



City of Waterford Sewer Rate and Fee Study

**Final Report
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SECTION 1: INTRODUCTION AND EXECUTIVE SUMMARY

1.1 Background

The City of Waterford (City) provides sewer collection, treatment, and disposal service to about 2,500 accounts. The collection system is comprised of clay or polyvinyl chloride pipe varying in size from 6 inches to 12 inches. Wastewater is conveyed by gravity lines as well as force mains from 3 lift stations to the wastewater treatment plant for treatment through a series of 5 ponds. The current wastewater treatment plant has a 1 million gallon per day (MGD) capacity and currently treats an average flow of 0.58 MGD. Treated wastewater is then pumped under the Tuolumne River to evaporation ponds.

The City last conducted an in-depth rate study in 2011 to review the cost of service and design appropriate rates and charges. Based on the results of that study, sewer rates were last increased in fiscal year (FY) 2016. Since the prior rate study, the City has conducted an engineering analysis to determine funding for infrastructure repairs and improvements. Moreover, rate changes are needed to keep up with inflationary operating cost increases. The prior rate study adjusted the rates of all customer classes by a uniform percent increase each year. This study offers a more detailed analysis of the wastewater flows and pollutant loadings of each customer class as the basis for rate adjustments.

1.2 Requirements of Proposition 218

Proposition 218, the “Right to Vote on Taxes Act”, was approved by California voters in November 1996 and is codified as Articles XIII C and XIII D of the California Constitution. Proposition 218 establishes requirements for imposing any new or increasing any existing property-related fees and charges. For many years, there was no legal consensus on whether water and sewer service fees met the definition of “property-related fees.” In July 2007, the California Supreme Court essentially confirmed that Proposition 218 applies to water and wastewater (sewer) service fees.

The City must follow the procedural requirements of Proposition 218 for all utility rate increases. These requirements include:

1. **Noticing Requirement** – The City must mail a notice of the proposed rate increases to all affected property owners or ratepayers. The notice must specify the amount of the fee, the basis upon which it was calculated, the reason for the fee, and the date/time/location of a public rate hearing at which the proposed rates will be considered/adopted.
2. **Public Hearing** – The City must hold a public hearing prior to adopting the proposed rate increases. The public hearing must be held not less than 45 days after the required notices are mailed.
3. **Rate Increases are Subject to Majority Protest** – At the public hearing, the proposed rate increases are subject to majority protest. If more than 50% of affected property owners or ratepayers submit written protests against the proposed rate increases, the increases cannot be adopted.

Proposition 218 also established substantive requirements that apply to sewer rates and charges, including:

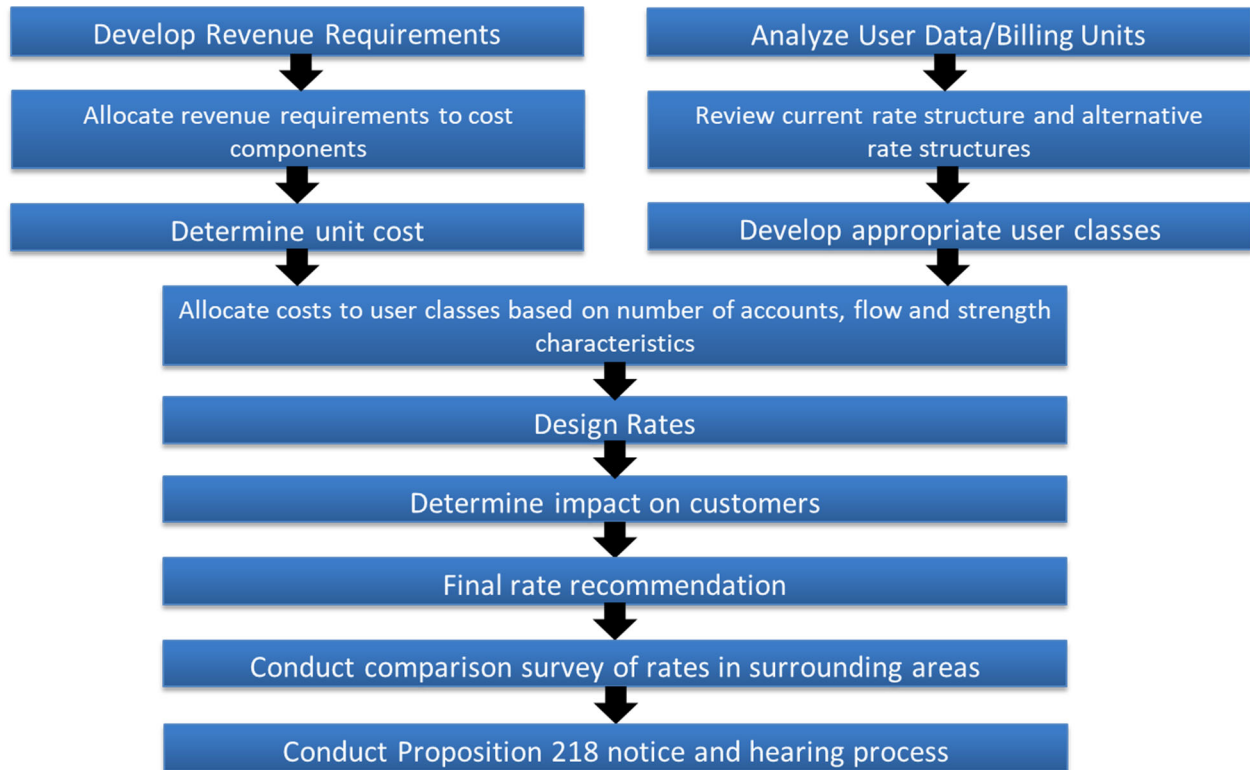
1. **Cost of Service** - Revenues derived from the fee or charge cannot exceed the funds required to provide the service. In essence, fees cannot exceed the “cost of service”.
2. **Intended Purpose** - Revenues derived from the fee or charge can only be used for the purpose for which the fee was imposed.
3. **Proportional Cost Recovery** - The amount of the fee or charge levied on any customer shall not exceed the proportional cost of service attributable to that customer.
4. **Availability of Service** - No fee or charge may be imposed for a service unless that service is used by, or immediately available to, the owner of the property.
5. **General Government Services** - No fee or charge may be imposed for general governmental services where the service is available to the public at large.

Charges for water, sewer, and refuse collection are exempt from additional voting requirements of Proposition 218, provided the charges do not exceed the cost of providing service and are adopted pursuant to procedural requirements of Proposition 218.

1.3 Rate Study Process

This section details the development of the City’s sewer rates via the Proposition 218 process as shown in the following figure.

Figure 1: Comprehensive Cost of Service Study Process



The following is a brief description of the rate study process:

- **Revenue Requirements** - Revenue requirements are analyzed via financial plans developed from the Sewer Fund budget. Based on the best information currently available, the financial plans incorporate projected operations and maintenance costs, capital expenditures, and debt service to estimate annual revenue requirements. The plans serve as a roadmap for funding the City’s future operating and capital programs while maintaining long-term fiscal stability.
- **Cost of Service Allocation** - The cost of service process builds on the financial plan analysis and assigns wastewater system costs to functional cost components: customer service, flow, and wastewater pollutant strength.

- **Rate Design** - Rate design involves developing a rate structure that proportionately recovers costs from customers. Final rate recommendations are designed to (a) fund the utilities' short- and long-term costs of providing service; (b) proportionately allocate costs to all customers and customer classes; and (c) comply with the substantive requirements of Proposition 218.

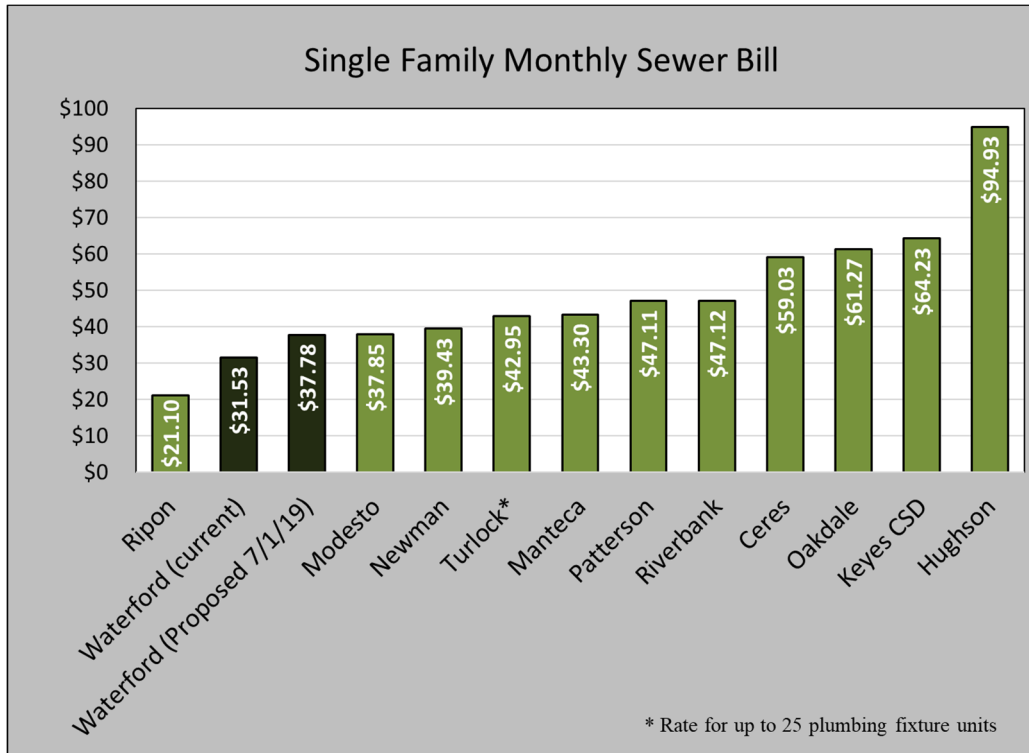
1.4 Proposed Rates

The findings and recommendations presented in this report were developed with substantial input from City staff and City Council. Rate changes are proposed to be implemented July 1 of each year for the next five years.

**Table 1: Proposed Sewer Rates
Sewer Rate and Fee Study
City of Waterford**

Customer Class	Billing Unit Description	Current Rate	PROPOSED				
			Jul 1, 2019	Jul 1, 2020	Jul 1, 2021	Jul 1, 2022	Jul 1, 2023
Single Family Residential	per dwelling unit	\$31.53	\$37.78	\$44.01	\$48.41	\$49.86	\$51.36
Multifamily Residential	per dwelling unit	\$31.53	\$35.50	\$39.97	\$43.97	\$45.29	\$46.65
Beauty Salon/Barber	per basin	\$31.53	\$16.74	\$19.50	\$21.45	\$22.09	\$22.75
Car wash	per bay	\$36.26	\$23.77	\$27.69	\$30.46	\$31.37	\$32.31
Church	per 100 people	\$31.53	\$33.15	\$34.84	\$36.63	\$37.73	\$38.86
Commercial - Flat	per account	\$47.30	\$32.46	\$37.82	\$41.60	\$42.85	\$44.14
Fast Food	per account	\$63.30	\$47.67	\$55.54	\$61.09	\$62.92	\$64.81
Gas Station	per pump	\$14.18	\$15.11	\$16.10	\$17.16	\$17.67	\$18.20
Health Services	per account	\$63.06	\$37.47	\$43.65	\$48.02	\$49.46	\$50.94
Industrial	per account	\$126.12	\$57.14	\$66.57	\$73.23	\$75.43	\$77.69
Laundromat	per washer	\$6.93	\$8.46	\$10.32	\$12.60	\$12.98	\$13.37
Major Food Market	per 1,000 sq ft	\$28.38	\$33.11	\$38.64	\$45.08	\$46.43	\$47.82
Pharmacy	per account	\$47.30	\$34.58	\$37.93	\$41.60	\$42.85	\$44.14
Prof Service	per account	\$31.53	\$34.58	\$37.93	\$41.60	\$42.85	\$44.14
Restaurant	per seat	\$2.68	\$3.11	\$3.62	\$3.98	\$4.10	\$4.22
Retail	per account	\$31.53	\$34.58	\$37.93	\$41.60	\$42.85	\$44.14
School	per school	\$756.74	\$823.20	\$895.49	\$974.13	\$1,003.35	\$1,033.45

A sewer bill survey was conducted to compare the City of Waterford’s current and proposed bill with other local agencies. Currently, the City’s sewer bill is one of the lowest in the region. Even with the proposed rate increase, the City’s single family residential sewer bill will remain cost-competitive.



1.5 Rate Assistance

The City currently offers a utility bill assistance program for seniors and low-income residents. Qualifying customers receive a \$10 per month discount on their total utility bill. The rate assistance program discount could be used by residents to potentially offset all or a portion of the sewer bill increase.

SECTION 2: CURRENT RATES AND CUSTOMER BASE

This section provides an overview of the City's sewer rates, customer base, and current rate revenues.

2.1 Current Sewer Rates

The City currently charges all customers fixed monthly rates for sewer service. Rates and charges are not directly tied to monthly metered water usage data. Single family and multifamily residential customers pay \$31.53 per dwelling unit. Non-residential customers pay rates based on the type and size of the establishment. For example, beauty salons pay rates based on the number of wash basins and restaurants pay charges based on the number of seats. The City currently collects about \$1 million annually in sewer service charges. Residential customers provide about 90% of the revenues, commercial customers provide about 6%, and churches and schools provide about 4%. Current rates and revenues are provided in Table 2.

**Table 2: Customer Count and Rate Revenue
Sewer Rate and Fee Study
City of Waterford**

Customer Class	# of Accounts	Billing Unit Description	Billing Unit Count	Rate	FY2018 Revenue
Single Family Residential [1]	2,130	per dwelling unit	2,130	\$31.53	\$806,009
Multifamily Residential [1]	269	per dwelling unit	269	\$31.53	\$101,966
Beauty Salon/Barber	4	per basin	6	\$31.53	\$2,270
Car wash	2	per bay	10	\$36.26	\$4,351
Church - Small	9	up to 100 people	9	\$31.53	\$3,405
Church - Medium	5	up to 200 people	5	\$63.06	\$3,784
Church - Large	3	up to 300 people	3	\$94.59	\$3,405
Commercial - Flat	8	per account	8	\$47.30	\$4,446
Fast Food	1	per account	1	\$63.30	\$760
Gas Station	5	per pump	18	\$14.18	\$3,336
Health Services	4	per account	4	\$63.06	\$3,027
Industrial	2	per account	2	\$126.12	\$3,027
Laundromat	1	per washer	26	\$6.93	\$2,162
Major Food Market	1	per 1,000 sq ft	33	\$28.38	\$11,133
Pharmacy	1	per account	1	\$47.30	\$568
Prof Service	1	per account	1	\$31.53	\$378
Restaurant	10	per seat	309	\$2.68	\$9,715
Retail	28	per account	28	\$31.53	\$12,574
School	3	per school	3	\$756.74	\$27,243
Total	2,487				\$1,003,558

1 - Number of accounts is number of dwelling units

2.2 Residential Sewer Flows

The City does not directly meter the wastewater flow of individual utility accounts. However, water use can be used as a proxy for sewer flow. Residential customers typically have high water use in the summer due to irrigation for landscaping. This water use occurs outdoors and does not flow into the sewer system. Therefore, it is necessary to isolate low water use periods during the winter to better estimate water use that flows into the sewer. The average single family residential sewer flow is estimated as 8.3 hundred cubic feet (HCF) per month based on the winter water usage data provided in Table 3.

**Table 3: Single Family Residential Estimated Sewer Flow
Sewer Rate and Fee Study
City of Waterford**

Date	Water Use (HCF)	# of Accounts	Avg Use (HCF)
2016-01	18,665	2,102	8.9
2016-02	19,110	2,097	9.1
2016-03	16,994	2,098	8.1
2016-04	19,334	2,087	9.3
2016-05	26,935	2,097	12.8
2016-06	34,459	2,096	16.4
2016-07	43,477	2,098	20.7
2016-08	46,991	2,101	22.4
2016-09	49,034	2,086	23.5
2016-10	38,464	2,100	18.3
2016-11	30,731	2,091	14.7
2016-12	19,759	2,099	9.4
2017-01	17,472	2,098	8.3
2017-02	19,116	2,101	9.1
2017-03	15,596	2,110	7.4
2017-04	20,050	2,105	9.5
2017-05	23,588	2,107	11.2
2017-06	38,753	2,100	18.5
2017-07	43,813	2,106	20.8
2017-08	47,183	2,103	22.4
2017-09	54,813	2,115	25.9
2017-10	44,105	2,100	21.0
2017-11	32,078	2,103	15.3
2017-12	22,977	2,114	10.9
2018-01	21,930	2,110	10.4
2018-02	17,882	2,107	8.5
2018-03	18,815	2,112	8.9
2018-04	23,063	2,101	11.0
2018-05	22,553	2,119	10.6
2018-06	39,050	2,104	18.6
Weighted Average of Shaded Months			8.3

Table excludes pro-rated accounts and sewer only accounts (i.e. accounts that are not charged for water)

The same analysis was conducted for multifamily residential customers. The average estimated flow per dwelling unit is 7.3 HCF per month, see Table 4.

**Table 4: Multifamily Residential Estimated Sewer Flow
Sewer Rate and Fee Study
City of Waterford**

Date	Water Use (HCF)	# of Dwelling Units	Avg Use (HCF)
2016-01	2,182	292	7.5
2016-02	2,268	296	7.7
2016-03	1,979	296	6.7
2016-04	2,246	296	7.6
2016-05	2,492	296	8.4
2016-06	2,584	298	8.7
2016-07	2,803	296	9.5
2016-08	2,904	298	9.7
2016-09	3,362	298	11.3
2016-10	2,958	296	10.0
2016-11	3,122	298	10.5
2016-12	2,493	298	8.4
2017-01	2,288	298	7.7
2017-02	2,718	298	9.1
2017-03	2,143	298	7.2
2017-04	2,571	299	8.6
2017-05	2,652	299	8.9
2017-06	3,014	299	10.1
2017-07	3,149	301	10.5
2017-08	2,763	258	10.7
2017-09	3,380	259	13.0
2017-10	2,867	259	11.1
2017-11	2,449	261	9.4
2017-12	2,297	261	8.8
2018-01	2,323	259	9.0
2018-02	2,036	261	7.8
2018-03	1,936	261	7.4
2018-04	2,417	261	9.2
2018-05	1,937	261	7.4
2018-06	2,821	261	10.8
Weighted Average of Shaded Months			7.3

Table excludes pro-rated accounts and sewer only accounts (i.e. accounts that are not charged for water)

2.3 Total System Flows and Loads

Total system flows and pollutant loads are estimated in Table 5. Pollutant loads consist of biochemical oxygen demand (BOD) and total suspended solids (TSS). The loading for residential customers is assumed to be 270 milligrams per liter (mg/l) for BOD and 310 mg/l for TSS based on the loading used by the City of Modesto in its recent master plan and rate study. The flow and loading estimates for non-residential customers were also taken from recent City of Modesto and general industry guidelines. The estimates shown below result in a total calculated flow of about 0.548 million gallons per day (MGD). This is roughly equal to the actual flow of 0.580 MGD. To be fiscally conservative, it is assumed that the City will experience little to no growth over the next five years. Therefore, the flows and loads shown in Table 5 are assumed to remain constant through FY2024.

**Table 5: Total Flow and Load Estimates
Sewer Rate and Fee Study
City of Waterford**

Customer Class	Billing Unit Description	Billing Unit Count	Flow (gallons per day)	BOD (mg/l)	TSS (mg/l)	Flow (gallons per year)	BOD (lbs/yr)	TSS (lbs/yr)
Single Family Residential	per dwelling unit	2,130	208	270	310	161,863,709	364,721	418,754
Multifamily Residential	per dwelling unit	269	182	270	310	17,902,448	40,339	46,315
Beauty Salon/Barber	per basin	6	85	200	200	186,150	311	311
Car wash	per bay	10	185	200	200	675,250	1,127	1,127
Church - Small	up to 100 people	9	175	130	130	574,875	624	624
Church - Medium	up to 200 people	5	350	130	130	638,750	693	693
Church - Large	up to 300 people	3	525	130	130	574,875	624	624
Commercial - Flat	per account	8	190	200	200	543,242	907	907
Fast Food	per account	1	270	400	240	98,550	329	197
Gas Station	per pump	18	90	200	200	591,300	987	987
Health Services	per account	4	190	200	200	277,400	463	463
Industrial	per account	2	400	300	300	292,000	731	731
Laundromat	per washer	26	70	150	110	664,300	832	610
Major Food Market	per 1,000 sq ft	33	330	400	300	3,937,501	13,144	9,858
Pharmacy	per account	1	190	200	200	69,350	116	116
Prof Service	per account	1	190	200	200	69,350	116	116
Restaurant	per seat	309	20	400	240	2,255,700	7,530	4,518
Retail	per account	28	190	200	200	1,941,800	3,241	3,241
School	per school	3	6,380	200	200	<u>6,986,100</u>	<u>11,660</u>	<u>11,660</u>
						200,142,650	448,493	501,851
					estimate	0.548	MGD	
					actual	0.580	MGD	

748 gallons = 1 HCF

SECTION 3: REVENUE REQUIREMENT

Proposition 218 requires that utility rates be based on the reasonable cost of providing service to customers. The cost of service includes annual operating expenses, debt service payments, capital projects, and the accumulation of appropriate reserves. The sewer utility cost of service was developed based on the FY2018/19 adopted budget, capital project list developed by staff, and reserve recommendations based on City policies. Sewer rates have not been increased since FY2016 despite inflationary cost increases.

3.1 Revenues

For FY2019, the City budgeted about \$1.12 million in Sewer Fund Revenues. The majority, about \$1 million is made up of monthly service charges paid by ratepayers. Other revenue categories include other charges (such as delinquent penalties), interest earnings, fats, oils, and grease (FOG) permit fees, and miscellaneous. In FY2019, the miscellaneous category included a \$35,000 rebate from the Modesto Irrigation District which will no longer be collected in FY2020 and beyond.

3.2 Operations

In FY2019, the sewer operating budget is approximately \$890,000. Major line-items include staffing, an administrative reimbursement for general City overhead (office space at City Hall, utility billing, etc.), equipment, maintenance, and engineering. The FY2019 budget includes \$60,000 in legal expenses due to a CalPERS settlement which will not be incurred in future years. All other operating expenses are projected to increase by 3% annually. The Sewer Operating Fund is also responsible for repayment of the 2012 Refunding Bonds in the amount of about \$200,000 annually. As needed, rate revenue is transferred from the Operations Fund to the Capital Fund to pay for facility improvements.

3.3 Capital

The Capital Fund is intended to provide cash flow for the City's sewer infrastructure repairs and replacements. Revenues include interest earnings on reserves, connection fees from new development, and transfers of rate revenues from the Operations Fund. The Capital Fund is responsible for debt service payments for the PNC equipment lease and Energy Commission loan. Over the next five years, the City expects to fund about \$1.73 million in capital improvements and replacements. Major projects include access road improvements for the wastewater treatment plant, sewer system maintenance, biosolids removal, and lift station improvements. Project timing and costs are provided in Table 6. Costs are escalated by 3% annually to the year of construction.

**Table 6: Capital Improvement Plan
Sewer Rate and Fee Study
City of Waterford**

Cost Escalation Project Name	Actual FY2018	Projected FY2019	103% FY2020	106% FY2021	109% FY2022	113% FY2023	116% FY2024	FY2020 to FY2024 total
Equipment Maintenance	0	150,000	0	0	0	0	0	0
Purchases - Furniture/Equip.	291,400	0	0	0	0	0	0	0
Purchases - Buildings	0	100,000	0	0	0	0	0	0
Sewer Maint. Project - Phase 2	0	0	257,500	265,200	0	0	0	522,700
WWTP Gate Valve Replacement	0	0	0	5,300	0	0	0	5,300
Western Lift Station Imprv.	0	0	0	0	65,600	0	0	65,600
PSL #3 - Bio Solids Removal	0	0	0	0	163,900	0	0	163,900
Brisk Rehabilitation	0	0	0	0	0	394,400	0	394,400
WWTP - Access Road Imprv.	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>579,600</u>	<u>579,600</u>
Total	291,400	250,000	257,500	270,500	229,500	394,400	579,600	1,731,500

3.4 Cash Flow

3.4.1 Cash Flow Objectives

Based on the FY2019 adopted budget, the Sewer Operations Fund is projected to begin FY2020 with a fund balance of about \$243,000. Over the five-year rate study period, rate increases are proposed such that the following objectives are met, in order of importance:

- 1) Fund operating costs
- 2) Fund debt service payments on outstanding debt
- 3) Meet or exceed the debt service coverage requirement of 1.25 times the annual payment
- 4) Fund capital costs via transfers to the Capital Fund
- 5) The fund balance at the end of each year should meet or exceed the operating reserve fund target of 25 percent of annual operating expenses

Objectives number 2 and 3 listed above reference the pay-down of debt over time. Typically, legal covenants require a debt service coverage ratio of 1.25 times meaning that net operating revenues should exceed the annual debt service payment by 25%.

In addition to funding budgeted expenses, the cost of service includes the funding of adequate reserves. The current targeted reserve is 25% of annual Operations Fund expenses and it is proposed to be continued over the next five years. This is consistent with the current Water Fund reserve target. The City could consider increasing the fund targets for both utilities to 50% to be consistent with the policies

of other City funds. However, rates would need to increase beyond the amount recommended in this report.

3.4.2 Operations Fund Results

The cash flow of the Operations Fund is provided in Table 7. It is assumed that the first rate increase will go into effect July 1, 2019 and subsequent rate increases will go into effect July 1 of each year thereafter. To cover the costs described above, the FY2020 rate increase is proposed to be a 16.5% increase over current rates. The 16.5% increase is the average increase across all customers. No customer will receive exactly a 16.5% increase. The rate change for each customer will depend on that customer's flow and loading characteristics. To be fiscally conservative, the City is assumed to have little to no growth over the next five years and no new revenues from additional customers connecting to the sewer system.

The major driver for the rate increase is capital improvement funding. As shown in Table 7, the Operations Fund began FY2019 with about \$248,000 and is projected to end the year with about \$243,000 in fund reserves. Although this covers operating costs, it slightly misses the fund target of 25% of expenses and provides limited funding for capital improvements. Moreover, debt service coverage is projected to be 1.15 times the annual payment rather than the 1.25 target. Rate increases are needed to fully fund these expenses and hit the City's financial targets.

3.4.3 Capital Fund Results

Table 8 provides the Capital Fund cash flow. Due to no or low growth projected over the next five years, it is assumed that the City will not receive connection fee revenues. Thus, capital project funding and capital debt service funding is dependent on transfers of rate revenues from the Operations Fund. As shown in the cash flows, the proposed rate increases are adequate to fully fund capital improvements without having to issue new debt. It should be noted that the Capital Fund is projected to begin FY2020 with about \$300,000 in available reserves. Most of this reserve will be spent down by the end of FY2024. Beyond FY2024, the City should re-evaluate its ongoing capital improvement needs and consider conducting another rate study.

3.4.4 Debt Service Coverage

Table 9 provides the combined debt service coverage ratio calculation for the Operations and Capital Funds. Net revenues are projected to provide coverage in excess of 1.25 times the annual payment for each year of the rate study period.

**Table 7: Operations Cash Flow Analysis
Sewer Rate and Fee Study
City of Waterford**

	Estimate FY2018	Budget FY2019	Proposition 2018				
			FY2020	FY2021	FY2022	FY2023	FY2024
OPERATIONS FUND (#5050)							
Annual Rate Rev Increase [1]			16.5%	16.5%	10%	3%	3%
Cumulative Rate increase			16.5%	36%	49%	54%	58%
Beginning Balance	\$214,800	\$247,800	\$242,700	\$263,200	\$270,100	\$277,000	\$282,700
Revenues							
Service Charges (rates)	1,003,600	1,003,600	1,169,200	1,362,100	1,498,300	1,543,200	1,589,500
Other Charges (late fees, etc)	66,600	65,000	65,000	65,000	65,000	65,000	65,000
Interest Earnings	3,300	1,200	1,000	1,000	1,000	1,000	1,000
FOG Permit Fee	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Other & Misc.	<u>49,600</u>	<u>50,000</u>	<u>15,000</u>	<u>15,000</u>	<u>15,000</u>	<u>15,000</u>	<u>15,000</u>
Total Revenues	1,124,100	1,120,800	1,251,200	1,444,100	1,580,300	1,625,200	1,671,500
Expenses							
Staffing	415,800	469,200	483,300	497,800	512,700	528,100	543,900
Legal & Other Prof. Service	28,000	84,000	24,700	25,400	26,200	27,000	27,800
Engineering Prof. Service	7,000	5,000	5,200	5,400	5,600	5,800	6,000
Property & Vehicle Maint	24,500	16,000	16,500	17,000	17,500	18,000	18,500
Equipment Maint	55,000	35,000	36,100	37,200	38,300	39,400	40,600
Office Supplies & services	62,300	61,600	63,400	65,300	67,300	69,300	71,400
Electric, Gas, & Water	55,000	58,000	59,700	61,500	63,300	65,200	67,200
Outside Agency Charges	20,000	20,000	20,600	21,200	21,800	22,500	23,200
Transfers Out	2,500	2,500	2,600	2,700	2,800	2,900	3,000
Admin Reimbursement	<u>121,000</u>	<u>137,200</u>	<u>141,300</u>	<u>145,500</u>	<u>149,900</u>	<u>154,400</u>	<u>159,000</u>
Total Expenses	791,100	888,500	853,400	879,000	905,400	932,600	960,600
Net Operating Revenue	333,000	232,300	397,800	565,100	674,900	692,600	710,900
Debt Service							
2012 Refunding Bonds	200,300	201,800	199,300	201,200	202,500	198,200	198,400
Debt Coverage Ratio	1.66	1.15	2.00	2.81	3.33	3.49	3.58
Transfer to Capital Fund	99,700	35,600	178,000	357,000	465,500	488,700	505,400
Total Expenses	1,091,100	1,125,900	1,230,700	1,437,200	1,573,400	1,619,500	1,664,400
Total Net Revenue	33,000	(5,100)	20,500	6,900	6,900	5,700	7,100
Ending Fund Balance	247,800	242,700	263,200	270,100	277,000	282,700	289,800
Target Balance (25% of Expenses) [2]	247,900	272,600	263,200	270,100	277,000	282,700	289,800
Target Met?	NO	NO	YES	YES	YES	YES	YES

1 - The % rate increases shown are the average increases across all customers. The rate change for each customer will depend on that customer's flow and loading characteristics.

2 - does not include transfers to the Capital Fund

Table 8: Capital Cash Flow Analysis
Sewer Rate and Fee Study
City of Waterford

	Estimate FY2018	Budget FY2019	Proposition 2018				
			FY2020	FY2021	FY2022	FY2023	FY2024
CAPITAL FUND (#4350)							
Beginning Balance	\$813,000	\$512,300	\$298,500	\$124,500	\$113,800	\$249,900	\$241,400
Revenues							
Interest Earnings	3,100	1,800	2,000	2,000	2,000	2,000	2,000
Connect/Disconn. Fee	0	0	0	0	0	0	0
Transfers In from Operations	99,700	35,600	178,000	357,000	465,500	488,700	505,400
Water Loan Repayment	0	107,400	0	0	0	0	0
Transfers In from Drainage	<u>0</u>	<u>5,800</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total Revenues	102,800	150,600	180,000	359,000	467,500	490,700	507,400
Total Capital Projects	291,400	250,000	257,500	270,500	229,500	394,400	579,600
Debt Service							
PNC Equipment Lease	28,700	31,000	13,100	15,800	18,500	21,400	24,400
Energy Commission Loan	<u>83,400</u>	<u>83,400</u>	<u>83,400</u>	<u>83,400</u>	<u>83,400</u>	<u>83,400</u>	<u>83,400</u>
Total Debt Service	112,100	114,400	96,500	99,200	101,900	104,800	107,800
Net Revenues	(300,700)	(213,800)	(174,000)	(10,700)	136,100	(8,500)	(180,000)
Ending Fund Balance	512,300	298,500	124,500	113,800	249,900	241,400	61,400

Table 9: Debt Service Coverage
Sewer Rate and Fee Study
City of Waterford

	Estimate FY2018	Budget FY2019	Proposition 2018				
			FY2020	FY2021	FY2022	FY2023	FY2024
Net Operating Revenues	333,000	232,300	397,800	565,100	674,900	692,600	710,900
Operating Debt Service	200,300	201,800	199,300	201,200	202,500	198,200	198,400
Capital Debt Service	<u>112,100</u>	<u>114,400</u>	<u>96,500</u>	<u>99,200</u>	<u>101,900</u>	<u>104,800</u>	<u>107,800</u>
Total Debt Service	312,400	316,200	295,800	300,400	304,400	303,000	306,200
Coverage Ratio	1.07	0.73	1.34	1.88	2.22	2.29	2.32

SECTION 4: COST ALLOCATION

The revenue requirements detailed in the previous section determine the amount of revenue to be recovered from sewer rates. The cost of service allocation determines how revenues will be recovered from customers based on their estimated impact on the sewer system. Proposition 218 requires that agencies providing “property-related services” (including sewer service) set rates and charges that are based on the cost of providing those services.

4.1 Methodology

A revenue requirement analysis determines the utility’s overall financial needs, while the cost of service analysis determines the fair and equitable manner to collect that revenue requirement. The first step is classification where the functionalized costs are classified into specific cost components. The following cost classifiers were used to develop the cost of service analysis:

- *Customer Service Costs:* Customer service costs represent the sewer utility’s overhead and administrative costs such as utility billing and office space in City Hall.
- *Flow Costs:* Volume or flow related costs that vary with the total quantity of wastewater collected and treated.
- *Strength Costs:* Strength related costs are those expenditures associated with the additional handling and treatment of high strength sewer discharge. Sewer strength is typically measured in biochemical oxygen demand (BOD) and total suspended solids (TSS). Increased levels of BOD or TSS typically equate to increased treatment costs.

The second step is to proportionally allocate the cost components to each customer class. The allocation is based on each customer class’ relative contribution to the cost component using the following allocation factors:

- *Customer Service Allocation Factor:* Base or fixed costs are allocated to each customer class based on the total number of customer accounts in that class of service.
- *Flow Allocation Factor:* Flow-related costs are typically allocated on the basis of contribution to sewer flows. Because the City does not meter wastewater discharges, metered winter water consumption is used to estimate wastewater flow for residential customers. Industry standard flow generation rates were used to estimate the discharge of commercial customers.
- *Strength Allocation Factor:* Strength-related costs are classified between BOD and TSS and are allocated to each customer class based upon assumed pollutant concentrations.

4.2 Cost Allocation Results

FY2020 is the year of the proposed first rate change and was selected as the test year for the sewer cost allocation. The budgeted expenses for FY2020 were allocated to customer service, flow, BOD, and TSS based on the type of expense and how the City incurs cost. Office supplies and administration reimbursements are allocated solely to customer service. Most operating and maintenance expenses are allocated 60% to flow, 20% to BOD, and 20% to TSS based on general industry guidance. These categorizations could be further refined in the City's next wastewater master plan. A total of 26% of expenses are allocated to customer service, 47% are allocated to flow, 14% to BOD, and 14% to TSS.

**Table 10: Cost Allocation
Sewer Rate and Fee Study
City of Waterford**

Expenses	FY2020	Cust. Serv.	Flow	BOD	TSS	Cust. Serv.	Flow	BOD	TSS
Staffing	483,300	96,660	241,650	72,495	72,495	20%	50%	15%	15%
Legal & Other Prof. Service	24,700	0	14,820	4,940	4,940	0%	60%	20%	20%
Engineering Prof. Service	5,200	0	3,120	1,040	1,040	0%	60%	20%	20%
Property & Vehicle Maint	16,500	0	9,900	3,300	3,300	0%	60%	20%	20%
Equipment Maint	36,100	0	21,660	7,220	7,220	0%	60%	20%	20%
Office Supplies & services	63,400	63,400	0	0	0	100%	0%	0%	0%
Electric, Gas, & Water [1]	59,700	0	53,730	2,985	2,985	0%	90%	5%	5%
Outside Agency Charges	20,600	15,450	3,090	1,030	1,030	75%	15%	5%	5%
Transfers Out	2,600	2,600	0	0	0	100%	0%	0%	0%
Admin Reimbursement	141,300	141,300	0	0	0	100%	0%	0%	0%
Debt Service									
2012 Refunding Bonds	199,300	0	119,580	39,860	39,860	0%	60%	20%	20%
Transfer to Capital Fund	178,000	0	106,800	35,600	35,600	0%	60%	20%	20%
Subtotal	1,230,700	319,410	574,350	168,470	168,470	26%	47%	14%	14%
Contribution to Fund Balance	20,500								
Total Cost of Service	\$1,251,200								

1 - Assumed to be mostly pumping (lift stations)

SECTION 5: RATE DESIGN

5.1 Rate Structure Considerations

As part of the rate study process, the City reviewed its current rate structure and potential alternative rate structures. The only significant rate structure change is the division of the residential class into single family and multifamily customers. Currently, both single family and multifamily dwelling units are charged the same rate of \$31.53 per month. As shown in Table 4, the average multifamily customer discharges less flow into the sewer than a single family customer. Therefore, it is proposed that multifamily customers be charged separate rates that are lower than the proposed single family rates.

Ultimately, this study does not recommend any changes to the current commercial sewer rate structure. Instead, the amount charged to individual customers are proposed to change each year, but the categories of charges and customer classes are proposed to remain the same. The City considered adopting a commercial rate structure that bills customers for sewer flow based on metered water use. This billing method has the advantage of encouraging water conservation and could be perceived as being more equitable because commercial accounts only pay for their monthly estimated flow. However, a metered commercial structure has several disadvantages that outweighed the benefits to the City. The City does not currently require non-residential customers to install dedicated irrigation water meters. Thus, both indoor and outdoor use flows through the same meter for about half the City's commercial customers. These customers would be over-charged for water use that does not flow into the sewer system. A metered rate system would also introduce financial risk if the City transitioned from a 100% fixed charge structure to a volume rate. If customers conserve significantly, the City would experience a loss in revenue.

5.2 Unit Cost Calculation

Table 11 provides the unit cost calculation for the customer service, flow, BOD, and TSS cost categories. The total amount of proposed rate revenue for FY2020 (taken from Table 7) is divided between the categories based on the percentages developed in Table 10. The revenue requirement for each category is then divided by the billing units to calculate a unit charge.

**Table 11: Unit Cost Calculation
Sewer Rate and Fee Study
City of Waterford**

Cost Allocation	Total	Cust. Serv.	Flow	BOD	TSS
		26%	47%	14%	14%
FY2020 Rate Revenue Requirement	\$1,169,200	\$303,400	\$545,600	\$160,100	\$160,100
Billing Units		2,498	200,142,650	448,493	501,851
		# of accounts[1]	Gal/year	lbs/year	lbs/year
Rate		\$10.12	\$2.73	\$0.36	\$0.32
		\$/month	\$/1000 gal	\$/lb	\$/lb

1 – Each residential dwelling unit is counted as one account. For churches, each 100 people is counted as one account

5.3 Proposed Sewer Rates

As a first step in calculating the final sewer rates, the unit charges shown above were multiplied by the number of accounts, flow, and loading assumptions in Table 5 for each customer class to calculate the total rate. This first step was used to calculate rates for FY2020 (going into effect July 1, 2019). The rates for subsequent years was calculated as the FY2020 rate increased by the annual percent change (16.5% for FY2021, for example) to correspond to the increase in revenue requirement. This initial iteration of rate changes would result in some commercial customers receiving a bill reduction in FY2020 followed by a bill increase above the current charge in later years. To avoid rate volatility, the rates for some commercial customer classes were smoothed to provide more steady rate changes. The multifamily customer rate was smoothed in FY2020. By FY2024, all customers will pay rates consistent with the cost allocation and revenue requirement described in prior sections. The five-year rate plan is provided in Table 12.

Table 12: Proposed Sewer Rates
Sewer Rate and Fee Study
City of Waterford

Customer Class	Billing Unit Description	Current Rate	PROPOSED				
			Jul 1, 2019	Jul 1, 2020	Jul 1, 2021	Jul 1, 2022	Jul 1, 2023
Single Family Residential	per dwelling unit	\$31.53	\$37.78	\$44.01	\$48.41	\$49.86	\$51.36
Multifamily Residential	per dwelling unit	\$31.53	\$35.50	\$39.97	\$43.97	\$45.29	\$46.65
Beauty Salon/Barber	per basin	\$31.53	\$16.74	\$19.50	\$21.45	\$22.09	\$22.75
Car wash	per bay	\$36.26	\$23.77	\$27.69	\$30.46	\$31.37	\$32.31
Church	per 100 people	\$31.53	\$33.15	\$34.84	\$36.63	\$37.73	\$38.86
Commercial - Flat	per account	\$47.30	\$32.46	\$37.82	\$41.60	\$42.85	\$44.14
Fast Food	per account	\$63.30	\$47.67	\$55.54	\$61.09	\$62.92	\$64.81
Gas Station	per pump	\$14.18	\$15.11	\$16.10	\$17.16	\$17.67	\$18.20
Health Services	per account	\$63.06	\$37.47	\$43.65	\$48.02	\$49.46	\$50.94
Industrial	per account	\$126.12	\$57.14	\$66.57	\$73.23	\$75.43	\$77.69
Laundromat	per washer	\$6.93	\$8.46	\$10.32	\$12.60	\$12.98	\$13.37
Major Food Market	per 1,000 sq ft	\$28.38	\$33.11	\$38.64	\$45.08	\$46.43	\$47.82
Pharmacy	per account	\$47.30	\$34.58	\$37.93	\$41.60	\$42.85	\$44.14
Prof Service	per account	\$31.53	\$34.58	\$37.93	\$41.60	\$42.85	\$44.14
Restaurant	per seat	\$2.68	\$3.11	\$3.62	\$3.98	\$4.10	\$4.22
Retail	per account	\$31.53	\$34.58	\$37.93	\$41.60	\$42.85	\$44.14
School	per school	\$756.74	\$823.20	\$895.49	\$974.13	\$1,003.35	\$1,033.45