726	46,336,643	12,238,265
32	Bond Issuance Expense	-	-	-	-	-	-
33	**Total Capital Uses**	**15,300,000**	**22,792,142**	**16,430,800**	**7,769,726**	**46,336,643**	**12,238,265**
34	**Annual Capital Balance**	**12,439,800**	**3,927,340**	**(1,490,660)**	**2,091,714**	**3,952,971**	**1,425,806**
35	**Total Cash Balance**	**19,512,651**	**11,272,406**	**6,138,121**	**10,016,010**	**12,185,481**	**9,979,331**
	Debt Service Coverage						
36	Net Operating Revenue Available for Debt Service [3]	14,154,384	14,585,215	14,993,615	15,412,015	15,840,115	16,278,515
37	Annual Debt Service	2,054,000	2,055,300	2,056,200	2,057,900	2,059,200	4,400,600
38	Debt Service Coverage	6.89	7.10	7.29	7.49	7.69	3.70

[1] Effectiveness of proposed revenue increases is reduced by an elasticity demand factor of 20%
[2] Operating Reserve Target is 75% of annual O&M
[3] Excludes the external transfers

3.0 Cost of Service Analysis

3.1 Introduction

The cost of service analysis estimates revenue responsibility for each customer class, commensurate with the level of service provided. To determine each customer class' share of the cost of providing utility service, the cost of service analysis compares the revenues received from each customer class under the existing schedule of rates with the allocated cost responsibility for each class.

The cost of service analysis was developed through the following steps:

1. Determine the net revenue requirements to be recovered from user charges.
2. Allocate test period operating and capital costs.
3. Estimate the system test period units of service.
4. Develop test period unit costs of service by class.
5. Assign the costs of service to customer classes.

To develop rates that reasonably recover the cost of providing service, the sewer utility's customer classes are allocated their respective share of the total cost of service according to their use of the system. Costs are assigned through consideration of flow, wastewater strength, customer costs, and other relevant factors. Ultimately, proposed rates must be sufficient to meet the net revenue requirements forecasted for the sewer utility.

3.2 Sewer Cost of Service

3.2.1 Net Revenue Requirements

As described in Section 2.0 of this Report, the cash needs of the sewer utility are projected over the five-year Study Period. The test period for the sewer cost of service analysis is 2025, which corresponds to the first year for which revenue adjustments are proposed. For the sewer utility, the revenue adjustment amounts to a 4.0 percent increase, consistent with the system revenue increase for 2025 shown in Table 2-7.

Table 3-1 summarizes the development of the net revenue requirements to be recovered from sewer rates in the 2025 Test Year. The net revenue requirements represent the level of costs that must be recovered from sewer rates and are equal to total operating and capital cost expenditures less all sources of other revenue. The net operating and net capital costs are shown on Line 10 of Table 3-1, which are 4.0 percent higher than revenues under existing sewer rates as shown on Line 12.

Table 3-1: Test Year 2025 Sewer Net Revenue Requirements

Line No.	Description	Operating Expense $	Capital Cost $	Total $
	Revenue Requirements			
1	Operating Expense	8,215,700	-	8,215,700
2	Debt Service	-	2,055,300	2,055,300
3	Transfers Out	1,577,800	-	1,577,800
4	Revenue Financed Capital	-	10,679,900	10,679,900
5	Total	9,793,500	12,735,200	22,528,700
	Revenue Requirements Met from Other Sources			
6	Other Miscellaneous Revenue	187,500	-	187,500
7	Use of / (Deposit to) Reserves	(118,300)	(153,900)	(272,200)
	Annualized Increase	(25,500)	(33,100)	(58,600)
8	Elasticity Demand	(76,400)	(99,400)	(175,800)
9	Total	(32,700)	(286,400)	(319,100)
10	Cost of Service to be met by User Charges	9,826,200	13,021,600	22,847,800
11	Revenue under Existing Rates			21,969,015
12	Indicated System Revenue Adjustment			4.0%

3.2.2 Cost of Service Methodology

According to the Water Environment Federation (WEF) Manual of Practice No. 27 *Financing and Charges for Wastewater Systems*, three cost allocation methodologies are generally used in the identification and allocation of wastewater utility costs, including:

- Design-Basis Cost Allocation Methodology, whereby costs are allocated to functions based on engineering design considerations that influence the size and purpose of facilities.
- Functional Cost Allocation Methodology, whereby costs are allocated to functions based on the operational purpose of facilities rather than engineering design.
- Hybrid Approach, where in general capital costs are allocated on the design basis while operating costs are allocated on the functional basis.

For this analysis, the functional cost allocation basis was followed, which aligns well with the current sewer cost structure and services related to its collection and treatment system.

3.2.3 Functional Cost Assignment

The sewer utility system includes a variety of facilities that work in concert with one another to meet necessary service requirements. For the City, sewer system expenses include billing and collection, sewer treatment, and sewer maintenance.

Volume costs are those which vary directly with the quantity of wastewater contributed. Treatment plant includes the strength of wastewater as measured in biochemical oxygen demand (BOD) and suspended solids (SS). Industrial Surcharge costs are those costs associated with labor and supplies to provide industrial pretreatment to high strength customers. General system are all other costs incurred by the utility which are spread on the basis of all other direct costs.

3.2.3.1 Operating Expenses

Operating expenses for the sewer system were forecasted previously in

Table **2-4** of this Report. Test Year 2025 summary level operating costs are assigned to functional components in Table 3-2.

In general, operation and maintenance costs were allocated based on several considerations, including:

- The cost causative or functional nature of the underlying expense.
- Directly assignable costs such as customer costs.
- Public works input regarding the functional purpose of certain costs.

Table 3-2: O&M Functional Allocation of Test Year Costs

Line No.	Description	Test Year 2025 Total $	Volume $	BOD $	Suspended Solids	Fixed / Customer	Industrial Surcharge	Allocation Basis
	Billing & Collection							
1	Total Billing & Collection	1,083,900	-	-	-	1,083,900	-	Billing & Collection
	Sewer Treatment							
2	Direct Sewer Treatment	3,885,100	1,493,000	1,352,100	1,040,000	-	-	Sewer Treatment
3	High Strength Industrial	235,500	-	-	-	-	235,500	Industrial Pretreatment
4	Chemical & Laboratory Supply	40,800	40,800	-	-	-	-	Chemicals
5	Wastewater Chemical Supply	40,800	40,800	-	-	-	-	Chemicals
6	Electric Charges	1,312,500	656,200	656,300	-	-	-	Power
7	Gas Charges	347,400	173,700	173,700	-	-	-	Power
8	Total Sewer Treatment	5,862,100	2,404,500	2,182,100	1,040,000	-	235,500	
	Sewer Maintenance							
9	Total Sewer Maintenance	1,269,700	951,500	-	-	318,200	-	Sewer Maintenance
10	Subtotal O&M Expenses	8,215,700	3,356,000	2,182,100	1,040,000	1,402,100	235,500	
11	Transfers Out	1,577,800	644,500	419,100	199,700	269,300	45,200	Subtotal O&M Expenses
12	Total Sewer Utility O&M Expenses	9,793,500	4,000,500	2,601,200	1,239,700	1,671,400	280,700	
	Revenue Requirements Met from Other Sources							
13	Other Miscellaneous Revenue	187,500	76,600	49,800	23,700	32,000	5,400	Subtotal O&M Expenses
14	Use of / (Deposit to) Reserves	(118,300)	(48,300)	(31,400)	(15,000)	(20,200)	(3,400)	Subtotal O&M Expenses
15	Annualized Increase	(25,500)	(10,400)	(6,800)	(3,200)	(4,400)	(700)	Subtotal O&M Expenses
16	Elasticity Demand	(76,400)	(31,200)	(20,300)	(9,700)	(13,000)	(2,200)	Subtotal O&M Expenses
17	**Subtotal**	(32,700)	(13,300)	(8,700)	(4,200)	(5,600)	(900)	
18	**Net Sewer O&M Expense**	9,826,200	4,013,800	2,609,900	1,243,900	1,677,000	281,600	
19	*Distribution*	*100.0%*	*40.8%*	*26.6%*	*12.7%*	*17.1%*	*2.9%*	

The net sewer O&M expense from Line 18 on Table 3-2 matches the net cost of service to be met by user charges in the operating expense column shown on Line 10 of Table 3-1.

3.2.3.2 Capital Costs

Cash capital costs for the sewer utility include cash financed (pay-as-you-go) capital funding and annual debt service. Existing debt is allocated on the basis of the City's fixed assets. Cash financed capital is allocated on the basis of future (five-year) CIP which consists of sewer collection and Phase 1 sewer treatment plant upgrades. Functionally allocated capital costs are shown in Table 3-3.

Table 3-3: Capital Functional Allocation of Test Year Costs

Line No.	Description	Test Year 2025 Total $	Volume $	BOD $	Suspended Solids $	Fixed / Customer $	Industrial Surcharge $	Allocation Basis
	Capital Costs							
	Existing & Proposed Debt							
1	Existing Debt	2,055,300	1,651,000	228,500	175,800	-	-	Net book
2	Revenue Financed Capital	10,679,900	7,484,200	1,806,000	1,389,700	-	-	Capital (non-phase 2)
3	Total Sewer Capital Costs	12,735,200	9,135,200	2,034,500	1,565,500	-	-	
	Less Revenue Requirements Met from Other Sources							
4	Other Miscellaneous Revenue	-	-	-	-	-	-	Total Sewer Capital Costs
5	Use of / (Deposit to) Reserves	(153,900)	(110,395)	(24,586)	(18,918)	-	-	Total Sewer Capital Costs
6	Annualized Increase	(33,100)	(23,743)	(5,288)	(4,069)	-	-	Total Sewer Capital Costs
7	Elasticity Demand	(99,400)	(71,302)	(15,880)	(12,219)	-	-	Total Sewer Capital Costs
8	Subtotal Other Operating Revenue	(286,400)	(205,440)	(45,754)	(35,206)	-	-	
9	Net Sewer Capital Expense	13,021,600	9,340,640	2,080,254	1,600,706	-	-	

The net sewer capital expense from Line 9 on Table 3-3 matches the net cost of service to be met by user charges in the capital expense column shown on Line 10 of Table 3-1.

3.2.4 Units of Service

Functional costs responsibility of each customer class may be established based on the respective service requirements of each class. These service requirements are referred to as units of service and are summarized in Table 3-4.

Billable flow or volume is that portion of each customer's annual water use discharged directly into the sewer system. Billable flow is based upon utility billing records by class. Treated flow represents the annual flow treated at the City's treatment plant, adjusted for Infiltration/Inflow. Billing costs are allocated to classes based on the projected number of billed units.

Table 3-4: Sewer Units of Service

Line No.	Description	Billable Flow Mgal	Treated Flow Mgal	Strength BOD lbs	Strength SS lbs.	Bills	Accounts
1	Residential	922,410	3,830,007	4,753,710	3,662,489	248,490	20,708
2	Commerical	644,070	938,005	2,088,411	1,978,097	25,120	2,093
3	Industrial	935,760	948,257	2,740,343	2,735,652	1,068	89
4	High Strength Industrial	-	-	1,837,667	357,568	-	-
5	Meter-Related Residence	46,180	65,276	148,337	141,170	1,643	136
6	Public Authority	69,310	82,790	211,872	206,813	1,152	96
7	Total	2,617,730	5,864,335	11,780,339	9,081,790	277,474	23,122

3.2.5 Unit Cost Development

Based on the functionalized operation and maintenance expenses and capital costs shown in Table 3-2 and Table 3-3, and the units of service developed in Table 3-4, unit costs of service for each functional cost component may be determined. Table 3-5 shows the unit of measure and applicable unit cost for each functional component.

Table 3-5: Sewer Unit Cost Development

Line No.	Description	Test Year 2025 Total	Volume	BOD	Suspended Solids	Fixed / Customer	Industrial Pretreatment Program
1	Total Units of Service		5,864,335	11,780,339	9,081,790	277,474	28
2	Unit of Measure		Treated Kgal	lbs	lbs	Bills	Customers
3	Net Operating Expense - $	9,544,600	4,013,800	2,609,900	1,243,900	1,677,000	281,600
4	Unit Cost - $/Unit		0.6844	0.2215	0.1370	6.0438	10,057.1429
5	Net Capital Costs - $	13,021,600	9,340,640	2,080,254	1,600,706	-	-
6	Unit Cost - $/Unit		1.5928	0.1766	0.1763	-	-
7	Total Cost of Service	22,566,200	13,354,440	4,690,154	2,844,606	1,677,000	281,600
8	Unit Cost - $/Unit		2.2772	0.3981	0.3133	6.0438	10,057.1429

3.2.6 Allocation of Costs to Customer Classes

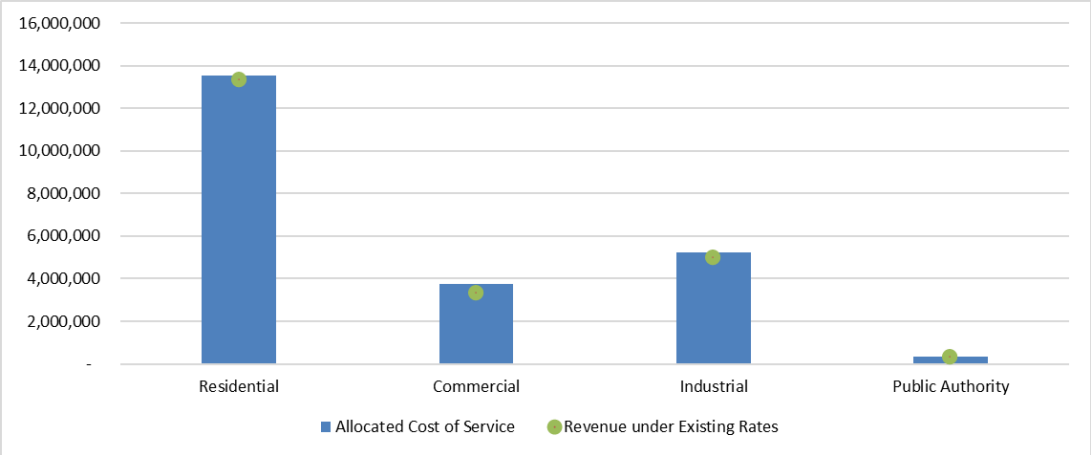
Applying the unit costs by function to units of service by class allows for the distribution of costs to customer classes, as shown in Table 3-6. Units of service for each class are as developed previously in Table 3-4. By applying the unit cost for each function against the level of service provided to each customer class, the total cost of service by customer class may be determined.

Table 3-6: Sewer Cost Allocation to Customer Classes

Line No.	Description	Test Year 2025 Total	Volume	BOD	Suspended Solids	Fixed / Customer	Industrial Pretreatment Program
1	Unit Cost of Service - $/Unit		$ 2.277	$ 0.398	$ 0.313	$ 6.044	$ 10,057.143
	Residential						
2	Units of Service		3,830,007	4,753,710	3,662,489	248,490	-
3	Allocated Cost - $	13,263,500	8,721,700	1,892,500	1,147,500	1,501,800	-
	Commercial						
4	Units of Service		938,005	2,088,411	1,978,097	25,120	-
5	Allocated Cost - $	3,738,900	2,136,000	831,400	619,700	151,800	-
	Industrial						
6	Units of Service		948,257	2,740,343	2,735,652	1,068	28
7	Allocated Cost - $	4,395,500	2,159,400	1,090,900	857,100	6,500	281,600
	Meter-Related Residence						
8	Units of Service		65,276	148,337	141,170	1,643	-
9	Allocated Cost - $	261,900	148,700	59,100	44,200	9,900	-
	Other Public Authority						
10	Units of Service		82,790	211,872	206,813	1,152	-
11	Allocated Cost - $	344,600	188,500	84,300	64,800	7,000	-
12	Total Units of Service		5,864,335	9,942,672	8,724,221	277,474	28
13	Total Cost of Service	22,004,400	13,354,300	3,958,200	2,733,300	1,677,000	281,600

After Test Year 2025 costs are assigned to customer classes, they may be compared against revenue under existing rates. This comparison provides an indication of equity in the recovery of costs through revenues under existing 2024 rates. As shown in Figure 3-1, customer class costs represented in the bars generally align with revenues by class represented by the green dots.

Figure 3-1: Comparison of Sewer Revenue Under Existing Rates to 2025 Allocated Cost of Service



It is important to note that cost of service results are instructive but for many reasons should not be interpreted as prescriptive in the development of proposed rates. A discussion of proposed rates for the sewer utility can be found in Section 4.0

4.0 Rate Design

4.1 Introduction

The primary focus of Step 3, Rate Design, is the examination of revenue recovery. Generally speaking, the objective is to design rates for each utility to progress toward the following goals:

- Generate adequate revenues to meet the projected operating and capital costs, while maintaining sound financial performance.
- Provide revenue stability.
- Provide cost recovery that is reasonably commensurate with the cost of providing service.

4.2 Existing and Proposed Rates

Table 4-1 shows the existing and proposed sewer rates. Lines 1 through 7 show the monthly fixed facility charge that graduates by meter size. Line 8 shows the volume charge per 1,000 gallons of usage. Lines 9 and 10 show the surcharge strength rates for BOD and TSS.

Line 11 shows the industrial pretreatment fee that is new for 2025 and is designed to help recover the cost of operating and administrating the City's industrial pretreatment program. This fee will be charged uniformly to all companies who participate in the City's pretreatment program and recovers the cost of labor, supplies and laboratory expenses.

Outside City customer rates are developed using the existing outside city multiplier of 1.30x the Inside City rates, consistent with the existing structure.

The overall systemwide increase is proposed to be 4 percent per year across all years of the study period. Proposed rates reflect the following adjustments:

- Facility charges increase 2.25 percent per year
- Volume charges increase 6.0 percent in 2025 and 8.0 percent per year thereafter
- BOD and TSS excess surcharge rates increase 1.5 percent per year
- Industrial pretreatment fee increases 4.0 percent per year beginning in 2026

The result of the proposed rate changes is anticipated to provide an annual increase in system user charge revenues of 4 percent, consistent with the proposed financial plan.

Table 4-1: Existing and Proposed Sewer Rates

Line No.	Description	Existing 2024	Proposed 2025	2026	2027	2028	2029
	INSIDE CITY						
	Monthly Facility Charge - $/bill						
1	3/4" or smaller	$ 40.29	$ 41.20	$ 42.13	$ 43.08	$ 44.05	$ 45.04
2	1"	$ 51.71	$ 52.87	$ 54.06	$ 55.28	$ 56.52	$ 57.79
3	1.5"	$ 80.33	$ 82.14	$ 83.99	$ 85.88	$ 87.81	$ 89.79
4	2"	$ 114.64	$ 117.22	$ 119.86	$ 122.56	$ 125.32	$ 128.14
5	3"	$ 194.71	$ 199.09	$ 203.57	$ 208.15	$ 212.83	$ 217.62
6	4"	$ 309.04	$ 315.99	$ 323.10	$ 330.37	$ 337.80	$ 345.40
7	6"	$ 595.00	$ 608.39	$ 622.08	$ 636.08	$ 650.39	$ 665.02
8	**Volume Charge - $/1,000 gal**	$ 2.64	$ 2.80	$ 3.02	$ 3.26	$ 3.52	$ 3.80
9	**BOD Surcharge - $/lb**	$ 1.11	$ 1.13	$ 1.15	$ 1.17	$ 1.19	$ 1.21
10	**SS Surcharge - $/lb**	$ 0.68	$ 0.69	$ 0.70	$ 0.71	$ 0.72	$ 0.73
11	**Industrial Pretreatment Fee - $/bill**	$ -	$ 150.00	$ 156.00	$ 162.24	$ 168.73	$ 175.48
	OUTSIDE CITY						
	Monthly Facility Charge - $/bill						
12	3/4" or smaller	$ 52.35	$ 53.56	$ 54.77	$ 56.00	$ 57.27	$ 58.55
13	1"	$ 67.20	$ 68.73	$ 70.28	$ 71.86	$ 73.48	$ 75.13
14	1.5"	$ 104.43	$ 106.78	$ 109.19	$ 111.64	$ 114.15	$ 116.73
15	2"	$ 149.04	$ 152.39	$ 155.82	$ 159.33	$ 162.92	$ 166.58
16	3"	$ 253.12	$ 258.82	$ 264.64	$ 270.60	$ 276.68	$ 282.91
17	4"	$ 401.74	$ 410.79	$ 420.03	$ 429.48	$ 439.14	$ 449.02
18	6"	$ 773.50	$ 790.91	$ 808.70	$ 826.90	$ 845.51	$ 864.53
19	**Volume Charge - $/1,000 gal**	$ 3.43	$ 3.64	$ 3.93	$ 4.24	$ 4.58	$ 4.94
20	**BOD Surcharge - $/lb**	$ 1.45	$ 1.48	$ 1.50	$ 1.53	$ 1.55	$ 1.58
21	**SS Surcharge - $/lb**	$ 0.88	$ 0.89	$ 0.91	$ 0.92	$ 0.93	$ 0.94

4.3 Bill Impact from Proposed Rates

Table 4-2 shows the impact on sewer bills for a sampling of residential customers with a 3/4” meter under different usage amounts under existing and proposed rates. Table 4-2 shows the changes in monthly bills over the study period, assuming all proposed rates are implemented through 2029.

The calculated bills are shown on Line 1 through Line 4 with the change in dollars shown on Line 5 through Line 8. The percentage change in monthly bills year over year can be seen on Lines 9 through 12.

Table 4-2: Residential Sewer Bills Under Existing and Proposed Rates

Line No.	Billable Flow *Kgal*	Existing 2024	2025	2026	2027	2028	2029
			Proposed Monthly Bill				
1	2.0	$ 45.57	$ 46.80	$ 48.17	$ 49.60	$ 51.09	$ 52.64
2	4.0	$ 50.85	$ 52.40	$ 54.21	$ 56.12	$ 58.13	$ 60.24
3	8.0	$ 61.41	$ 63.60	$ 66.29	$ 69.16	$ 72.21	$ 75.44
4	16.0	$ 82.53	$ 86.00	$ 90.45	$ 95.24	$ 100.37	$ 105.84
			Change in Monthly Bill ($)				
5	2.0		$ 1.23	$ 1.37	$ 1.43	$ 1.49	$ 1.55
6	4.0		$ 1.55	$ 1.81	$ 1.91	$ 2.01	$ 2.11
7	8.0		$ 2.19	$ 2.69	$ 2.87	$ 3.05	$ 3.23
8	16.0		$ 3.47	$ 4.45	$ 4.79	$ 5.13	$ 5.47
			Change in Monthly Bill (%)				
9	2.0		2.7%	2.9%	3.0%	3.0%	3.0%
10	4.0		3.0%	3.5%	3.5%	3.6%	3.6%
11	8.0		3.6%	4.2%	4.3%	4.4%	4.5%
12	16.0		4.2%	5.2%	5.3%	5.4%	5.4%

Table 4-3 shows the impact on sewer bills for a sampling of commercial customers with a 2" meter under different usage amounts under existing and proposed rates. Table 4-3 shows the changes in monthly bills over the study period, assuming all proposed rates are implemented through 2029.

Table 4-3: Commercial Sewer Bills Under Existing and Proposed Rates

Line No.	Billable Flow *Kgal*	Existing 2024	2025	2026	2027	2028	2029
			Proposed Monthly Bill				
1	25.0	$ 180.64	$ 187.22	$ 195.36	$ 204.06	$ 213.32	$ 223.14
2	50.0	$ 246.64	$ 257.22	$ 270.86	$ 285.56	$ 301.32	$ 318.14
3	100.0	$ 378.64	$ 397.22	$ 421.86	$ 448.56	$ 477.32	$ 508.14
			Change in Monthly Bill ($)				
4	25.0		$ 6.58	$ 8.14	$ 8.70	$ 9.26	$ 9.82
5	50.0		$ 10.58	$ 13.64	$ 14.70	$ 15.76	$ 16.82
6	100.0		$ 18.58	$ 24.64	$ 26.70	$ 28.76	$ 30.82
			Change in Monthly Bill (%)				
7	25.0		3.6%	4.3%	4.5%	4.5%	4.6%
8	50.0		4.3%	5.3%	5.4%	5.5%	5.6%
9	100.0		4.9%	6.2%	6.3%	6.4%	6.5%

Table 4-4 shows the impact on sewer bills for a sampling of high strength industrial customers with a 2" or 6" meter under different usage amounts under existing and proposed rates, including the Industrial Pretreatment Fee. Table 4-4 shows the changes in monthly bills over the study period, assuming all proposed rates are implemented through 2029.

Table 4-4: Industrial Sewer Bills Under Existing and Proposed Rates

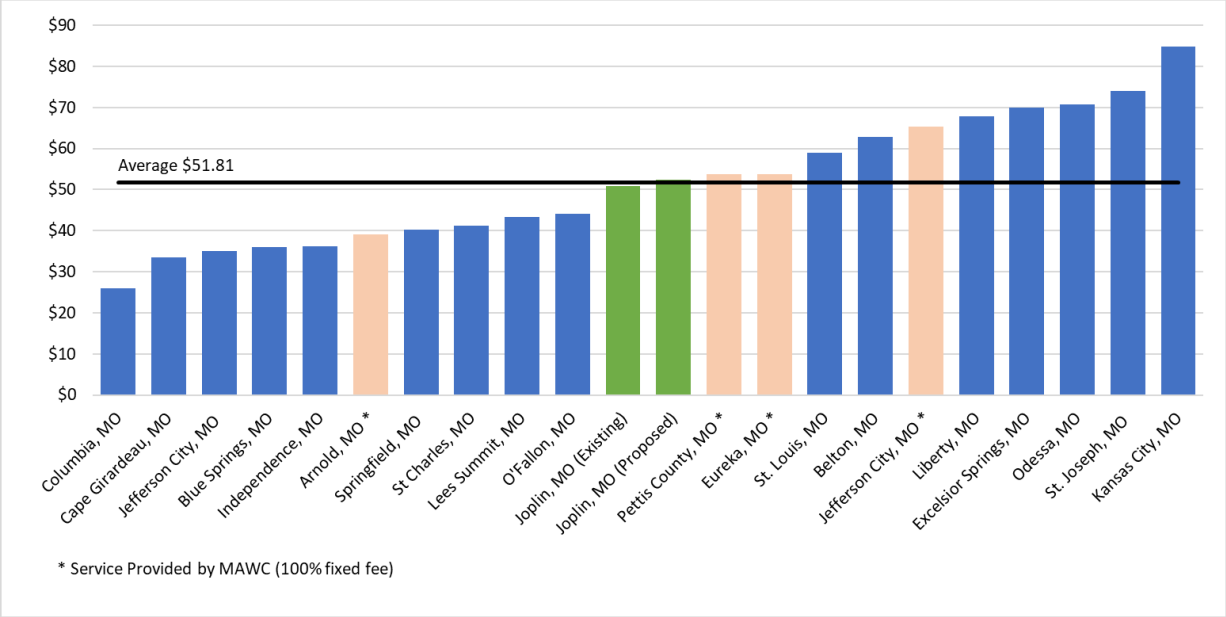
Line No.	Meter Size	Billable Flow	BOD	TSS	Existing 2024	2025	2026	2027	2028	2029
	Inches	*Kgal*	*lbs*	*lbs*						
						Proposed Monthly Bill				
1	2"	880.0	1,720.0	330.0	$ 4,571.44	$ 4,902.52	$ 5,142.46	$ 5,400.30	$ 5,676.05	$ 5,969.72
2	6"	1,760.0	3,440.0	660.0	$ 9,508.60	$ 10,028.99	$ 10,511.28	$ 11,029.32	$ 11,583.12	$ 12,172.70
3	6"	3,520.0	6,880.0	1,320.0	$ 18,422.20	$ 19,299.59	$ 20,244.48	$ 21,260.32	$ 22,347.12	$ 23,504.90
						Change in Monthly Bill ($)				
4	2"	880.0	1,720.0	330.0		$ 331.08	$ 239.94	$ 257.84	$ 275.75	$ 293.67
5	6"	1,760.0	3,440.0	660.0		$ 520.39	$ 482.29	$ 518.04	$ 553.80	$ 589.58
6	6"	3,520.0	6,880.0	1,320.0		$ 877.39	$ 944.89	$ 1,015.84	$ 1,086.80	$ 1,157.78
						Change in Monthly Bill (%)				
7	2"	880.0	1,720.0	330.0		7.2%	4.9%	5.0%	5.1%	5.2%
8	6"	1,760.0	3,440.0	660.0		5.5%	4.8%	4.9%	5.0%	5.1%
9	6"	3,520.0	6,880.0	1,320.0		4.8%	4.9%	5.0%	5.1%	5.2%

Companies participating in the City's industrial pretreatment program with relatively low monthly flow will realize a higher percent increase in their 2025 sewer bill, as their sewer bill will be influenced more by the implementation of the Industrial Pretreatment Fee of $150 per month. Percentage changes in these sewer bills will be more consistent with those shown in Table 4-4 beginning in 2026.

4.4 Regional Sewer Comparison

A comparison of rates for twenty-one regional utilities was conducted based on rates in effect as of July 1, 2024. Figure 1-3 shows the monthly bill for a 5/8-inch meter using 4 thousand gallons a month for each of these providers. The regional typical bill ranges from $26 per month to $85 per month, with the City currently just below the average of $51.81 per month. Implementing the proposed 2025 rates does not meaningfully impact the competitive position of the City's average residential sewer bill. Note that a portion of the surveyed communities are likely to experience rate increases in 2025. As mentioned earlier, nationwide annual rate increases for water and sewer service amount to about 5 percent per year, suggesting rates for other communities will increase over time.

Figure 4-1: Residential Sewer Monthly Bill Comparison at 4 Thousand Gallons per Month





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COUNCIL BILL NO. 2024-151 **ORDINANCE NO.**

AN ORDINANCE amending Chapter 118, Utilities, Article II, Sewers and Sewage Disposal, Division 6 Rates and Charges, of the Joplin City Code, by repealing sections 118-201 through 118-202, inclusive, of Division 6 in their entirety and enacting new sections 118-201 through 118-202, inclusive of Division 6, Rates and Charges; dealing generally with the establishment of sewer rates for the City of Joplin, Missouri.

BE IT ORDAINED BY THE COUNCIL OF THE CITY OF JOPLIN, as follows:

WHEREAS, in 2019 the Council of the City of Joplin established a sewer rate based upon the cost of providing and maintaining the sewer infrastructure and the cost of treating, on a per usage basis, the waste stream; and, for industrial and commercial users with additional surcharges for usage and wastewater strength; and,

WHEREAS, the Council of the City of Joplin heard a rate study report regarding the proposed rates at the August 12, 2024 work session of the Council; and,

WHEREAS, in 2024 the consulting firm of Burns and McDonnell have reviewed the City's wastewater treatment system and have provided rate recommendations; and,

WHEREAS, the rates increase each year, 2025 through 2029; and,

WHEREAS, only those residential, commercial, industrial and governmental persons or entities utilizing the system will be responsible for payment of sewer fees; and,

WHEREAS, the rate charged to out-of-town users is higher, in part, because those users do not bear the potential liability associated with a wastewater treatment system that City residents may incur; and,

WHEREAS, the Council of the City of Joplin has determined that the rate structure proposed is the most equitable way to balance the cost of maintaining an environmentally compliant and effective sewerage system.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF JOPLIN, MISSOURI, as follows:

Section 1. That Sections 118-201 through 118-202, inclusive, of Division 6. Rates and Charges. of Division II. Sewers and Sewage Disposal. of Chapter 118. Utilities. of the Joplin City Code, are hereby repealed in their entirety, and a new Division 6. Rates and Charges., Sections 118-201 through 118-202 are hereby enacted in lieu thereof, to read as follows:

COUNCIL BILL NO. 2024-151 **ORDINANCE NO.**

DIVISION 6. RATES AND CHARGES

Sec. 118-201. Generally.

Sewer service charges are hereby levied against every residential, commercial, industrial and governmental user connected to public sewers in accordance with the rate recommendation documented in the 2024 Burns and McDonnell rate study, said rate study is incorporated herein by reference as Appendix 1. The proceeds of such charges so derived will be used first, for the purpose of retiring the debt for the public wastewater treatment works and then for the purpose of operation, maintaining and replacing the sewer system and equipment.

Sec. 118-202. - Rates and surcharges.

(a) All residential, commercial, industrial and governmental establishments shall be charged for sewer service in accordance with the following rate table. The sewer service charge shall consist of a monthly facility charge based upon the size of water meter plus a charge based upon the gallons of water used per month. The charges shall become effective on the dates listed in the table. The rate effective on April 1, 2025, shall be effective thereafter until changed.

RATE TABLE I

¾ Inch Meter or Smaller

Effective Date	Facility Charge Per Month		Volume Charge Per 1,000 Gal.	
	In City	Out of City	In City	Out of City
Present Rate	40.29	52.35	2.64	3.43
April 1, 2025	41.20	53.56	2.80	3.64
April 1, 2026	42.13	54.77	3.02	3.93
April 1, 2027	43.08	56.00	3.26	4.24
April 1, 2028	44.05	57.27	3.52	4.58
April 1, 2029	45.04	58.55	3.80	4.94

1 Inch Meter

Effective Date	Facility Charge Per Month		Volume Charge Per 1,000 Gal.	
	In City	Out of City	In City	Out of City
Present Rate	51.71	67.20	2.64	3.43
April 1, 2025	52.87	68.73	2.80	3.64
April 1, 2026	54.06	70.28	3.02	3.93
April 1, 2027	55.28	71.86	3.26	4.24

April 1, 2028	56.52	73.48	3.52	4.58
April 1, 2029	57.79	75.13	3.80	4.94

1½ Inch Meter

Effective Date	Facility Charge Per Month		Volume Charge Per 1,000 Gal.	
	In City	Out of City	In City	Out of City
Present Rate	80.33	104.43	2.64	3.43
April 1, 2025	82.14	106.78	2.80	3.64
April 1, 2026	83.99	109.19	3.02	3.93
April 1, 2027	85.88	111.64	3.26	4.24
April 1, 2028	87.81	114.15	3.52	4.58
April 1, 2029	89.79	116.73	3.80	4.94

2 Inch Meter

Effective Date	Facility Charge Per Month		Volume Charge Per 1,000 Gal.	
	In City	Out of City	In City	Out of City
Present Rate	114.64	149.04	2.64	3.43
April 1, 2025	117.22	152.39	2.80	3.64
April 1, 2026	119.86	155.82	3.02	3.93
April 1, 2027	122.56	159.33	3.26	4.24
April 1, 2028	125.32	162.92	3.52	4.58
April 1, 2029	128.14	166.58	3.80	4.94

3 Inch Meter

Effective Date	Facility Charge Per Month		Volume Charge Per 1,000 Gal.	
	In City	Out of City	In City	Out of City
Present Rate	194.71	253.12	2.64	3.43
April 1, 2025	199.09	258.82	2.80	3.64
April 1, 2026	203.57	264.64	3.02	3.93
April 1, 2027	208.15	270.60	3.26	4.24
April 1, 2028	212.83	276.68	3.52	4.58
April 1, 2029	217.62	282.91	3.80	4.94

4 Inch Meter

Effective Date	Facility Charge Per Month		Volume Charge Per 1,000 Gal.	
	In City	Out of City	In City	Out of City
Present Rate	309.04	401.74	2.64	3.43
April 1, 2025	315.99	410.79	2.80	3.64
April 1, 2026	323.10	420.03	3.02	3.93
April 1, 2027	330.37	429.48	3.26	4.24
April 1, 2028	337.80	439.14	3.52	4.58
April 1, 2029	345.40	449.02	3.80	4.94

6 Inch Meter

Effective Date	Facility Charge Per Month		Volume Charge Per 1,000 Gal.	
	In City	Out of City	In City	Out of City
Present Rate	595.00	773.50	2.64	3.43
April 1, 2025	608.39	790.91	2.80	3.64
April 1, 2026	622.08	808.70	3.02	3.93
April 1, 2027	636.08	826.90	3.26	4.24
April 1, 2028	650.39	845.51	3.52	4.58
April 1, 2029	665.02	864.53	3.80	4.94

(b) A surcharge rate is established for each user which discharges wastewater into the city treatment works which contains excess strength biochemical oxygen demand (BOD) and total suspended solids (TSS). Excess strength BOD and TSS are defined as wastewater with a BOD concentration in excess of 2.5 lb./1,000 gallons or a TSS concentration in excess of 2.5 lb./1,000 gallons. Surcharges for BOD and TSS shall be paid at the rates established in Rate Table II, and shall be paid in addition to the normally established rates listed in Rate Table I. The charges shall become effective on the dates listed in the table and shall be applicable through the subsequent year. The rate effective on April 1, 2025 shall be effective thereafter until changed.

RATE TABLE II

Effective Date	BOD Surcharge Rate	SS Surcharge Rate

	Per Pound		Per Pound	
	In City	Out of City	In City	Out of City
Present Rate	1.11	1.45	0.68	0.88
April 1, 2025	1.13	1.48	0.69	0.89
April 1, 2026	1.15	1.50	0.70	0.91
April 1, 2027	1.17	1.53	0.71	0.92
April 1, 2028	1.19	1.55	0.72	0.93
April 1, 2029	1.21	1.58	0.73	0.94

(c) An industrial pretreatment fee shall be charged to each permitted industrial user that is being monitored by city personnel. The fee shall consist of a monthly charge and become effective on the dates listed in Rate Table III, and shall be paid in addition to the established rates in Rate Table l and Rate Table ll. The rate effective on April 1, 2025, shall be effective thereafter until changed.

RATE TABLE III

Effective Date	Pretreatment Charge Per Month
Present Rate	------
April 1, 2025	150.00
April 1, 2026	156.00
April 1, 2027	162.24
April 1, 2028	168.73
April 1, 2029	175.48

(d) In addition to any fee or surcharge described hereinabove, any user which discharges any toxic pollutants which cause an increase in the cost of managing the effluent or sludge from the city's treatment works, or any user which discharges any substance which singly or by interaction with other substances causes identifiable increases in the cost or operation, maintenance, or replacement of the treatment works, shall pay for such increased costs. The charge to each user shall be as determined by the responsible plant operating personnel and approved by the city council.

PASSED BY THE COUNCIL OF THE CITY OF JOPLIN, MISSOURI, this _____ day of_____, 2024, by a vote of_____.

_____

ATTEST: Keenan T. Cortez, Mayor

_____
Holly Nagy, City Clerk

APPROVED AS TO FORM:

_____
Peter C. Edwards, City Attorney