CITY OF

MARQUETTE

Water, Sewer and Stormwater Rate Study

Final Report / October 8, 2018

RAFTELIS

RAFTELIS

October 8, 2018

Mr. Michael Angeli
City Manager
City of Marquette
300 West Baraga Avenue
Marquette, MI 49855

Subject: Water, Sewer and Stormwater Rate Study

Dear Mr. Angeli,

Raftelis Financial Consultants, Inc. (Raftelis) is pleased to provide this Water, Sewer and Stormwater Rate Study Report (Report) for the City of City of Marquette (City).

The major objectives of the study include the following:

- Develop financial plans for each utility which properly fund operation and maintenance (O&M) expenses, capital repair and replacement and provide for prudent levels of operating reserves
- Review current rate structures for the water and sewer enterprises and make recommendations regarding increasing fixed cost recovery

The Report summarizes the key findings and recommendations related to the development of the financial plans for Water, Sewer and Stormwater utilities as well as the development of alternative fixed charges for the water and sewer utilities.

It has been a pleasure working with you, and we thank you and the City staff for the support provided during the course of this study.

Sincerely,

Tom Beckley
Senior Manager

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Charlotte, NC 28202
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1. Executive Summary

1.1. Background

The City of Marquette engaged Raftelis Financial Consultants, Inc. (Raftelis) to develop water, sewer and stormwater financial plans and develop rate structure alternatives to meet the City's pricing objectives.

The impetus for the Study was a Stormwater and Wastewater (SAW) asset management grant provided by the Michigan Department of Environmental Quality (Michigan DEQ). The grants provide funding to assess the current state of stormwater and wastewater infrastructure for utilities throughout Michigan and develop a plan to replace that infrastructure over time. While the plans for sewer and stormwater are nearly complete, it is our understanding that the City will undertake a similar asset management study for the water utility. The requirements of the SAW grant are minimal in that utilities must develop a plan which incorporates funding for repair and replacement of capital assets and balances revenues and expenditures over a reasonable period of time.

The recommendations for this study exceed those minimum requirements with a focus on developing a plan for achieving independent financial sustainability for each fund over the next five years. This includes developing positive cash flow (i.e. the minimum requirement for the SAW grant) as well as building an appropriate level of operating reserves and developing the capacity to cash fund certain capital projects.

1.2. Financial Planning Methodology

The primary objective of financial planning involves comparing forecast utility revenues under existing rates to forecast expenditures and determining what annual adjustments to revenues are necessary to ensure the financial viability of the water, sewer and stormwater utilities. This involves a forecast of utility revenues under existing (i.e. the status quo) and a forecast of expenditures. If there is a gap between the two, rate revenue adjustments are recommended to bring them in balance. In addition to balancing revenues and expenditures the plans were developed around strategic financial management principles regarding liquidity and capital financing strategy.

Liquidity pertains to having a certain level of operating reserves for each utility. Generally, we recommend 90 Days of O&M and Debt Service as a minimum level of operating reserves for utilities. This metric is a measure of the ability of the utility to deal with unanticipated declines in revenue or emergency expenditures without reducing service quality or dramatically increasing rates. O&M and debt service represent the minimum annual cash outflows a utility will incur in a given year. This reserve can be used for working capital (timing differences in revenues and expenditures), temporary revenue shortfalls, or emergency capital repairs.

In addition, the City has expressed interest in establishing some level of cash financing for capital improvement projects. While developing the capacity to cash finance capital projects does put upward pressure on rates in the short-run, it is a sound long-term financial strategy. As with most utilities throughout the United States, the City will continue to incur replacement costs each year. Given the ongoing nature of such programs it is appropriate to fund them with cash, rather than debt financing them.

During the course of the study, the City signed a **performance management contract** with Johnson Controls, Inc. to finance approximately $28 million in capital projects throughout the City. Among the projects are water and sewer projects at the treatment plants as well as a City-wide meter replacement program. The intent of these projects is to either increase revenues or decreases expenditures, such that the projects pay for themselves over time. Raftelis was not asked to perform an in-depth evaluation of the contract or the assumptions used to determine the savings. That

said, we generally recommend incorporating the additional cost first and evaluating the extent of the savings each year, rather than developing plans assuming the savings will occur. That approach is reflected in the water and sewer financial plans included in this report. The stormwater utility was not impacted by the performance management contract.

1.3. Financial Plans

As stated above the financial plans identify the level of revenues necessary to achieve the City's financial management objectives. **Figures 1.1 through 1.3** indicate the financial plans for each utility. The solid gray line indicates existing rate revenues and the stacked bars indicate forecast expenditures. As indicated, existing revenues are insufficient to meet forecast expenditures for each utility. Accordingly, the proposed rate revenue increases are recommended to close the gap between revenues and expenditures and maintain the 90 days minimum reserve at the end of FY 2023. The revenue increases are represented by the dashed line and gray boxes.

It is worth noting that across the United States, utility rates have increased 5 to 6 percent every year, on average. Generally, such increases are driven by inflation, declining per customer usage and the need for re-capitalization of water, sewer and stormwater assets. Sewer utilities often see above average increases as many sewer treatment plants which were originally financed through construction grants from the federal government must now be maintained by municipalities using rate revenue. The City has adjusted rates periodically over the past few years but did not adjust rates for the current fiscal year. This is a large driver of the current water and stormwater increase. The sewer utility has been significantly weaker and past rate revenue adjustments have been insufficient to generate positive cash flow for the fund. The absence of an adjustment in FY 2018 only exacerbated what had been ongoing financial weakness in the sewer fund.

Figure 1.1: Water Financial Plan

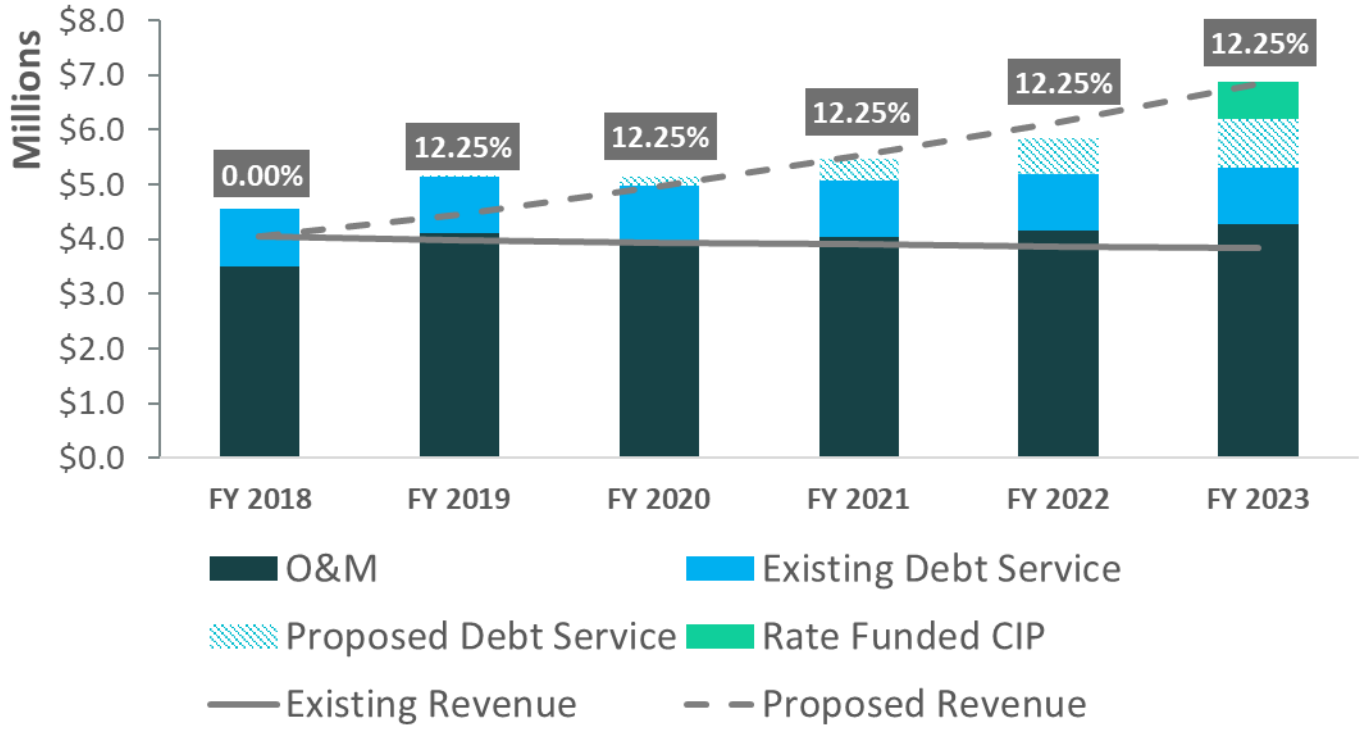


Figure 1.2: Sewer Financial Plan

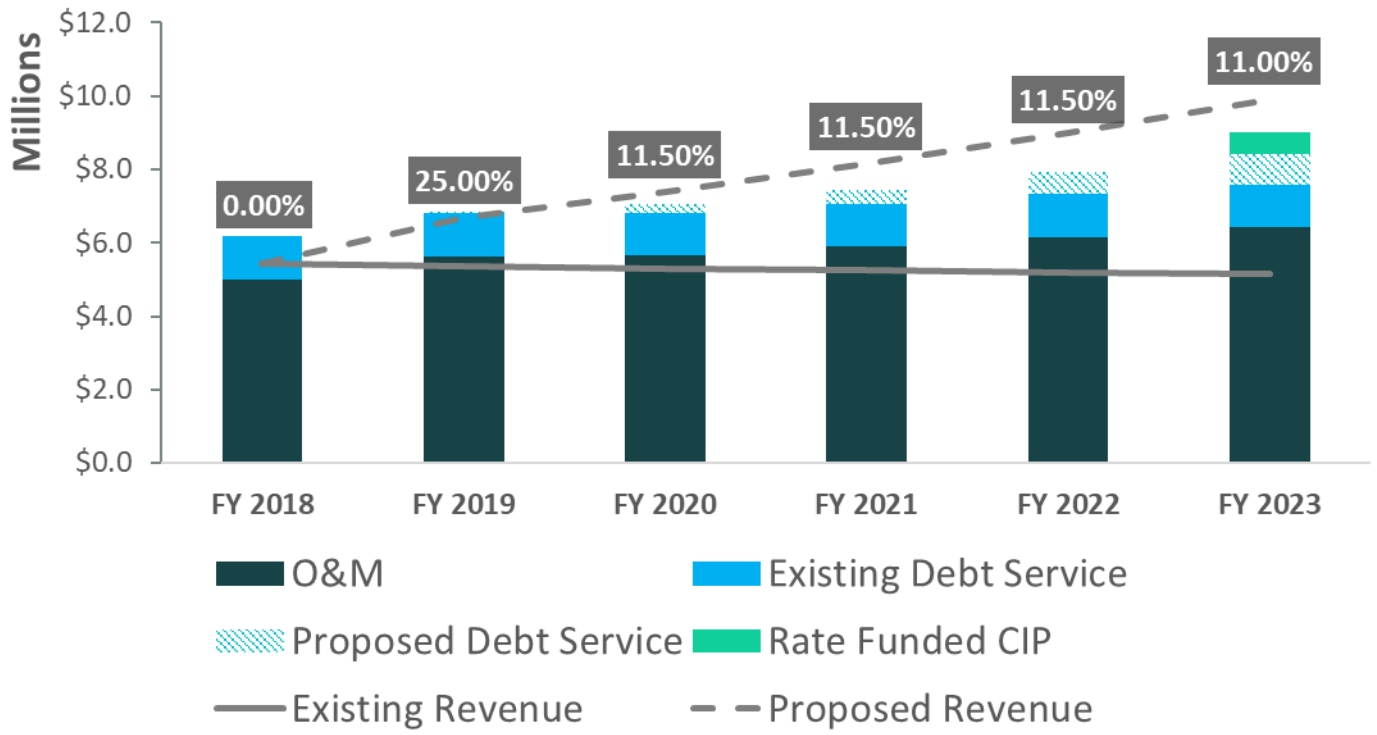
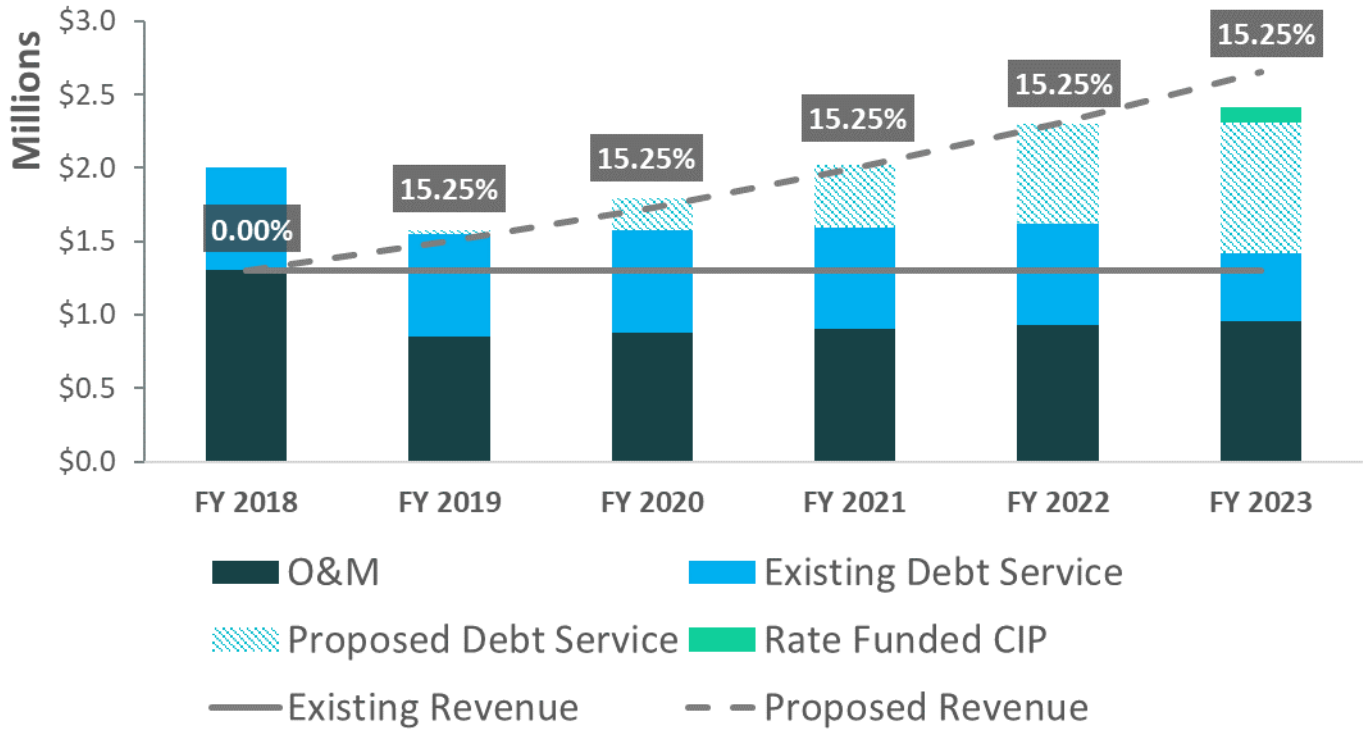


Figure 1.3: Stormwater Financial Plan



Figures 1.4 through 1.6 below indicate the operating reserve balance for each fund. As indicated the water and stormwater funds will use a mix of existing reserves and additional rate revenues to fund forecast expenditures. The sewer fund lacks any existing reserves. Accordingly, the negative amounts represent what would be covered by the City's general fund until the sewer fund is stabilized. As indicated, the current financial position of the sewer fund is relatively weak as compared to water and stormwater. Accordingly, the larger upfront increases for sewer are required for the fund to move toward generating positive cash flow and begin building the minimum 90-day reserve.

Figure 1.4: Water Operating Reserve

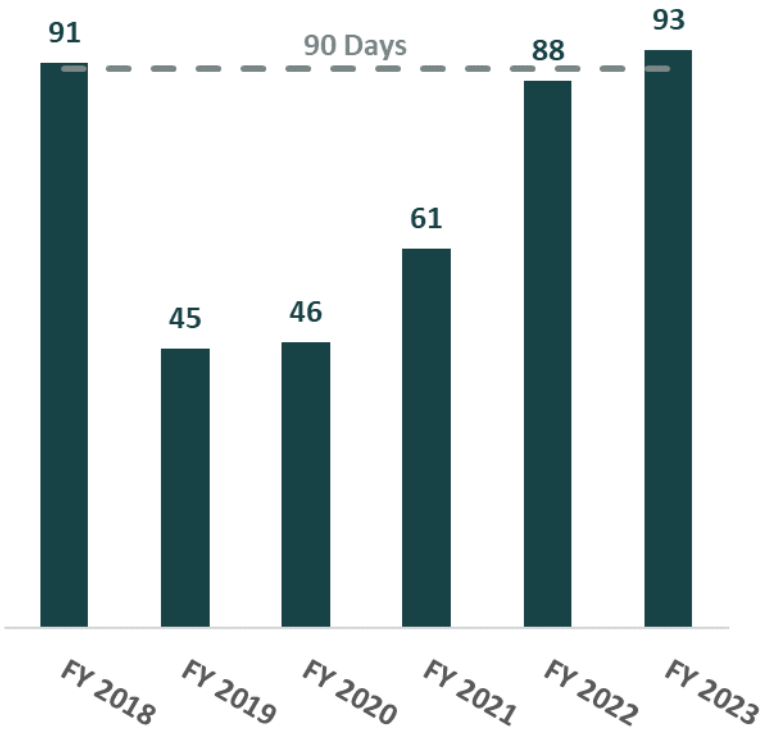


Figure 1.5: Sewer Operating Reserve

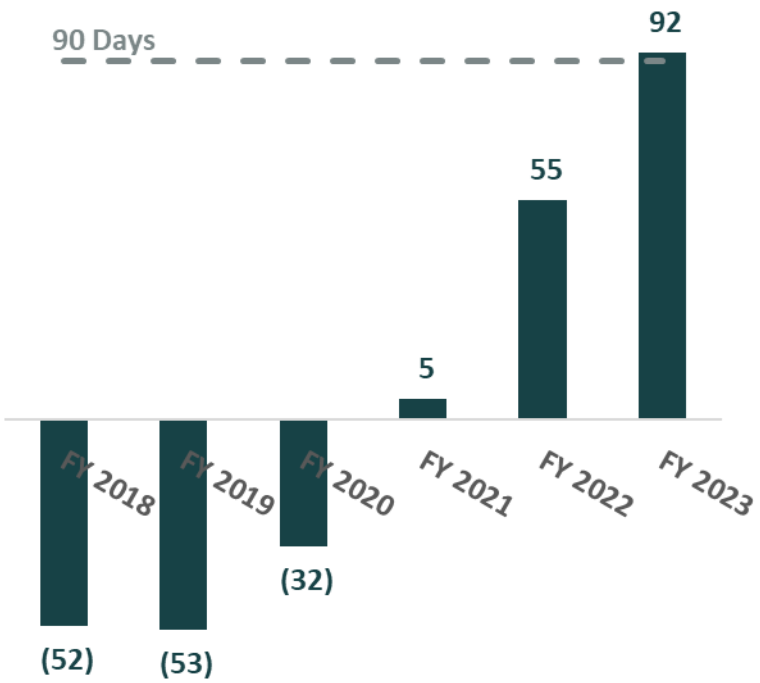
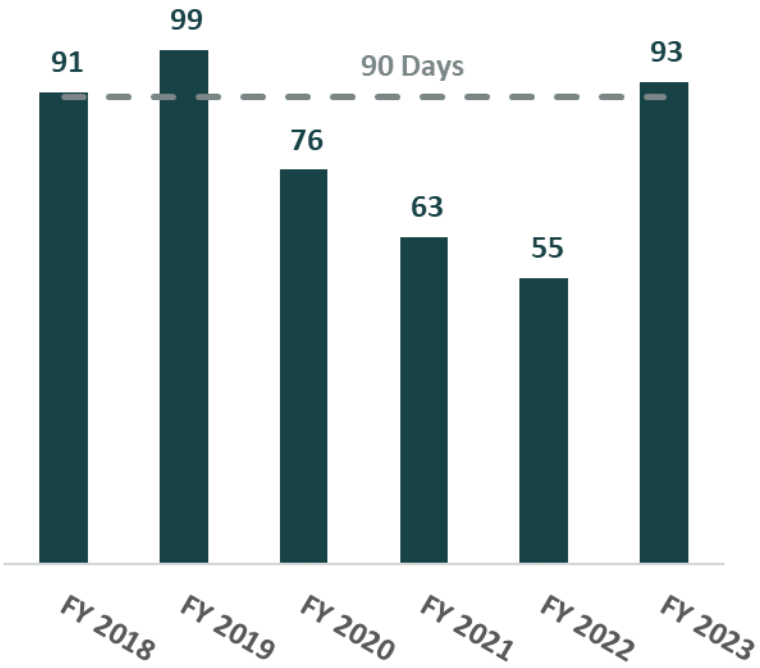


Figure 1.6: Stormwater Operating Reserve



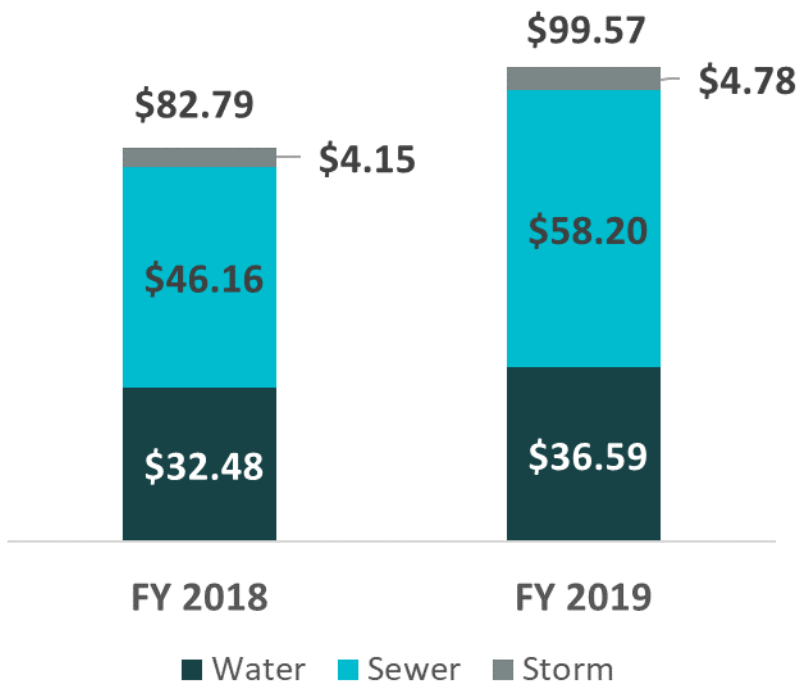
1.4. Bill Impacts

After establishing the overall level of revenue recovery for each utility, Raftelis examined rate structure options to recover the revenue as well and the meet the objectives of the City. The scope of this engagement involved examining the rate structures for water and sewer only. Accordingly, stormwater rates are based on an across the board increase, which applies the overall percentage increase in revenues necessary (15.25%) equally to each stormwater charge.

For water and sewer rates the key driving factor in designing alternative rate structures involved increasing fixed cost recovery for the water and sewer utilities. The majority of water and sewer costs incurred by the City do not vary based on customer usage. This is because the majority of the costs are incurred to make the system available to provide water and sewer service whenever customers need it, regardless of how much water is used or sewage discharged.

Accordingly, it is prudent to increase the proportion of rate revenues which are derived from fixed monthly service charges. This has the added benefit of stabilizing the water and sewer utility revenue stream, as a certain portion of customer bills will remain fixed regardless of any changes in demand. Our recommendation involves increasing the fixed charge at a faster pace than the variable charge. This is reflected in **Figure 1.7** below, which represents the bill impact for the average City customer. As indicated, in FY 2019, the bill would increase by $16.78 per month or **about $5.60 per utility, per month.**

Figure 1.7: FY 2019 Bill Impact (4,000 Gallons, 5/8" Meter, 1/5 Acre or Less)



2. Introduction

2.1. Background and Objectives of the Study

The City of Marquette engaged Raftelis Financial Consultants, Inc. (Raftelis) to develop water, sewer and stormwater financial plans and develop rate structure alternatives to meet the City's pricing objectives.

The impetus for the Study was a Stormwater and Wastewater (SAW) asset management grant provided by the Michigan Department of Environmental Quality (Michigan DEQ). The grants provide funding to assess the current state of stormwater and wastewater infrastructure for utilities throughout Michigan and develop a plan to replace that infrastructure over time. One requirement of the grant is that utilities must develop a plan for funding the level of infrastructure replacement identified by the asset management process. While the plans for sewer and stormwater are nearly complete, it is our understanding that the City will undertake a similar asset management study for the water utility. The requirements of the SAW grant are minimal in that utilities must develop a plan which balances revenues and expenditures over a reasonable period of time.

The recommendations for this study exceed those minimum requirements with a focus on developing a plan for achieving independent financial sustainability for each fund over the next five years. This includes developing positive cash flow (i.e. the minimum requirement) as well as building an appropriate level of operating reserves and developing the capacity to cash fund certain capital projects.

2.2. Financial Planning Methodology

The primary objective of financial planning involves comparing forecast utility revenues under existing rates to forecast expenditures and determining what annual adjustments to revenues are necessary to ensure the financial viability of the water, sewer and stormwater utilities. This involves three steps:

First, a forecast of revenue under existing rates forms the baseline against which any revenue adjustments will be made. Second, a forecast of operating and capital expenses establishes the costs which will need to be recovered from utility rates.

Once the revenues under existing rates and expenses have been forecasted, the final step involves a detailed cash flow forecast and an evaluation of what rate revenue adjustments are needed for ongoing financial sustainability. Evaluating financial sustainability involves two key financial performance metrics: days O&M and debt service, and debt service coverage.

Days O&M and Debt Service is a measure of the ability of the utility to deal with unanticipated declines in revenue or emergency expenditures without reducing service quality or dramatically increasing rates. While typical liquidity measures include operating expenses only, we recommend evaluating liquidity with debt service included as this remains an obligation of the utility, regardless of any unforeseen events. While the number of days a utility will seek to maintain will vary by utility, we typically recommend a minimum of 90 days. This can be used for working capital (timing differences in revenues and expenditures), temporary revenue shortfalls, or emergency capital repairs.

Debt Service Coverage Ratios are a measure of how much current revenues exceed current debt service obligations, after operating expenses have been funded. A ratio above 1 indicates that current net revenues (operating revenues less expenses) are sufficient to meet current debt service obligations with room to spare for unforeseen emergencies. A ratio of less than 1 would mean that the utility does not have sufficient current revenues to cover operating expenses

and meet debt service payment obligations. Coverage requirements vary by the type of debt issued, bond covenants and ratings agency criteria, but the financial plans developed for the City are based on maintaining a 1.25 times coverage ratio.

In addition, the City has expressed interest in establishing some level of cash financing for capital improvement projects. The plans designed for each utility recommend revenue adjustments sufficient to facilitate cash funding some capital improvement projects by FY 2023.

During the course of the study, the City signed a **performance management contract** with Johnson Controls, Inc. This contract financed approximately $28 million in projects throughout the City via a Tax-Exempt Lease Payment (TELP) loan. Among the projects are water and sewer projects at the treatment plants as well as a City-wide meter replacement program. The intent of these projects is to either increase revenues or decreases expenditures, such that the projects pay for themselves over time. Raftelis was not asked to perform an in-depth evaluation of the contract or the assumptions used to develop the savings. That said, we generally recommend incorporating the additional cost first (i.e. the TELP loan) and evaluating the extent of the savings each year, rather than developing plans assuming the savings will occur. That approach is reflected in the water and sewer financial plans included in this report. The stormwater utility was not impacted by the performance management contract.

3. Water Financial Plan

3.1. Forecast of Accounts

Table 3.1 indicates the forecast of water accounts. Historically, the City has seen modest growth (around .5 percent per year) in new water and sewer accounts. Given the relatively slow pace of account growth over the past 5 years, the water financial plan is based on a conservative 0 percent growth assumption.

Table 3.1: Water Account Growth Forecast

	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Accounts by Meter Size										
5/8	4,945	4,953	4,948	4,948	4,948	4,948	4,948	4,948	4,948	4,948
3/4	673	696	726	726	726	726	726	726	726	726
1	234	235	240	240	240	240	240	240	240	240
1 1/2	95	95	95	95	95	95	95	95	95	95
2	84	85	85	85	85	85	85	85	85	85
3	14	14	14	14	14	14	14	14	14	14
4	17	17	17	17	17	17	17	17	17	17
6	6	6	6	6	6	6	6	6	6	6
8	7	7	7	7	7	7	7	7	7	7
10	3	3	3	3	3	3	3	3	3	3
Total	**6,078**	**6,111**	**6,141**	**6,141**	**6,141**	**6,141**	**6,141**	**6,141**	**6,141**	**6,141**
Annual % Δ	0.55%	0.54%	0.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
General	5,617	5,650	5,674	5,674	5,674	5,674	5,674	5,674	5,674	5,674
Township	1	1	1	1	1	1	1	1	1	1
Commercial/Industrial	200	198	202	202	202	202	202	202	202	202
Public Authority	41	41	41	41	41	41	41	41	41	41
Tax Exempt	179	179	178	178	178	178	178	178	178	178
City Departments	40	42	45	45	45	45	45	45	45	45
Total	**6,078**	**6,111**	**6,141**	**6,141**	**6,141**	**6,141**	**6,141**	**6,141**	**6,141**	**6,141**
Annual % Δ	0.55%	0.54%	0.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

3.2. Forecast of Usage

Table 3.2 indicates the forecast of water usage. Water usage is forecast by evaluating usage per account, by customer class, and multiplying that by the projected number of customer accounts. Usage per account is based on a baseline which is then adjusted for an overall trend. While water usage per account varies from year to year, the general trend (both in the City and nationwide) is toward declining per customer usage due to increased fixture efficiency, price elasticity (customer response to rate increases) and a general ethos of conservation.

To establish a baseline, Raftelis reviewed the City's usage to date and compared it to historical usage. Based on this comparison, Raftelis estimated the usage per account and adjusted for the overall downward trend in usage per account. Usage per account is assumed to decline 1 percent per year for all customer classes, excluding Marquette Township, which is anticipated to continue to grow slowly over time. Taken together with the 0 percent growth in accounts, the overall trend in total water usage is assumed to decline 0.8 percent per year. In addition to this general trend, the forecast incorporates anticipated reductions from Marquette DLP General Hospital, whose new facility is estimated to use 25% less water.

Table 3.2: Water Usage Forecast

	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Annual Usage (1,000 Gallons)										
General	439,009	295,802	275,039	241,917	239,497	237,103	234,731	232,384	230,060	227,760
Township	103,583	80,375	101,754	72,912	73,641	74,378	75,121	75,873	76,631	76,631
Commercial/Industrial	183,395	137,170	128,910	110,300	109,197	100,461	99,457	98,462	97,478	96,503
Public Authority	15,176	12,694	13,519	12,451	12,327	12,203	12,081	11,961	11,841	11,723
Tax Exempt	199,866	152,897	149,055	149,787	148,289	146,806	145,338	143,885	142,446	141,021
City Departments	13,562	8,841	8,937	5,453	5,398	5,344	5,291	5,238	5,186	5,134
Total	**954,592**	**687,780**	**677,214**	**592,820**	**588,350**	**576,295**	**572,020**	**567,802**	**563,642**	**558,772**
Annual % Δ	19.0%	-28.0%	-1.5%	-12.5%	-0.8%	-2.0%	-0.7%	-0.7%	-0.7%	-0.9%
Usage Per Account (1,000 Gallons)										
General	78	52	48	43	42	42	41	41	41	40
Township	103,583	80,375	101,754	72,912	73,641	74,378	75,121	75,873	76,631	76,631
Commercial/Industrial	917	693	638	546	541	497	492	487	483	478
Public Authority	370	310	330	304	301	298	295	292	289	286
Tax Exempt	1,117	854	837	842	833	825	817	808	800	792
City Departments	339	211	199	121	120	119	118	116	115	114
System Avg. Per Acct.	**140**	**99**	**94**	**85**	**84**	**82**	**81**	**80**	**79**	**79**
Annual % Δ	16.8%	-29.0%	-5.7%	-9.7%	-1.0%	-2.5%	-1.0%	-1.0%	-1.0%	-1.0%

3.3. Revenue Under Existing Rates

As discussed in the introduction, the first step in developing the utility financial plans is to evaluate revenues under existing rates. In other words, given customer demand, what can the water utility expect to receive in revenues if rates remain unchanged.

Table 3.3 indicates our projection of revenue under the City's existing water rate structure. Currently the City charges a fixed monthly charge which increases by meter size and a uniform volume charge for all customers residing within the City. Given that growth in customers is anticipated to remain flat, fixed charge revenues are projected to remain flat throughout the forecast period. Volume charge revenues, by contrast, are anticipated to decline, due to declining per customer usage. Under existing rates, fixed revenues represent approximately 13 percent of overall revenues, with the remaining 87 percent made up of volumetric revenues.

Table 3.3: Water Revenue Under Existing Rates

Revenue Source	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Fixed Charge Revenues						
5/8"	$ 342,006	$ 342,006	$ 342,006	$ 342,006	$ 342,006	$ 342,006
3/4"	50,181	50,181	50,181	50,181	50,181	50,181
1"	30,989	30,989	30,989	30,989	30,989	30,989
1 1/2"	12,266	12,266	12,266	12,266	12,266	12,266
2"	30,355	30,355	30,355	30,355	30,355	30,355
3"	8,696	8,696	8,696	8,696	8,696	8,696
4"	15,659	15,659	15,659	15,659	15,659	15,659
6"	10,927	10,927	10,927	10,927	10,927	10,927
8"	16,948	16,948	16,948	16,948	16,948	16,948
10"	12,123	12,123	12,123	12,123	12,123	12,123
Total Fixed	**$ 530,150**	**$ 530,150**	**$ 530,150**	**$ 530,150**	**$ 530,150**	**$ 530,150**
Fixed % of Total	13%	13%	13%	13%	13%	13%
Volume Charge Revenues						
General	$ 1,599,843	$ 1,583,845	$ 1,568,006	$ 1,552,326	$ 1,536,803	$ 1,521,435
Township	131,818	128,673	129,209	131,259	122,610	122,610
Commercial/Industrial	729,436	671,082	664,371	657,727	651,150	644,638
Public Authority	82,342	81,519	80,704	79,897	79,098	78,307
Tax Exempt	1,081,028	1,070,217	1,059,515	1,048,920	1,038,431	1,028,047
City Departments	36,061	35,701	35,344	34,990	34,640	34,294
Total Variable	**$ 3,660,529**	**$ 3,571,037**	**$ 3,537,148**	**$ 3,505,120**	**$ 3,462,732**	**$ 3,429,331**
Variable % of Total	87%	87%	87%	87%	87%	87%
Total Revenue	**$ 4,190,679**	**$ 4,101,186**	**$ 4,067,298**	**$ 4,035,270**	**$ 3,992,882**	**$ 3,959,481**

3.4. Forecast of Expenses

3.4.1. OPERATING EXPENSES

Operating expenses are those which the utility incurs on a consistent day to day basis and which generally do not involve the construction of a capital asset. The basis for the operating expense forecast was the FY 2018 water utility budget provided by City staff. From this we removed any non-cash expenses (e.g. depreciation) and any expenses captured in the capital improvements program (CIP), which we evaluate separately. The remaining expenses were forecast using escalation rates developed in conjunction with City staff. While most expenses are escalated at 3 percent the exceptions are: personnel (2 percent), and health care and insurance (4 percent). **Table 3.4** indicates the forecast of water utility operating expenses.

Table 3.4: Forecast of Water Utility Operating Expenses

Description	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Salaries and Benefits	$ 1,516,485	$ 1,572,052	$ 1,630,860	$ 1,693,168	$ 1,759,255	$ 1,829,425
Supplies	37,700	38,831	39,996	41,196	42,432	43,705
Chemicals	35,000	36,050	37,132	38,245	39,393	40,575
Repairs and Maintenance	115,000	118,450	122,004	125,664	129,434	133,317
Contracted Services	75,000	77,250	79,568	81,955	84,413	86,946
Other	330,191	340,097	350,300	360,809	371,633	382,782
Electricity	362,000	372,860	384,046	395,567	407,434	419,657
Natural Gas	14,000	14,420	14,853	15,298	15,757	16,230
Administrative Charges	196,195	202,081	208,143	214,388	220,819	227,444
PILOT	638,350	657,501	677,226	697,542	718,469	740,023
Vehicles/Equipment	189,500	195,185	201,041	207,072	213,284	219,682
Total	**$ 3,509,421**	**$ 3,624,776**	**$ 3,745,166**	**$ 3,870,903**	**$ 4,002,322**	**$ 4,139,784**

3.4.2. CAPITAL EXPENSES

Capital expenses are incurred to make improvements to water system assets. **Table 3.5** indicates the capital improvement program (CIP), as provided by City staff. Many of the projects involve the replacement of City water mains. Specific projects are identified through FY 2022, after which the City anticipates that average repair and replacement costs will be approximately $1.95 Million per year. The City anticipates completing a water asset management plan which will further refine the long-term level of capital improvement expenditures necessary for a sustainable water system.

The City has historically employed a mix of 15-year General Obligation (G.O.) bonds and 20-year Drinking Water Revolving Fund (DWRF) loans to fund water utility capital improvements. **Table 3.6** indicates the plan developed by Raftelis to finance the capital improvements indicated in the CIP.

As noted above, the majority of the City's capital projects are repair and replacement projects, which will need to occur at some level every year into the future. This is common throughout the industry, with many utilities targeting a percentage of the water distribution system to replace each year. Given their ongoing nature, many utilities seek to cash finance some, or all, of these types of projects. That said, revenues must be sufficient to generate the cash needed. If current revenues are insufficient, large rate revenue adjustments may be needed to fund the projects with cash. Debt financing reduces the impact to customers by spreading the cost out over the term of the loan. That said, the project will ultimately cost more due to the interest cost associated with the debt.

While the City would like to move toward funding capital improvements with cash, current rates do not generate sufficient cash to begin this strategy immediately. Accordingly, the plan assumes the City will continue to issue General Obligation (G.O.) bonds to finance capital improvement projects until FY 2023, when free cash flows are expected to be sufficient to fund some projects with cash.

Table 3.5: Water Capital Improvement Program

Description	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
SIMP and Sewer Lateral Replacements	15,000	-	20,000	20,000	20,000	-
WTF Turbidimeter Replacement	-	40,000	-	-	-	-
Presque Isle Avenue Reconstruction (Fair to Wright)	1,012,099	-	-	-	-	-
Fifth Street Reconstruction (Fisher to Spring)	128,369	-	-	-	-	-
Homestead Street Upgrade (Ward to Grove)	124,126	-	-	-	-	-
Altamont Street Reconstruction (Blemhuber to McMillan)	-	207,618	-	-	-	-
Front Street Reconstruction (Arch to Michigan)	-	91,789	-	-	-	-
Front Street Reconstruction (Ohio to Hewitt)	-	119,107	-	-	-	-
Front Street Reconstruction (Park to Magnetic)	-	178,115	-	-	-	-
Kaye Avenue Reconstruction (Presque Isle to Third)	-	122,386	-	-	-	-
Park Street Reconstruction (Lee to Fourth)	-	328,911	-	-	-	-
Marquette Drive Upgrade (Lakeview Dr. to North End)	-	296,129	-	-	-	-
Lakeview Drive Upgrade (Marquette Dr. to South End)	-	135,499	-	-	-	-
Third Street Reconstruction (Fisher to Baraga)	-	134,406	-	-	-	-
SCADA Computer System Replacement	-	18,333	-	-	-	-
Allouez Road Upgrade (W. Nicolet to LaSalle Road)	-	-	363,539	-	-	-
Center Street Reconstruction (Wilkinson to Schaffer)	-	-	227,353	-	-	-
College Avenue Reconstruction (Presque Isle to Front)	-	-	291,507	-	-	-
Front Street Reconstruction (Magnetic to Fair)	-	-	377,046	-	-	-
Hewitt Avenue Reconstruction (Pine to Spruce)	-	-	225,102	-	-	-
Hewitt Avenue Reconstruction (Third to Front)	-	-	182,332	-	-	-
Newberry Street Upgrade (Division to East End)	-	-	96,794	-	-	-
Ohio Street Upgrade (Spruce to Pine)	-	-	151,943	-	-	-
Shiras Drive Street Upgrade (U.S. 41 to Radisson)	-	-	203,718	-	-	-
Lidar, Orthophotography, and Elevation Contours Aerial Map	-	-	10,000	-	-	-
College Avenue Reconstruction (Front to Pine)	-	-	-	236,492	-	-
Kildahl Avenue Reconstruction (McClellan to West)	-	-	-	112,450	-	-
Nicolet Boulevard Upgrade (Raymbault to US 41)	-	-	-	248,085	-	-
Spruce Street Reconstruction (Michigan to Hewitt)	-	-	-	207,510	-	-
Wright Street Reconstruction (Sugarloaf to Vanevera)	-	-	-	293,286	-	-
Spruce Street Reconstruction (Magnetic to College)	-	-	-	107,812	-	-
Morgan Street Reconstruction (Washington to Bluff)	-	-	-	92,742	-	-
Fitch Avenue Reconstruction (Union to Harlow)	-	-	-	56,805	-	-
Meeske Avenue Reconstruction (Washington to Ridge)	-	-	-	76,512	-	-
Altamont Street Reconstruction (Grandview to Pioneer)	-	-	-	68,397	-	-
Gravel Street Upgrade (Washington Street Alley)	-	-	-	2,319	-	-
Microfiltration Plant Study	-	-	-	100,000	-	-
Cedar Street Reconstruction (Prospect to Crescent)	-	-	-	-	101,495	-
Division Street Reconstruction (Blemhuber to Newberry)	-	-	-	-	145,675	-
Division Street Reconstruction (Hampton and Joliet)	-	-	-	-	340,305	-
Fern Place Upgrade (Michigan to Ohio)	-	-	-	-	107,465	-
Oak Street Reconstruction (Ridge to Ohio)	-	-	-	-	249,557	-
Ohio Street Reconstruction (Cedar to Fern)	-	-	-	-	154,032	-
Park Street Reconstruction (Pine to Spruce)	-	-	-	-	275,826	-
Sherman Street Upgrade (Sheridan to Lincoln)	-	-	-	-	353,440	-
Summit Street Reconstruction (Longyear to Presque Isle)	-	-	-	-	260,304	-
Annual Replacement Projects	-	-	-	-	-	1,950,000
Total	**$ 1,279,594**	**$ 1,672,293**	**$ 2,149,334**	**$ 1,622,410**	**$ 2,008,099**	**$ 1,950,000**

Table 3.6: Water Capital Improvement Financing Plan

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Beginning Balance	**$ 196,898**	**$ 117,304**	**$ 145,011**	**$ 31,197**	**$ 109,982**	**$ 15,678**
Sources of Financing						
Cash	$ -	$ -	$ -	$ -	$ -	$ 700,000
GO Bonds	1,200,000	1,700,000	2,100,000	1,800,000	2,100,000	1,600,000
Total Sources	**$ 1,200,000**	**$ 1,700,000**	**$ 2,100,000**	**$ 1,800,000**	**$ 2,100,000**	**$ 2,300,000**
Uses of Financing						
Carry-Over Projects	$ -	$ -	$ -	$ -	$ -	$ -
Capital Projects	1,279,594	1,672,293	2,213,814	1,721,215	2,194,304	2,194,742
Other	-	-	-	-	-	-
Total Uses	**$ 1,279,594**	**$ 1,672,293**	**$ 2,213,814**	**$ 1,721,215**	**$ 2,194,304**	**$ 2,194,742**
Ending Balance	**$ 117,304**	**$ 145,011**	**$ 31,197**	**$ 109,982**	**$ 15,678**	**$ 120,936**

3.5. Cash Flow Forecast

The final step in the financial planning process involves compiling a cash flow forecast which identifies the revenue adjustments necessary to ensure financial sustainability. As indicated by **Table 3.7**, water utility revenues are not sufficient to meet current expenses. Additionally, the water fund is projected to end the current fiscal year well below the target reserve balance of 90 days. The rate revenue adjustments indicated below will bring revenues back in line with expenditures as well as restore the operating reserve to the recommended level of 90 days of O&M and debt service over the next five fiscal years.

Table 3.7: Water Utility Cash Flow Forecast

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Fixed Charge Adjustment	0.00%	12.25%	12.25%	12.25%	12.25%	12.25%
Volume Charge Adjustment	0.00%	12.25%	12.25%	12.25%	12.25%	12.25%
Revenues						
Operating Revenues	$ 4,058,861	$ 4,459,146	$ 4,962,018	$ 5,521,664	$ 6,144,504	$ 6,837,682
Other Revenue	214,248	211,103	211,639	213,689	205,040	205,040
Total Revenue	**$ 4,273,109**	**$ 4,670,249**	**$ 5,173,656**	**$ 5,735,354**	**$ 6,349,544**	**$ 7,042,722**
Revenue Requirements						
O&M Expense	$ 3,509,421	$ 3,624,776	$ 3,745,166	$ 3,870,903	$ 4,002,322	$ 4,139,784
Water Share of TELP Loan	-	478,350	191,676	170,616	154,334	129,678
Debt Service	1,046,885	1,065,674	1,214,667	1,433,189	1,693,197	1,913,895
Rate Funded Capital	-	-	-	-	-	700,000
Total Revenue Requirements	**$ 4,556,306**	**$ 5,168,799**	**$ 5,151,509**	**$ 5,474,708**	**$ 5,849,854**	**$ 6,883,357**
Operating Performance						
Beginning Fund Balance	$ 1,420,032	$ 1,136,835	$ 638,285	$ 660,432	$ 921,078	$ 1,420,769
Net Cash Flow	(283,197)	(498,550)	22,147	260,646	499,691	159,364
Ending Fund Balance	**$ 1,136,835**	**$ 638,285**	**$ 660,432**	**$ 921,078**	**$ 1,420,769**	**$ 1,580,133**
Days O&M + DS	**91**	**45**	**46**	**61**	**88**	**93**
Debt Service Coverage						
Revenue Bonds	N/A	N/A	N/A	N/A	N/A	N/A
Drinking Water Revolving Fund	0.81	0.60	1.33	1.83	2.35	3.00
General Obligation	-1.55	-2.74	1.07	1.51	1.65	1.86
Combined	0.72	0.53	1.01	1.18	1.29	1.44

4. Sewer Financial Plan

4.1. Forecast of Accounts

Table 4.1 indicates the forecast of sewer accounts. Historically, the City has seen modest growth (around .5 percent per year) in new water and sewer accounts. Given the relatively slow pace of account growth over the past 5 years, the sewer financial plan is based on a conservative 0 percent growth assumption.

Table 4.1: Sewer Account Growth Forecast

Accounts	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
General	5,587	5,620	5,644	5,644	5,644	5,644	5,644	5,644	5,644	5,644
Commercial/Industrial	182	180	184	184	184	184	184	184	184	184
Public Authority	38	38	38	38	38	38	38	38	38	38
Tax Exempt	142	142	141	141	141	141	141	141	141	141
City Departments	22	24	27	27	27	27	27	27	27	27
Total	**5,971**	**6,004**	**6,034**	**6,034**	**6,034**	**6,034**	**6,034**	**6,034**	**6,034**	**6,034**
Annual % Δ	0.54%	0.55%	0.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

4.2. Forecast of Usage

Table 4.2 indicates the forecast of sewer usage. Sewer usage is forecast by evaluating usage per account, by customer class, and multiplying that by the projected number of customer accounts. Usage per account is based on a baseline which is then adjusted for an overall trend. For most City customers, sewer usage is billed based on billed water volumes. Accordingly, billed sewer usage is subject to the same factors which contribute to the declining trend in per customers usage: increased fixture efficiency, price elasticity (customer response to rate increases) and a general ethos of conservation.

Similar to water usage, Raftelis reviewed the City's usage to date and compared it to historical usage to establish a baseline for billed sewer usage per account. Usage per account is then assumed to decline 1 percent per year for all customer classes. In addition to this general trend, the forecast incorporates anticipated reductions from Marquette DLP General Hospital, whose new facility is estimated to use 25% less water and in turn be billed for lower sewer volumes as well.

Table 4.2: Sewer Usage Forecast

	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Annual Usage (1,000 Gallons)										
General	220,757	226,828	247,663	236,416	234,052	231,711	229,394	227,100	224,829	222,581
Commercial/Industrial	134,679	126,199	117,025	105,288	104,236	99,024	98,034	97,053	96,083	95,122
Public Authority	11,511	11,269	12,097	11,274	11,161	11,050	10,939	10,830	10,722	10,614
Tax Exempt	161,982	149,925	144,839	141,714	140,297	138,894	137,505	136,130	134,769	133,421
City Departments	3,288	4,070	3,687	3,988	3,948	3,909	3,870	3,831	3,793	3,755
Total	**532,217**	**518,291**	**525,311**	**498,681**	**493,694**	**484,587**	**479,742**	**474,944**	**470,195**	**465,493**
Annual % Δ	-13.8%	-2.6%	1.4%	-5.1%	-1.0%	-1.8%	-1.0%	-1.0%	-1.0%	-1.0%
Usage Per Account (1,000 Gallons)										
General	40	40	44	42	41	41	41	40	40	39
Commercial/Industrial	740	701	636	572	566	538	533	527	522	517
Public Authority	303	297	318	297	294	291	288	285	282	279
Tax Exempt	1,141	1,056	1,027	1,005	995	985	975	965	956	946
City Departments	149	170	137	148	146	145	143	142	140	139
System Avg. Per Acct.	**89**	**86**	**87**	**83**	**82**	**80**	**80**	**79**	**78**	**77**
Annual % Δ	-14.2%	-3.2%	0.9%	-5.1%	-1.0%	-1.8%	-1.0%	-1.0%	-1.0%	-1.0%

4.3. Revenue Under Existing Rates

As discussed in the introduction, the first step in developing the utility financial plans is to evaluate revenues under existing rates. In other words, given customer demand, what can the sewer utility expect to receive in revenues if rates remain unchanged.

Table 4.3 indicates our projection of revenue under the City's existing sewer rate structure. Currently the City charges a fixed monthly charge and a uniform volume charge for all customers residing within the City. Given that growth in customers is anticipated to remain flat, fixed charge revenues are projected to remain flat throughout the forecast period. Volume charge revenues, by contrast, are anticipated to decline, due to declining per customer usage. Under existing rates, fixed revenues represent approximately 7 percent of overall revenues, with the remaining 87 percent made up of volumetric revenues.

Table 4.3: Sewer Revenue Under Existing Rates

Revenue Source	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Fixed Charge Revenues	**$ 362,160**	**$ 362,160**	**$ 362,160**	**$ 362,160**	**$ 362,160**	**$ 362,160**
Fixed % of Total	7%	7%	7%	7%	7%	7%
Volume Charge Revenues						
General	$ 2,408,392	$ 2,384,308	$ 2,360,465	$ 2,336,860	$ 2,313,492	$ 2,290,357
Township	-	-	-	-	-	-
Commercial/Industrial	1,072,584	1,018,955	1,008,766	998,678	988,691	978,804
Public Authority	114,850	113,702	112,565	111,439	110,325	109,222
Tax Exempt	1,443,656	1,429,219	1,414,927	1,400,778	1,386,770	1,372,902
City Departments	40,627	40,221	39,819	39,421	39,026	38,636
Total Variable	**$ 5,080,110**	**$ 4,986,405**	**$ 4,936,541**	**$ 4,887,176**	**$ 4,838,304**	**$ 4,789,921**
Variable % of Total	93%	93%	93%	93%	93%	93%
Total Revenue	**$ 5,442,270**	**$ 5,348,565**	**$ 5,298,701**	**$ 5,249,336**	**$ 5,200,464**	**$ 5,152,081**

4.4. Forecast of Expenses

4.4.1. OPERATING EXPENSES

Operating expenses are those which the utility incurs on a day to day basis and which generally do not involve the construction of a capital asset. The basis for the operating expense forecast was the FY 2018 sewer utility budget provided by City staff. From this we removed any non-cash expenses (e.g. depreciation) and any expenses captured in the capital improvements program (CIP), which we evaluate separately. The remaining expenses were forecast using escalation rates developed in conjunction with City staff. While most expenses are escalated at 3 percent the exceptions are: personnel (2 percent), health care and insurance (4 percent), and wastewater treatment (6 percent). **Table 4.4** indicates the forecast of sewer utility operating expenses.

Table 4.4: Forecast of Sewer Utility Operating Expenses

Description	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Salaries and Benefits	$ 818,040	$ 845,691	$ 874,766	$ 905,368	$ 937,609	$ 971,612
Supplies	32,500	33,475	34,479	35,514	36,579	37,676
Repairs and Maintenance	45,000	46,350	47,741	49,173	50,648	52,167
Contracted Services	53,000	54,590	56,228	57,915	59,652	61,442
Wastewater Treatment	2,798,720	2,966,643	3,144,642	3,333,320	3,533,320	3,745,319
Electricity	65,000	66,950	68,959	71,027	73,158	75,353
Natural Gas	6,500	6,695	6,896	7,103	7,316	7,535
Administrative Charges	155,090	159,743	164,535	169,471	174,555	179,792
PILOT	500,130	515,134	530,588	546,506	562,901	579,788
Vehicles/Equipment	296,000	304,880	314,026	323,447	333,151	343,145
Other	236,965	244,053	251,354	258,874	266,619	274,597
Total	**$ 5,006,945**	**$ 5,244,204**	**$ 5,494,213**	**$ 5,757,717**	**$ 6,035,507**	**$ 6,328,425**

4.4.2. CAPITAL EXPENSES

Capital expenses are incurred to make improvements to the sewer system. **Table 4.5** indicates the capital improvement program (CIP), as provided by City staff. Most of the projects involve the repair and replacement of City sewer mains. Specific projects are identified through FY 2022, after which the City anticipates that average repair and replacement costs will be approximately $1.03 Million per year. The City is near completion of an asset management plan associated with the Stormwater and Wastewater (SAW) grant from the Michigan Department of Environmental Quality. This plan identified an average repair and replacement cost for the City's sewer collection system of $1.0 Million per year. That said, the City has already identified specific projects through FY 2022 which exceed this long-term average. Accordingly, the specific projects were included through FY 2022, after which the long-term average was used.

The City has historically employed a mix of 15-year General Obligation (G.O.) bonds and 20-year Clean Water Revolving Fund (CWRF) loans to fund sewer utility capital improvements. **Table 4.6** indicates the plan developed by Raftelis to finance the capital improvements indicated in the CIP.

As noted above, the majority of the City's capital projects are repair and replacement projects, which will need to occur at some level every year into the future. This is common throughout the industry, with many utilities targeting a percentage of the water distribution system to replace each year. Given their ongoing nature, many utilities seek to cash finance some, or all, of these types of projects. That said, revenues must be sufficient to generate the cash needed. If current revenues are insufficient, large rate revenue adjustments may be needed to fund the projects. Debt financing reduces the impact to customers by spreading the cost out over the term of the loan. That said, the project will ultimately cost more due to the interest cost associated with the debt.

While the City would like to move toward funding capital improvements with cash, current rates do not generate sufficient cash to begin this strategy immediately. Accordingly, the plan assumes the City will continue to issue General Obligation (G.O.) bonds to finance capital improvement projects until FY 2023, when free cash flows are expected to be sufficient to fund some projects with cash.

Table 4.5: Sewer Capital Improvement Program

Description	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Wright Street Reconstruction	-	-	-	134,476	-	-
Presque Isle Avenue Reconstruction	864,634	-	-	-	-	-
SIMP and Sewer Lateral Replacements	425,000	-	355,000	465,000	330,000	-
Fifth Street Reconstruction (Fisher to Spring)	158,074	-	-	-	-	-
Homestead Street Upgrade (Ward to Grove)	94,420	-	-	-	-	-
Cured in Place Pipe Lining	-	-	-	400,000	-	-
Lift Stations	-	-	-	-	-	175,000
Sanitary Sewer System (based on 90 year life)	-	-	-	-	-	850,000
Altamont Street Reconstruction (Blemhuber to McMillan)	-	89,604	-	-	-	-
Front Street Reconstruction	-	286,294	278,001	-	-	-
Kaye Avenue Reconstruction (Presque Isle to Third)	-	111,458	-	-	-	-
Park Street Reconstruction (Lee to Fourth)	-	232,751	-	-	-	-
Marquette Drive Upgrade (Lakeview Dr. to North End)	-	102,716	-	-	-	-
Lakeview Drive Upgrade (Marquette Dr. to South End)	-	71,027	-	-	-	-
Third Street Reconstruction (Fisher to Baraga)	-	114,736	-	-	-	-
SCADA Computer System Replacement	-	36,667	-	-	-	-
Hewitt Avenue Reconstruction	-	-	367,591	-	-	-
Allouez Road Upgrade	-	-	228,478	-	-	-
College Avenue Reconstruction	-	-	218,349	169,254	-	-
Jefferson Street Storm Sewer Upgrade	-	-	-	7,000	-	-
Shiras Drive Street Upgrade (U.S. 41 to Radisson)	-	-	21,385	-	-	-
Ohio Street Upgrade/Reconstruction	-	-	51,773	-	85,972	-
Newberry Street Upgrade (Division to East End)	-	-	50,648	-	-	-
Center Street Reconstruction (Wilkson to Schaffer)	-	-	79,911	-	-	-
Lidar, Orthophotography, and Elevation Contours Aerial Map	-	-	10,000	-	-	-
Nicolet Boulevard Upgrade	-	-	-	62,601	-	-
Meeske Avenue Reconstruction (Washington to Ridge)	-	-	-	44,052	-	-
Spruce Street Reconstruction	-	-	-	137,954	-	-
Fitch Avenue Reconstruction (Union to Harlow)	-	-	-	45,212	-	-
Morgan Street Reconstruction (Washington to Bluff)	-	-	-	54,486	-	-
Altamont Street Upgrade (Grandview to Pioneer)	-	-	-	25,504	-	-
Kildalhl Reconstruction (McClellan to West)	-	-	-	85,786	-	-
Gravel Street Upgrades (Washington Street Alley)	-	-	-	5,796	-	-
Division Street Reconstruction	-	-	-	-	273,438	-
Oak Street Reconstruction (Ridge to Ohio)	-	-	-	-	192,242	-
Park Street Reconstruction (Pine to Spruce)	-	-	-	-	199,407	-
Cedar Street Reconstruction (Prospect to Crescent)	-	-	-	-	68,061	-
Summit Street Reconstruction (Longyear to Presque Isle)	-	-	-	-	204,183	-
Fern Place Upgrade (Michigan to Ohio)	-	-	-	-	74,031	-
Sherman Street Upgrade (Sheridan to Lincoln)	-	-	-	-	160,003	-
Total	**1,542,128**	**1,045,253**	**1,661,136**	**1,637,121**	**1,587,337**	**1,025,000**

Table 4.6: Sewer Capital Improvement Financing Plan

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Beginning Balance	**$ (72,532)**	**$ 85,340**	**$ 140,087**	**$ 329,117**	**$ 292,295**	**$ 7,769**
Sources of Financing						
Cash	$ -	$ -	$ -	$ -	$ -	$ 600,000
Revenue Bonds	-	-	-	-	-	-
GO Bonds	1,700,000	1,100,000	1,900,000	1,700,000	1,450,000	600,000
Total Sources	**$ 1,700,000**	**$ 1,100,000**	**$ 1,900,000**	**$ 1,700,000**	**$ 1,450,000**	**$ 1,200,000**
Uses of Financing						
Capital Projects	1,542,128	1,045,253	1,710,970	1,736,822	1,734,526	1,153,647
Other	-	-	-	-	-	-
Total Uses	**$ 1,542,128**	**$ 1,045,253**	**$ 1,710,970**	**$ 1,736,822**	**$ 1,734,526**	**$ 1,153,647**
Ending Balance	**$ 85,340**	**$ 140,087**	**$ 329,117**	**$ 292,295**	**$ 7,769**	**$ 54,123**

4.5. Cash Flow Forecast

The final step in the financial planning process involves compiling a cash flow forecast which identifies the revenue adjustments necessary to ensure financial sustainability. As indicated by **Table 4.7** sewer utility revenues are not sufficient to meet current expenses. Note that the sewer fund began FY 2019 with a negative reserve balance. The negative cash flow anticipated in FY 2019 will increase this deficit further. The rate revenue adjustments indicated below will bring revenues back in line with expenditures as well as restore the operating reserve to the recommended level of 90 days of O&M and debt service over the next five fiscal years.

Table 4.7: Sewer Utility Cash Flow Forecast

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Fixed Charge Adjustment	0.0%	25.0%	11.5%	11.5%	11.5%	11.0%
Volume Charge Adjustment	0.0%	25.0%	11.5%	11.5%	11.5%	11.0%
Revenues						
Operating Revenues	$ 5,442,270	$ 6,685,707	$ 7,385,065	$ 8,157,632	$ 9,011,077	$ 9,909,239
Other Revenue	24,610	24,820	25,036	25,259	25,489	25,725
Total Revenue	**$ 5,466,880**	**$ 6,710,527**	**$ 7,410,101**	**$ 8,182,891**	**$ 9,036,566**	**$ 9,934,963**
Revenue Requirements						
O&M Expense	$ 5,006,945	$ 5,244,204	$ 5,494,213	$ 5,757,717	$ 6,035,507	$ 6,328,425
Sewer Share of TELP Loan	$ -	$ 390,869	$ 156,622	$ 139,414	$ 126,110	$ 105,963
Debt Service	1,160,816	1,194,932	1,393,608	1,545,757	1,780,250	1,977,169
Rate Funded Capital	-	-	-	-	-	600,000
Total Revenue Requirements	**$ 6,167,761**	**$ 6,830,005**	**$ 7,044,443**	**$ 7,442,888**	**$ 7,941,867**	**$ 9,011,557**
Operating Performance						
Beginning Fund Balance	$ (181,129)	$ (882,010)	$ (1,001,489)	$ (635,831)	$ 104,173	$ 1,198,871
Net Cash Flow	(700,881)	(119,478)	365,658	740,004	1,094,698	923,406
Ending Fund Balance	**$ (882,010)**	**$ (1,001,489)**	**$ (635,831)**	**$ 104,173**	**$ 1,198,871**	**$ 2,122,277**
Days O&M + DS	**(52)**	**(53)**	**(32)**	**5**	**55**	**92**
Debt Service Coverage						
Revenue Bonds	N/A	N/A	N/A	N/A	N/A	N/A
Clean Water Revolving Fund	0.53	1.25	2.06	2.67	3.35	4.10
General Obligation	-1.35	0.64	1.67	2.06	2.18	2.35
Combined	0.39	0.90	1.26	1.47	1.61	1.77

5. Stormwater Financial Plan

5.1. Forecast of Accounts

Table 5.1 indicates the forecast of stormwater accounts. Historically, the City has seen modest growth (around .5 percent per year) in new accounts. Given the relatively slow pace of account growth over the past 5 years, the stormwater financial plan is based on a conservative 0 percent growth assumption.

Table 5.1: Stormwater Account Growth Forecast

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Residential						
1/5 acre of less	3,080	3,080	3,080	3,080	3,080	3,080
1/5 to 1 acre	2,111	2,111	2,111	2,111	2,111	2,111
1 - 2 acres	112	112	112	112	112	112
2 - 6 acres	22	22	22	22	22	22
Total	5,325	5,325	5,325	5,325	5,325	5,325
Annual % Δ		**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
Non-Residential						
General	612	612	612	612	612	612
Total	5,937	5,937	5,937	5,937	5,937	5,937
Annual % Δ		**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

5.2. Revenue Under Existing Rates

As discussed in the introduction, the first step in developing the utility financial plans is to evaluate revenues under existing rates. In other words what level of revenue can the utility expect to receive if stormwater rates remain unchanged.

Table 5.2 indicates our projection of revenue under the City's existing stormwater rate structure. Currently the City employs a tiered structure based on property size for residential and a charge per unit of equivalent hydraulic area (EHA) for non-residential. The utility also bills City properties for stormwater. Given the flat forecast for customer accounts, revenues under existing rates are anticipated to remain flat throughout the forecast period.

Table 5.2: Stormwater Revenue Under Existing Rates

Revenue Source	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Residential						
1/5 acre or less	$ 153,384	$ 153,384	$ 153,384	$ 153,384	$ 153,384	$ 153,384
1/5 to 1 acre	178,591	178,591	178,591	178,591	178,591	178,591
1 - 2 acres	15,053	15,053	15,053	15,053	15,053	15,053
2 - 6 acres	5,636	5,636	5,636	5,636	5,636	5,636
Total Residential	**$ 352,664**	**$ 352,664**	**$ 352,664**	**$ 352,664**	**$ 352,664**	**$ 352,664**
Non-Residential						
General	$ 601,915	$ 601,915	$ 601,915	$ 601,915	$ 601,915	$ 601,915
City Departments	350,000	350,000	350,000	350,000	350,000	350,000
Total Non-Residential	**$ 951,915**	**$ 951,915**	**$ 951,915**	**$ 951,915**	**$ 951,915**	**$ 951,915**
Total Revenue	**$ 1,304,579**	**$ 1,304,579**	**$ 1,304,579**	**$ 1,304,579**	**$ 1,304,579**	**$ 1,304,579**

5.3. Forecast of Expenses

5.3.1. OPERATING EXPENSES

Operating expenses are those which the utility incurs on a consistent day to day basis and which generally do not involve the construction of a capital asset. The basis for the operating expense forecast was the FY 2018 stormwater utility budget provided by City staff. From this we removed any non-cash expenses (e.g. depreciation) and any expenses captured in the capital improvements program (CIP), which we evaluate separately. The remaining expenses were forecast using escalation rates developed in conjunction with City staff. While most expenses are escalated at 3 percent the exceptions are: personnel (2 percent), and health care and insurance (4 percent). **Table 5.3** indicates the forecast of stormwater utility operating expenses.

Table 5.3: Forecast of Stormwater Utility Operating Expenses

Description	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Salaries and Benefits	$ 259,960	$ 266,095	$ 272,420	$ 278,944	$ 285,678	$ 292,631
Repairs and Maintenance	10,000	10,300	10,609	10,927	11,255	11,593
Contracted Services	588,415	115,300	118,759	122,322	125,991	129,771
Other	281,820	290,275	298,983	307,952	317,191	326,707
Administrative Charges	51,705	53,256	54,854	56,499	58,194	59,940
Vehicles/Equipment	116,000	119,480	123,064	126,756	130,559	134,476
Total	**$ 1,307,900**	**$ 854,706**	**$ 878,689**	**$ 903,402**	**$ 928,869**	**$ 955,117**

5.3.2. CAPITAL EXPENSES

Capital expenses are incurred to make improvements to the stormwater system. **Table 5.4** indicates the capital improvement program (CIP), as provided by City staff. Most of the projects involve the repair and replacement of City stormwater mains. Specific projects are identified through FY 2022, after which the City anticipates that average repair and replacement costs will be approximately $0.6 Million per year. The City is near completion of an asset management plan associated with the Stormwater and Wastewater (SAW) grant from the Michigan Department of Environmental Quality. This plan identified an average repair and replacement cost for the City's stormwater collection system of $0.6 Million per year. That said, the City has already identified specific projects through FY 2022 which exceed this long-term average. Accordingly, the specific projects were included through FY 2022, after which the long-term average was used.

The City has historically employed a mix of 15-year General Obligation (G.O.) bonds and 20-year Clean Water Revolving Fund (CWRF) loans to fund stormwater utility capital improvements. **Table 5.5** indicates the plan developed by Raftelis to finance the capital improvements indicated in the CIP.

As noted above, the majority of the City's capital projects are repair and replacement projects, which will need to occur at some level every year into the future. This is common throughout the industry, with many utilities targeting a percentage of the water distribution system to replace each year. Given their ongoing nature, many utilities seek to cash finance some, or all, of these types of projects. That said, revenues must be sufficient to generate the cash needed. If current revenues are insufficient, large rate revenue adjustments may be needed to fund the projects. Debt financing reduces the impact to customers by spreading the cost out over the term of the loan. That said, the project will ultimately cost more due to the interest cost associated with the debt.

While the City would like to move toward funding capital improvements with cash, current rates do not generate sufficient cash to begin this strategy immediately. Accordingly, the plan assumes the City will continue to issue General Obligation (G.O.) bonds to finance capital improvement projects until FY 2023, when free cash flows are expected to be sufficient to fund some projects with cash.

Table 5.4: Stormwater Capital Improvement Program

Description	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Storm Sewer (based on 90 year life)	-	-	-	-	-	500,000
Curb Replacement	-	100,000	100,000	100,000	100,000	100,000
Presque Isle Avenue Reconstruction (Fair to Wright)	929,467	-	-	-	-	-
SIMP and Sanitary Sewer Lateral Replacements	50,000	-	80,000	80,000	90,000	-
Fifth Street Reconstruction (Fisher to Spring)	235,520	-	-	-	-	-
Homestead Street Upgrade (Ward to Grove)	194,145	-	-	-	-	-
Altamont Street Reconstruction (Blemhuber to McMillan)	-	160,631	-	-	-	-
Front Street Reconstruction	-	265,533	218,349	-	-	-
Kaye Avenue Reconstruction (Presque Isle to Third)	-	88,511	-	-	-	-
Park Street Reconstruction (Lee to Fourth)	-	268,811	-	-	-	-
Marquette Drive Upgrade (Lakeview Dr. to North End)	-	278,645	-	-	-	-
Lakeview Drive Upgrade (Marquette Dr. to South End)	-	121,293	-	-	-	-
Third Street Reconstruction (Fisher to Baraga)	-	155,167	-	-	-	-
Hewitt Avenue Reconstruction	-	-	266,745	-	-	-
Allouez Road Upgrade	-	-	407,434	-	-	-
College Avenue Reconstruction	-	-	193,588	133,317	-	-
Jefferson Street Storm Sewer Upgrade	-	-	-	93,000	-	-
Shiras Drive Street Upgrade (U.S. 41 to Radisson)	-	-	185,709	-	-	-
Ohio Street Upgrade/Reconstruction	-	-	149,693	-	75,225	-
Newberry Street Upgrade (Division to East End)	-	-	37,142	-	-	-
Center Street Reconstruction (Wilkson to Schaffer)	-	-	172,203	-	-	-
Lidar, Orthophotography, and Elevation Contours Aerial Map	-	-	10,000	-	-	-
Wright Street Reconstruction	-	-	-	234,173	-	-
Nicolet Boulevard Upgrade	-	-	-	303,730	-	-
Meeske Avenue Reconstruction (Washington to Ridge)	-	-	-	143,750	-	-
Spruce Street Reconstruction	-	-	-	188,962	-	-
Fitch Avenue Reconstruction (Union to Harlow)	-	-	-	56,804	-	-
Morgan Street Reconstruction (Washington to Bluff)	-	-	-	74,194	-	-
Altamont Street Upgrade (Grandview to Pioneer)	-	-	-	114,768	-	-
Kildalhl Reconstruction (McClellan to West)	-	-	-	98,538	-	-
Gravel Street Upgrades (Washington Street Alley)	-	-	-	222,581	-	-
Division Street Reconstruction	-	-	-	-	452,546	-
Oak Street Reconstruction (Ridge to Ohio)	-	-	-	-	76,419	-
Park Street Reconstruction (Pine to Spruce)	-	-	-	-	109,853	-
Cedar Street Reconstruction (Prospect to Crescent)	-	-	-	-	70,449	-
Summit Street Reconstruction (Longyear to Presque Isle)	-	-	-	-	169,555	-
Fern Place Upgrade (Michigan to Ohio)	-	-	-	-	111,047	-
Sherman Street Upgrade (Sheridan to Lincoln)	-	-	-	-	200,601	-
Total	**1,409,132**	**1,438,591**	**1,820,863**	**1,843,817**	**1,455,695**	**600,000**

Table 5.5: Stormwater Capital Improvement Financing Plan

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Beginning Balance	**$ -**	**$ 90,868**	**$ 252,277**	**$ 476,788**	**$ 320,683**	**$ 30,005**
Sources of Financing						
Cash	$ -	$ -	$ -	$ -	$ -	$ 100,000
GO Bonds	1,500,000	1,600,000	2,100,000	1,800,000	1,300,000	600,000
Total Sources	**$ 1,500,000**	**$ 1,600,000**	**$ 2,100,000**	**$ 1,800,000**	**$ 1,300,000**	**$ 700,000**
Uses of Financing						
Capital Projects	1,409,132	1,438,591	1,875,489	1,956,105	1,590,677	675,305
Other	-	-	-	-	-	-
Total Uses	**$ 1,409,132**	**$ 1,438,591**	**$ 1,875,489**	**$ 1,956,105**	**$ 1,590,677**	**$ 675,305**
Ending Balance	**$ 90,868**	**$ 252,277**	**$ 476,788**	**$ 320,683**	**$ 30,005**	**$ 54,700**

5.4. Cash Flow Forecast

The final step in the financial planning process involves compiling a cash flow forecast which identifies the revenue adjustments necessary to ensure financial sustainability. As indicated by **Table 5.6** stormwater utility revenues are not sufficient to meet current expenses. The rate revenue adjustments indicated below will bring revenues back in line with expenditures as well as restore the operating reserve to the recommended level of 90 days of O&M and debt service over the next five fiscal years.

Table 5.6: Stormwater Utility Cash Flow Forecast

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Stormwater Revenue Adjustment	0.00%	15.25%	15.25%	15.25%	15.25%	15.25%
Revenues						
Operating Revenues	$ 1,304,579	$ 1,503,527	$ 1,732,815	$ 1,997,069	$ 2,301,622	$ 2,652,619
Other Revenue	476,215	2,800	2,800	2,800	2,800	2,800
Total Revenue	**$ 1,780,794**	**$ 1,506,327**	**$ 1,735,615**	**$ 1,999,869**	**$ 2,304,422**	**$ 2,655,419**
Revenue Requirements						
O&M Expense	$ 1,307,900	$ 854,706	$ 878,689	$ 903,402	$ 928,869	$ 955,117
Debt Service	697,801	723,053	912,263	1,119,624	1,375,952	1,358,422
Rate Funded Capital	-	-	-	-	-	100,000
Total Revenue Requirements	**$ 2,005,701**	**$ 1,577,759**	**$ 1,790,952**	**$ 2,023,026**	**$ 2,304,821**	**$ 2,413,539**
Operating Performance						
Beginning Fund Balance	$ 726,786	$ 501,879	$ 430,447	$ 375,109	$ 351,952	$ 351,553
Net Cash Flow	(224,907)	(71,432)	(55,337)	(23,157)	(399)	241,880
Ending Fund Balance	**$ 501,879**	**$ 430,447**	**$ 375,109**	**$ 351,952**	**$ 351,553**	**$ 593,434**
Days O&M + DS	**91**	**99**	**76**	**63**	**55**	**93**
Debt Service Coverage						
Revenue Bonds	N/A	N/A	N/A	N/A	N/A	N/A
Clean Water Revolving Fund	0.67	0.94	1.23	1.58	1.98	3.69
General Obligation	N/A	-1.35	0.74	0.94	0.99	1.38
Combined	0.67	0.90	0.93	0.97	0.99	1.25

6. Rates and Customer Impacts

6.1. Rate Recommendations

Once the overall level of revenue recovery was determined for each utility Raftelis examined rate structure options to recover the revenue as well as meet the objectives of the City. The scope of this engagement involved examining the rate structures for water and sewer only. Accordingly, stormwater rates are based on an across the board increase, which applies the overall percentage increase in revenues necessary (15.25%) equally to each stormwater charge.

For water and sewer rates the key driving factor in designing alternative rate structures involved increasing fixed cost recovery for the water and sewer utilities. The majority of water and sewer costs incurred by the City do not vary based on customer usage. This is because the majority of the costs are incurred to make the system available to provide water and sewer service whenever customers need it. If usage declines 10 percent for example, the water and sewer capital costs to maintain reliable systems do not decline, because these systems must stand ready to provide service at whatever level of usage occurs. In other words, the vast majority of the costs are incurred to make the infrastructure available, regardless of usage.

Accordingly, many utilities seek to increase the proportion of rate revenues which are derived from fixed monthly service charges. This has the added benefit of stabilizing the water and sewer utility revenue stream, as a certain

portion of customer bills will remain fixed regardless of any changes in demand. In discussions with City staff, one issue that was raised involved years where water and sewer rates were increased, but revenues remained flat as compared to the prior year because usage had declined sufficiently to offset the increase. Our recommendation involves increasing the fixed charge at a faster pace than the variable charge. This is reflected in **Tables 6.1 and 6.2** below.

For an overall ***water*** rate revenue increase of 12.25 percent, we are proposing an increase of 24.5 percent to the fixed charge and only 10.1 percent the variable charge. The impact of the increase to the fixed charge for water is **$1.41 per bill.**

For an overall ***sewer*** rate revenue increase of 25 percent, we are proposing a 50 percent increase to the fixed charge and only a 23.2 percent increase to the commodity charge. The impact of the increase to the fixed charge for sewer is **$2.50 per bill.**

Table 6.1: Recommended Water Rates

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Fixed Charge (per Month)						
5/8	$ 5.76	$ 7.17	$ 8.93	$ 11.12	$ 13.84	$ 17.23
3/4	5.76	7.17	8.93	11.12	13.84	17.23
1	10.76	13.40	16.68	20.76	25.85	32.19
1 1/2	10.76	13.40	16.68	20.76	25.85	32.19
2	29.76	37.05	46.13	57.43	71.50	89.02
3	51.76	64.44	80.23	99.89	124.36	154.82
4	76.76	95.57	118.98	148.13	184.42	229.61
6	151.76	188.94	235.23	292.86	364.62	453.95
8	201.76	251.19	312.73	389.35	484.74	603.51
10	336.76	419.27	521.99	649.87	809.09	1,007.32
% Δ	**0.0%**	**24.5%**	**24.5%**	**24.5%**	**24.5%**	**24.5%**
Water Charge Per 1,000 Gallons						
General	$ 6.68	$ 7.35	$ 8.10	$ 8.88	$ 9.72	$ 10.58
Commercial/Industrial	6.68	7.35	8.10	8.88	9.72	10.58
Public Authority	6.68	7.35	8.10	8.88	9.72	10.58
Tax Exempt	7.29	8.09	8.90	9.77	10.69	11.64
City Departments	6.68	7.35	8.10	8.88	9.72	10.58
% Δ	**0.0%**	**10.1%**	**10.1%**	**9.8%**	**9.4%**	**8.9%**

Table 6.2: Recommended Sewer Rates

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Fixed Charge (per Month)	$ 5.00	$ 7.50	$ 9.23	$ 11.35	$ 13.96	$ 17.03
% Δ	**0.0%**	**50.0%**	**23.0%**	**23.0%**	**23.0%**	**22.0%**
Sewer Charge Per 1,000 Gallons						
General	$ 10.29	$ 12.68	$ 14.00	$ 15.45	$ 17.01	$ 18.64
Commercial/Industrial	10.29	12.68	14.00	15.45	17.01	18.64
Public Authority	10.29	12.68	14.00	15.45	17.01	18.64
Tax Exempt	10.29	12.68	14.00	15.45	17.01	18.64
City Departments	10.29	12.68	14.00	15.45	17.01	18.64
% Δ	**0.0%**	**23.2%**	**10.5%**	**10.3%**	**10.2%**	**9.5%**

Table 6.3: Recommended Stormwater Rates

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Residential (per Month)						
1/5 acre or less	$ 4.15	$ 4.78	$ 5.51	$ 6.35	$ 7.32	$ 8.44
1/5 to 1 acre	7.05	8.13	9.36	10.79	12.44	14.33
1 - 2 acres	11.20	12.91	14.88	17.15	19.76	22.77
2 - 6 acres	21.35	24.61	28.36	32.68	37.67	43.41
% Δ	**0.0%**	**15.3%**	**15.3%**	**15.3%**	**15.3%**	**15.3%**
Non-Residential (Per EHA/Mo)	$ 82.00	$ 94.51	$ 108.92	$ 125.53	$ 144.67	$ 166.73
% Δ	**0.0%**	**15.3%**	**15.3%**	**15.3%**	**15.3%**	**15.3%**

6.2. Bill Impacts

Figures 6.1 and 6.2 indicate the impact on the average City water, sewer and stormwater customer. Figure 6.1 indicates the combined water, sewer and stormwater bill for the average customer, both currently and over the next 5 fiscal years. In FY 2019, the bill would rise from $82.79 currently, to $99.57, an increase of $16.78 per month for the average customer. Figure 6.2 indicates the combined bills at various levels of customer volumes in FY 2019. The impacts, based on volume are as follows:

- Low usage customer increase of $7 per month, an average of **$2.33 per utility.**
- The average customer would see an increase of $16.78 per month, **an average of $5.60 per utility.**
- A higher usage customer would see an increase of $35 per month, **an average of $11.67 per utility.**

Figure 6.1: Combined Bill Impacts (4,000 Gallons, 5/8" Meter, 1/5 acre or less)

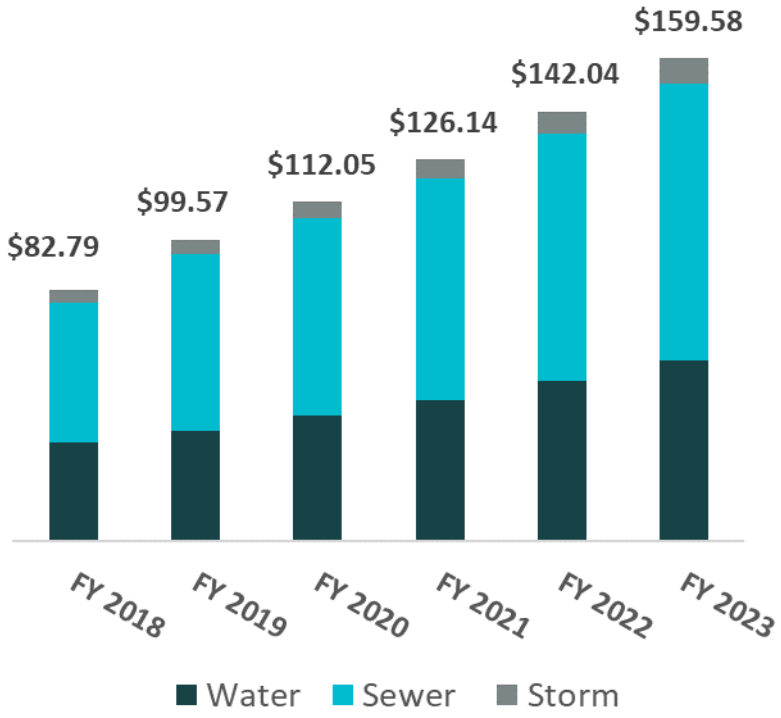
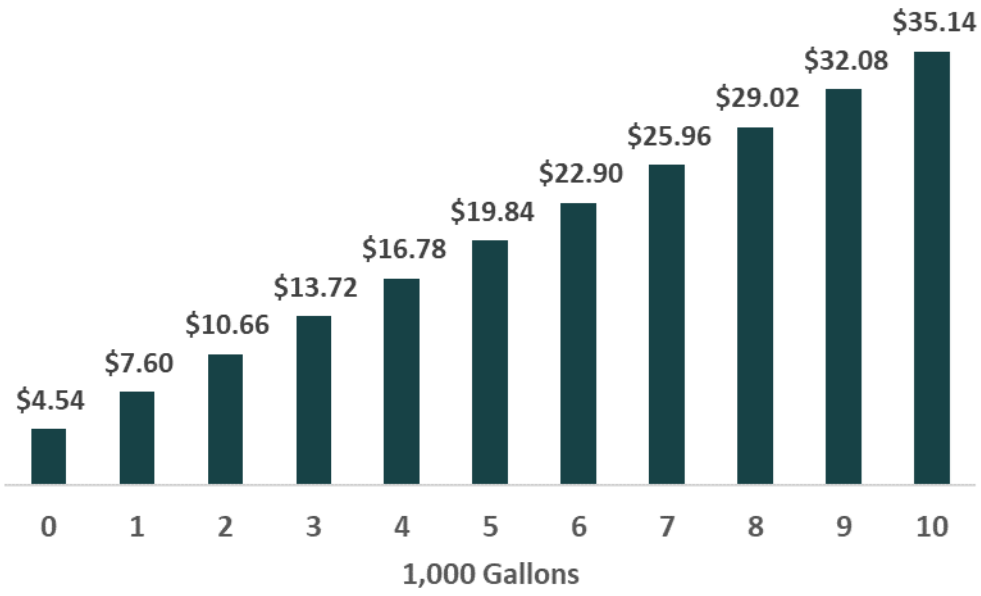



Figure 6.2: Combined Bill Impacts (5/8" Meter, 1/5 acre or less)