

DRAFT WATER AND SEWER RATE STUDY

B&V PROJECT NO. 197743.0100

PREPARED FOR



**City of
Santa Clara**
The Center of What's Possible

JUNE 23, 2020

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Acronyms

ADD	Average Daily Demand
AWWA	American Water Works Association
Black & Veatch	Black & Veatch Management Consulting LLC
BOD	Biological Oxygen Demand
CIP	Capital Improvement Program
City	City of Santa Clara
CIS	Customer Information System
EDU	Equivalent Dwelling Unit
FY	Fiscal Year (July 1 to June 30)
gpcd	gallons per capita per day
HCF	Hundred Cubic Feet
M	Million
M1	Principles of Water Rates, Fees, and Charges
Max Day	Maximum Day
Max Hour	Maximum Hour
NH3	Ammonia
O&M	Operation and Maintenance
SBx7-7	Senate Bill X7-7 (State of California in the Water Conservation Act of 2009)
SCVWD	Santa Clara Valley Water District
SJSCRWF	San Jose-Santa Clara Regional Wastewater Facility
SFPUC	San Francisco Public Utilities Commission
Study	Water and Sewer Rate Study
TSS	Total Suspended Solids
TY	Test Year
WEF	Water Environment Federation

1 Executive Summary

The City of Santa Clara (“City”) commissioned Black & Veatch Management Consulting, LLC (“Black & Veatch”) to perform an update of the Water and Sewer Rate Study (“Study”) for its Water, Recycled Water and Sewer Utilities. Like the original Study, it included the development of a ten-year financial plan, a cost of service analysis and the design of rates. The specific objectives of the Study were to:

- Evaluate the adequacy of projected revenues under existing rates to meet projected revenue requirements;
- Develop sound financial plans for the utilities covering a ten-year Study period for both ongoing operations and planned capital improvements;
- Allocate the utilities’ projected revenue requirements to the various customer classes in accordance with the respective service requirements; and
- Develop a suitable rate schedule that produces revenues adequate to meet financial needs while recognizing customer costs of service and regulatory considerations such as Proposition 218 and applicable judicial decisions.

1.1 WATER SYSTEM

The City’s Water Utility provides water services to approximately 26,000 residential, commercial, irrigation, schools, and agricultural customers. The City obtains potable water from three primary sources: local groundwater, surface water from the Santa Clara Valley Water District (“SCVWD”) and imported water from the Hetch Hetchy watershed via the San Francisco Public Utilities Commission (“SFPUC”). The City’s distribution system consists of 335 miles of distribution mains, 7 storage tanks totaling 28.8 million gallons of storage capacity, 26 wells, and 4 booster pump stations. The City has a target of obtaining 68% of the 5.8 billion gallons of water that flows to its customers each year from the City’s wells.

1.2 RECYCLED WATER SYSTEM

The City’s Recycled Water Utility provides recycled water services to approximately 280 commercial, irrigation, and industrial customers. The City obtains recycled water from South Bay Water Recycling. The recycled water system has been in operation since 1989. There are 33-miles of recycled water pipelines situated within City limits. Recycled water comes from the San Jose-Santa Clara Regional Wastewater Facility (“SJSCRWF”), an advanced tertiary treatment facility located in San Jose, of which the City is a co-owner. A portion of the recycled water from the SJSCRWF supplies the District’s Silicon Valley Advanced Water Purification Center for advanced treatment (microfiltration, reverse osmosis, and advanced oxidation) to create a mix of high-quality recycled water that is blended back into the recycled water system.

1.3 SEWER SYSTEM

The City’s Sewer Utility provides sewer services to approximately 26,000 residential, commercial, industrial, and municipal customers. Services include the construction and maintenance of the City’s sewer system and installation of sewer lateral clean-outs at the property line. Sanitary sewer flows in the City are collected and transported through more than 270 miles of sewer main by way of six pumping stations to

the San Jose/Santa Clara Regional Wastewater Facility. The SJSCRWF can treat 167 million gallons a day of liquid waste. The plant also treats waste from other cities in Santa Clara County.

1.4 FINANCIAL PLAN

The City operates the utilities as self-supporting enterprises. As such, the utilities must develop financial plans which provide enough levels of revenue to meet all operation and maintenance expenses, water purchases, wastewater treatment, debt service requirements, capital improvements funded from current revenues, and other expenditures.

The Study develops financial plans that project operating revenue, expenses, and capital financing costs for the utilities over a ten-year planning period beginning July 1, 2020 and ending June 30, 2030. This report will focus on a three-year planning period beginning July 1, 2020 and ending June 30, 2023, for discussion. The full ten-year financial plans can be found in Appendix A.

The financial plans project future rate revenues under existing rates, operations and maintenance (“O&M”) expenses, principal and interest expense on debt, transfers, and capital improvement program (“CIP”) requirements. In the projection of rate revenues, annual projections of customers and water consumption rely upon City estimates based on a continual reasonable increase from historical low demands experienced in 2016 due to state-mandated drought restrictions. In addition, the Water Utility’s forecast incorporates efforts to continue to meet the conservation goals as established by the State Senate Bill 7x-7 (“SB7x-7”) and the City’s Water Shortage Contingency Plan was incorporated. SB7x-7 requires urban retail water suppliers to achieve a 20% reduction in urban per capita water use on or before December 31, 2020. The City’s target is 186 gallons per capita per day (“gpcd”).

In addition, in 2017 the City approved continuation of Stage 1 of the Water Shortage Contingency Plan and amended the City’s Water Use Rules and Regulations calling for an ongoing voluntary 10% reduction based on 2013 water usage. The City’s 2019 gpcd was 123, well ahead of the City’s target of 186 gpcd. Even with growth projections, the Water Utility will remain under the conservation levels set forth by SB7x-7.

1.4.1 Water Utility

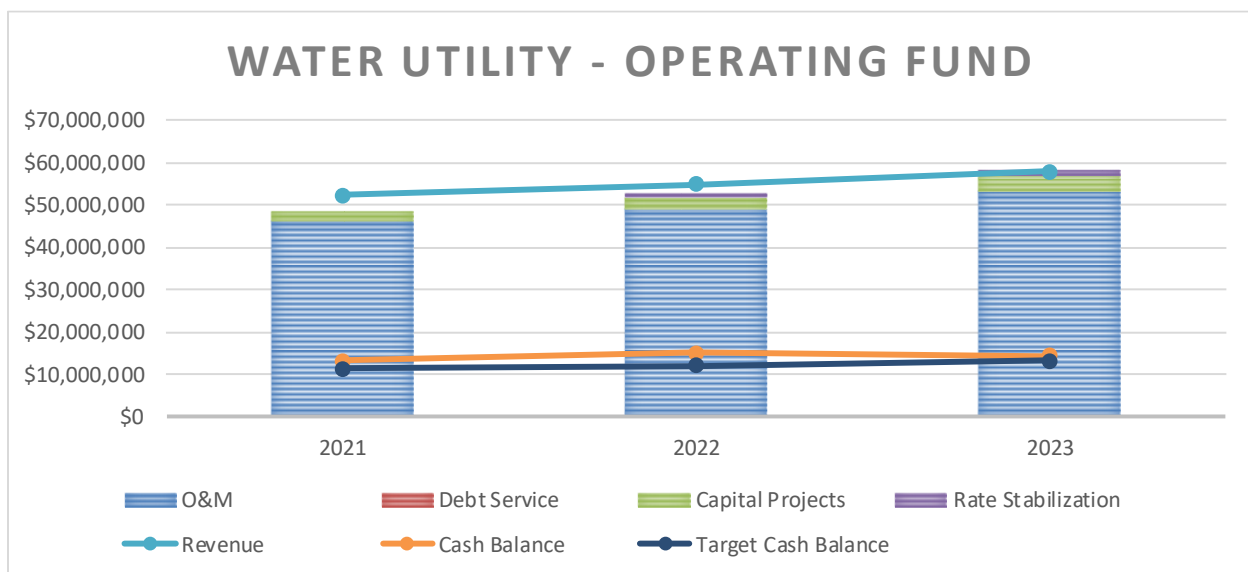
The Water Utility’s revenue requirements are summarized below:

- **Operation and Maintenance Expenses:** The Water Utility anticipates O&M expenses to increase from \$46.1M in FY 2021 to \$53.4M in FY 2023. Water production and water purchases account for most of this increase, representing on average 62% of O&M expenses.
- **Debt Service:** The Water Utility has no existing debt service and no future debt is planned.
- **Capital Improvements:** The Water Utility plans to execute an average of \$5.6M per year in capital projects from FY 2021 to FY 2023.
- **Reserves:** The Water Utility plans to continue funding the operating fund reserve, construction fund reserve, rate stabilization fund reserve and the pension stabilization reserve.
 - The operating fund reserve is to help cover fluctuations in day-to-day expenses. The scheduled target is 90 days of O&M expenses.

- The construction fund reserve is to help maintain enough funds on hand to help mitigate unexpected capital costs. The scheduled target is 12-months of the following year's CIP.
- The rate stabilization fund reserve is to help mitigate future increases in drought-stricken years. The scheduled target is 10% of the prior year's rate revenues.
- The pension fund reserve is to pay for the unfunded pension liabilities and the increase in the City's share of pension costs due to factors such as higher CalPERS rates and negotiated pay increases

To meet the projected revenue requirements, the Water Utility is proposing revenue adjustments which would allow the Water Utility to operate the enterprise on a revenue-neutral basis as shown in Figure 1-1.

Figure 1-1 Water Operating Cash Flow



1.4.2 Recycled Water Utility

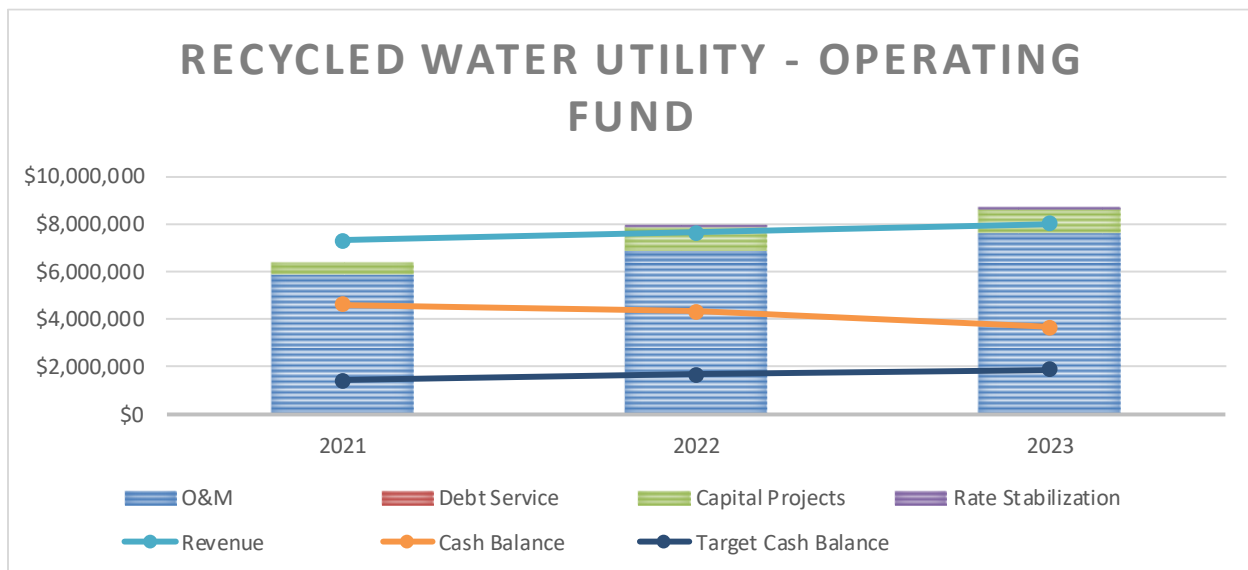
The Recycled Water Utility's revenue requirements are summarized below:

- **Operation and Maintenance Expenses:** The Recycled Water Utility anticipates O&M expenses to increase from \$5.9M in FY 2021 to \$7.6M in FY 2023. Recycled water purchase costs constitute most of the increase on average 85% of O&M expenses.
- **Debt Service:** The Recycled Water Utility has no existing debt service and no future debt is planned.
- **Capital Improvements:** The Recycled Water Utility plans to execute an average \$0.9M per year in capital projects from FY 2021 to FY 2023.
- **Reserves:** The City plans to continue funding the operating fund reserve, construction fund reserve, rate stabilization fund reserve and the pension stabilization reserve.
 - The operating fund reserve is to help cover fluctuations in day-to-day expenses. The scheduled target is 90 days of O&M expenses.

- The construction fund reserve is to help maintain enough funds on hand to help mitigate unexpected capital costs. The scheduled target is 12-months of the following year's CIP.
- The rate stabilization fund reserve is to help mitigate future increases in drought-stricken years. The scheduled target is 10% of the prior year's rate revenues.
- The pension fund reserve is to pay for the unfunded pension liabilities and the increase in the City's share of pension costs due to factors such as higher CalPERS rates and negotiated pay increases

To meet the projected revenue requirements, the Recycled Water Utility is proposing revenue adjustments which would allow the utility to operate the enterprise on a revenue-neutral basis as shown in Figure 1-2.

Figure 1-2 Recycled Water Operating Cash Flow



1.4.3 Sewer Utility

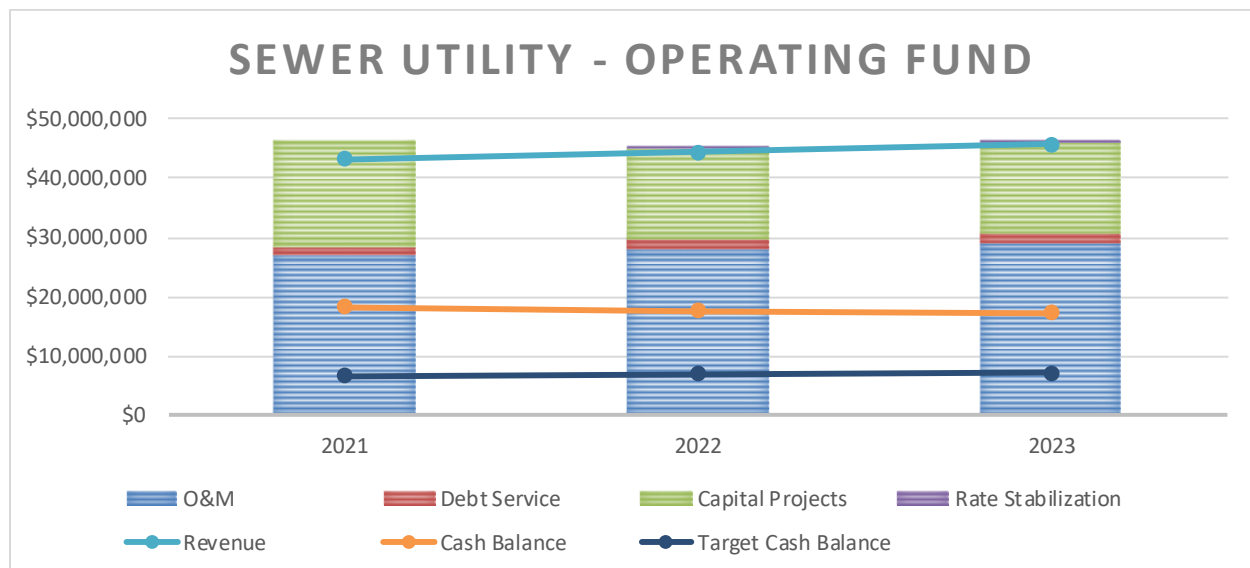
The Sewer Utility's revenue requirements are summarized below:

- **Operation and Maintenance Expenses:** The Sewer Utility anticipates O&M expenses to increase from \$26.8M in FY 2021 to \$28.9M in FY 2023. SJSCRWF-related costs represent 66% of O&M expenses.
- **Debt Service:** The Sewer Utility anticipates an average debt service payment of \$1.7M per year from FY 2020 to FY 2023 associated with existing and proposed debt issuances. The City anticipates a net issuance of \$20.0M in FY 2020, \$15.0M in FY 2021, \$15.0M in FY 2022 and \$13.0M in FY 2023.
- **Capital Improvements:** The Sewer Utility plans to execute an average \$35.8M per year in capital projects from FY 2021 to FY 2023.
- **Reserves:** The Sewer Utility plans to continue funding the operating fund reserve, construction fund reserve, rate stabilization fund reserve and the pension stabilization reserve.
 - The operating fund reserve is to help cover fluctuations in day-to-day expenses. The scheduled target is 90 days of O&M expenses.

- The construction fund reserve is to help maintain enough funds on hand to help mitigate unexpected capital costs. The scheduled target is 12-months of the following year's City CIP and 6-months of the following year's SJSCRWF CIP.
- The rate stabilization fund reserve is to help mitigate future increases in drought-stricken years. The scheduled target is 10% of the prior year's rate revenues.
- The pension fund reserve is to pay for the unfunded pension liabilities and the increase in the City's share of pension costs due to factors such as higher CalPERS rates and negotiated pay increases

To meet the projected revenue requirements, the Sewer Utility is proposing revenue adjustments which would allow the Sewer Utility to operate the enterprise on a revenue-neutral basis as shown in Figure 1-3.

Figure 1-3 Sewer Operating Cash Flow



1.5 ADEQUACY OF EXISTING RATES TO MEET COSTS OF SERVICE

Based on the financial plans, Black & Veatch recommends the revenue adjustments shown in Table 1-1 to meet the projected revenue requirements for the FY 2021 to FY 2023. These do not represent proposed rate increases to customers; rather these represent the overall revenue increases needed by the utilities to meet their overall obligations and to maintain current service levels.

Table 1-1 Proposed Revenue Adjustment

Fiscal Year	Effective Month	Water Utility	Recycled Water	Sewer Utility
FY 2021	July	3.30%	4.00%	2.50%
FY 2022	July	3.30%	3.00%	2.50%
FY 2023	July	3.30%	3.00%	2.50%

1.6 COST-OF-SERVICE ANALYSIS

The cost-of-service analysis allocates the costs to the various customer classes of service in a fair and equitable manner. The methodologies used in the Study are specific to the respective utility operations. The following is a brief description of the methodologies.

The water cost-of-service allocation performed in this Study uses the Base-Extra Capacity Method endorsed by the American Water Works Association (“AWWA”) *Principles of Water Rates, Fees, and Charges*, M1 (“M1”) manual. Under cost-of-service principles, costs are allocated to the different customer classes in proportion to their use of the water system. As recommended by AWWA, Black & Veatch distributed functional costs to the base (average load conditions), extra capacity (peaking) and customer-related parameters. This allocation methodology produces unit costs for allocation to individual customer classes based on the projected customer service requirements.

The sewer cost-of-service allocation performed in this Study follows the Functional Cost Allocation Method endorsed by the Water Environment Federation (“WEF”) *Financing and Charges for Wastewater Systems, Manual of Practice 27* manual. Like the methodology used for water systems, the sewer cost of service analysis allocates costs to the different customer classes in proportion to their use of the sewer system. As recommended by WEF, Black & Veatch distributed functional costs to volume, strength and customer-related parameters. This allocation methodology produces unit costs for allocation to individual customer classes based on the projected customer service requirements.

1.7 RATE DESIGN

Through the cost-of-service analysis, the allocation of costs to customer classes must meet Proposition 218 requirements. The Right to Vote on Taxes Act, also known as Proposition 218, was passed by California voters in 1996 and added Article XIIC and Article XIID to the California Constitution. These articles provide the regulatory framework that guides and informs the rate-setting process. The regulatory framework helps ensure cost recovery proportionate to the cost of providing the service.

1.7.1 Water and Recycled Water Utilities

To minimize impacts, retain simplicity, and ensure the reasonable stability of revenue, Black & Veatch recommends the following rate structure.

- **Monthly Service Charge:** The Water and Recycled Water Utilities should retain the minimum monthly service charge based on meter sizes for all customer classes. The minimum monthly service charge includes a minimum consumption allowance and recovers portions of fixed cost elements such as operating and capital components, meter maintenance and services, meter reading, issuing bills, and maintenance and capacity costs associated with public fire protection. The minimum consumption allowance accommodates water considered essential for health and safety.
- **Consumption Charge:** The Water Utility should maintain the uniform consumption charge for all customers and the Recycled Water Utility should now have uniform consumption charge for all customer classes. The consumption charge recovers costs associated with the base and extra capacity demands.

- **Fire Service Charge:** The Water Utility should continue to utilize the fire service charge based on meter size for private fire service connections. The fire service charge will recover costs of maintenance and capacity costs associated with private fire protection costs.
- **Cross Connection Charge:** The Water Utility should continue to utilize the cross-connection charge based on meter size for backflow connections. The cross-connection charge will recover costs of maintenance associated with backflow devices.

Table 1-2 summarizes the recommended three-year rate schedules for all Water Utility components.

Table 1-2 Proposed Three-Year Water Rate Schedules

Customer Class	Proposed		
	FY 2021	FY 2022	FY 2023
	\$/mo	\$/mo	\$/mo
Minimum Monthly Meter Rates (\$/Month)			
5/8" x 3/4"	18.90	19.71	20.64
1"	29.36	30.67	32.27
1-1/2"	55.51	58.08	61.34
2"	86.89	90.96	96.21
3"	170.57	178.66	189.22
4"	264.71	277.32	293.86
6"	526.21	551.36	584.52
8"	840.01	880.22	933.31
10"	1,258.41	1,318.69	1,398.36
12"	1,768.34	1,853.09	1,965.15
Fire Service (\$/Month)			
2"	2.69	2.75	2.78
4"	15.22	15.57	15.78
6"	44.77	45.80	46.41
8"	95.37	97.56	98.84
10"	171.48	175.43	177.73
12"	277.15	283.52	287.25
Cross Connection (\$/Month)			
1"	7.88	8.06	7.93
2"	12.60	12.89	12.68
3"	25.20	25.78	25.36
4"	39.38	40.28	39.63
6"	78.75	80.56	79.26
8"	126.00	128.89	126.82
10"	189.00	193.34	190.23
Consumption Charges (\$/HCF)			
Water Utility			
General Customer	6.43	6.64	6.87

Table 1-3 summarizes the recommended three-year rate schedules for all Recycled Water Utility components.

Table 1-3 Proposed Three-Year Recycled Water Rate Schedules

Customer Class	Proposed		
	FY 2021	FY 2022	FY 2023
	\$/mo	\$/mo	\$/mo
Minimum Monthly Meter Rates (\$/Month)			
5/8" x 3/4"	18.90	19.71	20.64
1"	29.36	30.67	32.27
1-1/2"	55.51	58.08	61.34
2"	86.89	90.96	96.21
3"	170.57	178.66	189.22
4"	264.71	277.32	293.86
6"	526.21	551.36	584.52
8"	840.01	880.22	933.31
10"	1,258.41	1,318.69	1,398.36
12"	1,768.34	1,853.09	1,965.15
Consumption Charges (\$/HCF)			
Recycled Water Utility			
General Customers	3.74	3.85	3.97

1.7.2 Sewer Utility

To minimize impacts, retain simplicity, and ensure the reasonable stability of revenue, Black & Veatch recommends the following rate structure.

- **Monthly Service Charge:** The Sewer Utility should retain the monthly service charge based on equivalent dwelling units ("EDU") for all residential customer classes. In addition, the monthly service charge serves as the base amount, or minimum, for all non-residential customer classes.
- **Consumption Charge:** The Sewer Utility should retain its uniform consumption charges for each individual non-residential customer classes. The recommended rate structure should be based on customer class.
- **Major Commercial and Industrial Users:** The Sewer Utility should retain the major commercial and industrial user charge for customers with high discharge quantities and/or high strength loadings.

Table 1-4 summarizes the recommended three-year rate schedules for all Sewer Utility components.

Table 1-4 Proposed Three-Year Sewer Rate Schedules

Line No.	Customer Class	Proposed		
		FY 2021	FY 2022	FY 2023
	Monthly Service Charge (\$/EDU)	\$/mo	\$/mo	\$/mo
1	Single Family	44.53	45.82	47.12
2	Multi-Family	44.53	45.82	47.12
	Minimum Bill Charge (\$/Month)	\$/mo	\$/mo	\$/mo
3	All Customers	44.53	45.82	47.12
	Commodity Charge (\$/HCF)	\$/HCF	\$/HCF	\$/HCF
1	Amusement Parks	5.79	5.93	6.03
2	Auto Dealers & Service Station	6.10	6.24	6.36
3	Churches	5.00	5.11	5.19
4	Com/Ind/Misc	5.29	5.42	5.50
5	Electric & Electronic Equip.	5.02	5.17	5.23
6	Food and Kindred Products	14.45	14.51	15.00
7	Hospitals & Convalescent Homes	6.55	6.68	6.81
8	Industrial Chemical	9.60	9.81	10.07
9	Industrial Water Treatment	3.62	3.62	3.62
10	Laundries	5.76	5.90	5.99
11	Machinery Manufacturers	7.52	7.69	7.87
12	Metal Plating	3.31	3.39	3.39
13	Motels & Hotels	7.04	7.15	7.30
14	Paper	11.05	11.05	11.05
15	Repair Shops & Car Washes	4.64	4.76	4.83
16	Restaurants	15.09	15.11	15.64
17	Schools & Colleges	5.62	5.77	5.88
	Major Commercial and Industrial Users			
	Operating and Maintenance Cost Recovery			
1	Volume (per MG)	2,667.35	2,997.95	3,255.63
2	BOD [2] (per 1,000 lbs)	425.59	488.98	535.93
3	SS [3] (per 1,000 lbs)	578.32	642.10	693.20
4	NH3 [4] (per 1,000 lbs)	4,902.37	5,415.25	5,830.98
	Annual Capital Cost Recovery			
5	Volume (per MGD)	1,087,067	1,037,611	983,440
6	BOD [2] (per 1,000 lbs/day)	121,093	155,878	175,138
7	SS [3] (per 1,000 lbs/day)	54,616	55,839	57,007
8	NH3 [4] (per 1,000 lbs/day)	411,021	483,915	534,849

Water and Recycled Water Rate Study

2 Revenue and Revenue Requirements

To meet the costs associated with providing water services to its customers, the Water and Recycled Water Utilities derive revenue from a variety of sources including water user charges (rates), developer contributions, solar water heating, interest earned from the investment of available funds, engineering fees, and other miscellaneous revenues. Both utilities are constantly looking for other sources of revenue, such as grants, to fund infrastructure investments. Black & Veatch has projected the level of future revenue generated in the Study through a combination of an analysis of historical and future system growth in terms of the number of bills and water consumption. This section also projects the expenses, or revenue requirements, necessary to operate and maintain the system, invest in capital improvements, make debt service payments and cover other expenses of the water and recycled water systems.

2.1 CUSTOMER AND WATER CONSUMPTION PROJECTIONS

2.1.1 Customer Classes

The Water Utility's customer base includes both residential and non-residential accounts. The City has identified the following distinct customer classes: General Customer; Fire Service; and Cross Connection.

The Recycled Water Utility's customers are mainly non-residential. The City identified the following distinct customer classes: General Customer (all customers not identified independently); Industrial Process; Industrial Process (Private Well); and Landscape Irrigation (Private Well).

2.1.2 Minimum Bills

The City provides water services to approximately 26,000 customers and recycled water service to approximately 280 customers. All customers connected to the water and recycled water systems do so via metered-connections. For the most part, the City bills customers based on water consumption, but there are several bills that do not meet the consumption allowance identified by meter size. Therefore, the City refers to these bills as minimum monthly service bills. Since the City bills customers based on minimum bills generated, the analysis included a review of historical bill patterns for customers and anticipated growth within the City. The projected total number of bills are expected to increase by 0.5% per year for the Water Utility and 1.9% year for the Recycled Water Utility over the Study Period.

Table 2-1 summarizes the projected number of minimum bills for the Water and Recycled Water Utilities.

Table 2-1 Minimum Bills

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
		(Bills)	(Bills)	(Bills)
Water Utility				
1	General Customers	44,330	44,552	44,774
2	Total	44,330	44,552	44,774
Recycled Water Utility				
3	General Customers	650	662	675
4	Total	650	662	675

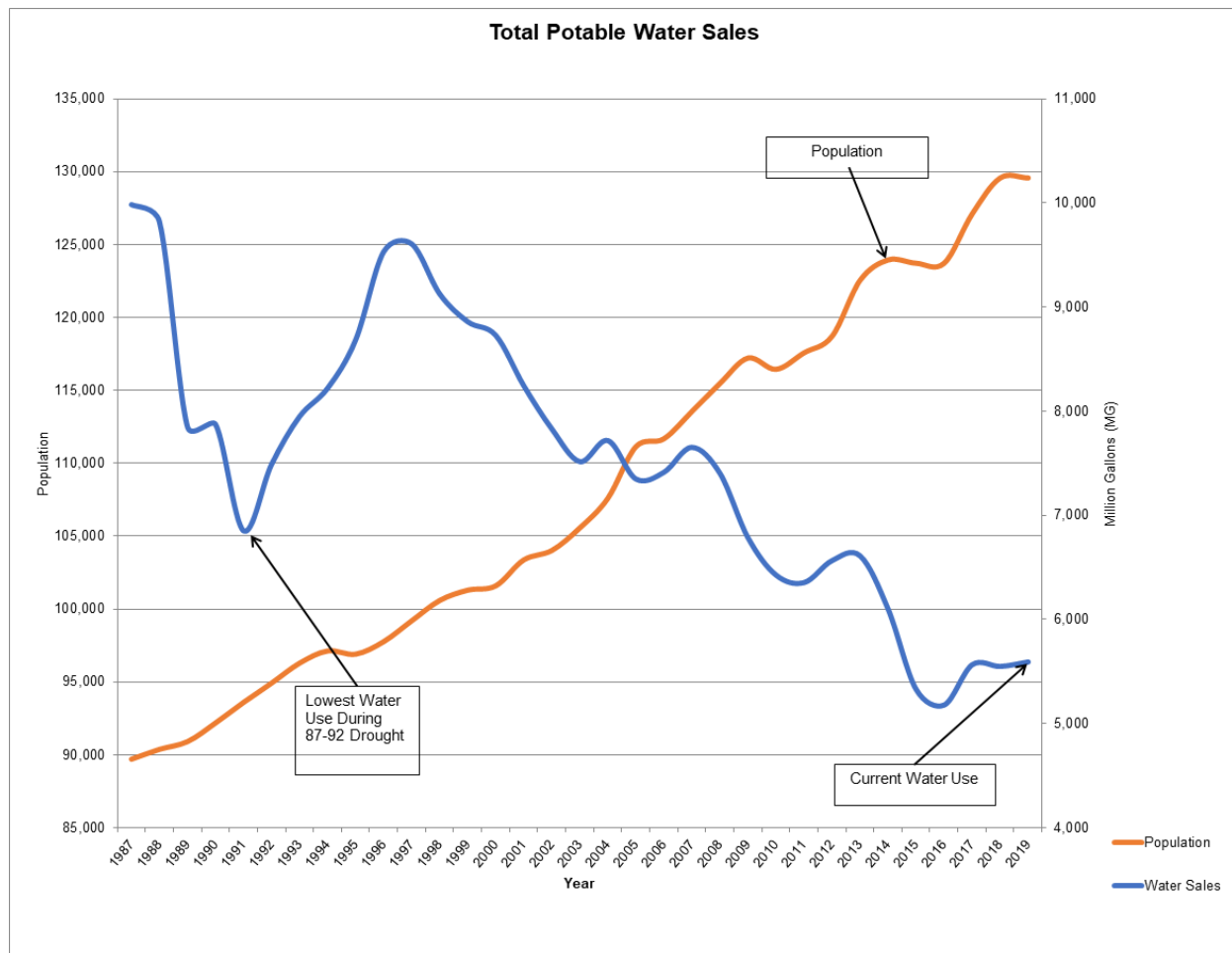
2.1.3 Water Consumption

Table 2-2 shows the projected water and recycled water consumption for the Study Period. In determining the projected water and recycled water consumption, Black & Veatch analyzed historical patterns of water consumption in conjunction with future water conservation requirements set by the City's Water Shortage Contingency Plan and SB 7x-7. In 2017, the State of California formally lifted the water restrictions as it declared the drought over, but still encourages utilities to continue efforts that minimize wasteful usage.

The City's primary conservation goals can be found in the Water Shortage Contingency Plan, and the continuing goal to conserve was codified by Santa Clara's Council in July of 2017. The City offers the WaterSmart Program, a rain barrel and landscape rebate program, and works with the SCVWD on other outreach and rebate programs for water conservation. Expanding the use of recycled water to existing and new customers is important for the City in supplementing the use of potable water. Many factors have contributed to the City's steady decline in consumption. Overall, customers have done well to increase efficiency in the use of water resources.

Figure 2-1 below represents the population growth and a decline in water consumption.

Figure 2-1 Water Sales



Recognizing that the City has met SB 7x-7 requirements and water consumption was at historic lows, the City anticipates a rebound of 2.0% per year for the Water Utility and 2.0% per year for the Recycled Water Utility over the Study Period. The City currently bills water consumption in hundred cubic feet (“HCF”) and only charges for consumption in excess of the allowance.

Table 2-2 Billed Water Consumption

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
		(HCF)	(HCF)	(HCF)
Water Utility				
1	General Customers	7,397,861	7,545,637	7,696,368
2	Total Usage (HCF)	7,397,861	7,545,637	7,696,368
3	Total Usage (AF)	16,983	17,322	17,668
Recycled Water Utility				
4	General Customers	1,802,282	1,838,328	1,875,094
5	Total	1,802,282	1,838,328	1,875,094
6	Total Usage (AF)	4,137	4,220	4,305

2.2 REVENUE UNDER EXISTING RATES

Water and recycled water user rates serve as the primary source of revenue for the Water and Recycled Water Utilities. Therefore, the level of future rate revenue is important in the development of a long-range financial plan. To determine rate revenue, the projected system growth in terms of the number of minimum bills and billed water consumption is multiplied by the applicable rates to determine water and recycled water rate revenue.

Table 2-3 shows the Water and Recycled Water Utilities current schedule of charges. It is important to note that the minimum monthly service charge applies to customers that do not exceed the consumption allowance within the meter sizes. Therefore, the minimum monthly service charge serves as a baseline cost that the City needs to recover.

Table 2-3 Existing Water and Recycled Water Rates

Description	Water Allowance	All City FY 2020
Minimum Monthly Meter Rates		
5/8" x 3/4"	3	18.59
1"	6	28.95
1-1/2"	9	54.83
2"	9	85.89
3"	9	168.72
4"	9	261.90
6"	9	520.73
8"	9	831.34
10"	9	1,245.47
12"	9	1,750.20
Fire Service Charges		
		(\$/mo)
2"		2.59
4"		14.67
6"		43.14
8"		91.89
10"		165.22
12"		267.03
Cross Connection Charges		
		(\$/mo)
1"		7.81
2"		12.50
3"		25.00
4"		39.06
6"		78.13
8"		125.00
10"		187.50

Description	All City FY 2020
Consumption Charges	
Water Utility	(\$/HCF)
General Customers	6.22
Recycled Water Utility	(\$/HCF)
General Customers	3.74
Industrial Process	3.58
Industrial Process (Private Well)	3.08
Landscape Irrigation (Private Well)	3.35

Table 2-4 represents a summary of projected water and recycled water rate revenue under existing rates. As shown, the revenue generated is projected to increase over the Study period in conjunction with the increase in the number of minimum bills and water consumption. The projected Water Utility revenue increases from \$49.4M in FY 2021 to \$51.3M in FY 2023, representing an overall increase of 3.8% over the three-year Study Period. The projected Recycled Water Utility revenue increases from \$6.6M in FY 2021 to \$6.8M in FY 2023, which reflects an overall increase of 4.0% over the three-year Study Period.

Table 2-4 Projected Revenue under Existing Rates

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
		(\$)	(\$)	(\$)
Water Utility				
1	General Customers	47,500,700	48,427,100	49,371,900
2	Fire Service	846,400	846,400	846,400
3	Cross Connection	1,071,500	1,071,500	1,071,500
4	Total	\$ 49,418,600	\$ 50,345,000	\$ 51,289,800
Recycled Water Utility				
5	General Customers	6,553,700	6,684,400	6,818,100
6	Total	\$ 6,553,700	\$ 6,684,400	\$ 6,818,100

2.3 OTHER REVENUE

There are other sources of operating revenue, including charges for hydrant flow tests, meter tests, engineering plan review, water installation and relocation, interest on investments, and other miscellaneous revenues. In total, other operating revenues represent less 2.3% of the Water Utility's total revenue and 6.0% of the Recycled Water Utility's total revenue. The City anticipates that these revenues will remain relatively constant for the duration of the Study Period.

2.4 OPERATING AND MAINTENANCE EXPENSES

Table 2-5 summarizes the Water and Recycled Water Utilities' projected O&M expense for the Study Period. These expenses include costs related to salaries and benefits, materials and supplies, contract and professional services, water supply costs, indirect and direct costs, and routine capital outlay. The City anticipates that all O&M expenditures, excluding water supply costs, will increase on average 3.9% annually for the Water Utility and 4.2% annually for the Recycled Water Utility from the FY 2021.

Water supply costs include water production and purchased water costs. In the case of the Water Utility, the City has three main sources of water: 1) City groundwater pumped from City-owned wells; 2) surface water from the SCVWD and; 3) imported water from the Hetch Hetchy watershed via the SFPUC. The City operates 26 groundwater wells that tap the underground aquifers which make up a targeted amount of approximately 68% of the City's water supply. The City imports the remainder of its water supplies from the two wholesale water agencies. Based on estimates of groundwater and wholesale rates provided by SCCVWD and SFPUC, the City expects water production and purchased water costs to increase by at least 20.9% over the Study period.

In the case of the Recycled Water Utility, the City has one main source of recycled water: The San Jose/Santa Clara Regional Wastewater Facility's South Bay Recycled Water facility. This facility produces highly treated water delivered through separate pipelines. Recycled water is a reliable drought proof source of water that helps offset the use of potable sources, especially in drought-prone years in California. Based on estimates from the facility, the City expects purchased recycled water costs to increase by at least 39.7% over the Study period.

Table 2-5 O&M Expenses

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
		(\$)	(\$)	(\$)
Water Utility				
1	Salaries	5,779,435	6,010,600	6,250,800
2	Benefits	2,943,764	3,061,500	3,183,600
3	Materials/Services/Supplies	2,433,741	2,421,800	2,516,600
4	Interfund Services	7,107,008	7,436,100	7,748,900
5	Resource & Production	27,857,005	30,283,500	33,672,900
6	Capital Outlay	0	0	0
7	Total	\$ 46,120,953	\$ 49,213,500	\$ 53,372,800
Recycled Water Utility				
8	Salaries	390,995	406,700	423,000
9	Benefits	206,495	214,700	223,000
10	Materials/Services/Supplies	40,440	42,100	43,600
11	Interfund Services	343,809	360,000	376,900
12	Resource & Production	4,883,600	5,853,400	6,522,100
13	Capital Outlay	0	0	0
14	Total	\$ 5,865,339	\$ 6,876,900	\$ 7,588,600

As shown in Table 2-5, the Water Utility's O&M expenses increase from \$46.1M in FY 2021 to \$53.4M in FY 2023 while the Recycled Water Utility's O&M expenses increase from \$5.9M in FY 2021 to \$7.6M in FY 2023.

2.5 CAPITAL IMPROVEMENT PROGRAM

The Water and Recycled Water Utilities develop a five-year Capital Improvement Plan on an annual basis to identify water and recycled water system needs including assessments, inspections, maintenance, and rehabilitation and replacement requirements.

Table 2-6 summarizes the Water and Recycled Water Utilities CIP for FY 2021 through FY 2023. The Water Utility is projecting \$16.9M in CIP, and the Recycled Water Utility is projecting \$2.6M in CIP over the Study Period, which includes both capital and replacement projects. For complete details associated with each CIP project, the City has posted the CIP Budget on their website.¹

¹ The City of Santa Clara. Finance Department. < <http://santaclaraca.gov/government/departments/finance> >

Table 2-6 Capital Improvement Projects

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
		(\$)	(\$)	(\$)
Water Utility				
	7054 Distribution System			
1	Replacement/Restoration	1,000,000	2,000,000	2,175,000
2	7057 Asset Management Program	150,000	0	0
3	7058 SCADA Improvements	1,000,000	1,000,000	1,000,000
4	7059 New and Replacement Wells	0	1,100,000	1,000,000
5	7060 Tank Rehabilitation	3,250,000	3,240,900	0
6	Total	\$ 5,400,000	\$ 7,340,900	\$ 4,175,000
Recycled Water Utility				
	7505 Recycled Water System Mains and			
7	Services	500,000	50,000	50,000
	XXXX Recycled Water System Capacity			
8	Projects (TBD)	0	1,000,000	1,000,000
9	Total	\$ 500,000	\$ 1,050,000	\$ 1,050,000

2.5.1 Capital Improvement Financing Plan

The City funds annual expenditures for the CIP from a combination of available funds on hand, connection charges, developer contributions, and revenues derived from user rates. As shown in Table 2-7 and Table 2-8, the average annual CIP expenditure is \$5.6M for the Water Utility and \$0.9M for the Recycled Water Utility. The planned average annual CIP contribution from the Water Utility Operating Fund is \$2.9M per year while the contribution from the Recycled Water Utility is \$0.8M per year over the Study Period.

Table 2-7 Construction Fund Financing Plan (Water)

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
Source of Funds				
1	Intra Transfer In - Debt Financing	0	0	0
2	Intra Transfer In - Customer Service Charge	2,500,000	2,500,000	3,750,000
3	Connection Charges	0	0	0
4	Developer Contributions	0	0	0
5	Total Sources	\$ 2,500,000	\$ 2,500,000	\$ 3,750,000
Use of Funds				
6	Improvements Projects	5,400,000	7,340,900	4,175,000
7	Total Uses	\$ 5,400,000	\$ 7,340,900	\$ 4,175,000
8	Net Annual Cash Balance	(2,900,000)	(4,840,900)	(425,000)
9	Beginning Unrestricted Fund Balance	12,500,900	10,100,900	5,760,000
10	Net Cumulative Fund Balance	\$ 9,600,900	\$ 5,260,000	\$ 5,335,000
11	Minimum Construction Reserves	\$ 7,340,900	\$ 4,175,000	\$ 4,772,900

Table 2-8 Construction Fund Financing Plan (Recycled Water)

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
Source of Funds				
1	Intra Transfer In - Debt Financing	0	0	0
2	Intra Transfer In - Customer Service Charge	500,000	1,000,000	1,000,000
3	Connection Charges	0	0	0
4	Developer Contributions	0	0	0
5	Total Sources	\$ 500,000	\$ 1,000,000	\$ 1,000,000
Use of Funds				
6	Improvements Projects	500,000	1,050,000	1,050,000
7	Total Uses	\$ 500,000	\$ 1,050,000	\$ 1,050,000
8	Net Annual Cash Balance	0	(50,000)	(50,000)
9	Beginning Unrestricted Fund Balance	1,378,500	1,378,500	1,328,500
10	Net Cumulative Fund Balance	\$ 1,378,500	\$ 1,328,500	\$ 1,278,500
11	Minimum Construction Reserves	\$ 1,050,000	\$ 1,050,000	\$ 1,050,000

2.6 TRANSFERS

The Water and Recycled Water Utilities will each conduct two transfers over the Study period from their respective Operating Funds and other funds. The other funds consist of the Rate Stabilization Fund, Pension Stabilization Fund and Construction Fund. See Section 2.7 for further explanation on Rate Stabilization and Pension Stabilization Funds. The Construction Fund transfers represent money to cover planned CIP project expenditures. For all these transfers, they do not represent direct operating expenses for either enterprise, therefore Black & Veatch includes these costs as “below-the-line” cash flow items and does not include them as O&M expenses. Table 2-9, Lines 21 to 24 for the Water Utility and Table 2-10, Lines 16 to 18 for Recycled Water Utility summarize these associated amounts, respectively.

2.7 RESERVES

A utility typically establishes reserves for several reasons such as covering shortfalls in operating revenues, maintaining strong bond ratings, covering day-to-day operating costs, and easing the burden on ratepayers associated with large rate increases. Per the reserve level recommendations, the Water and Recycled Water Utilities will maintain the following four reserves:

- Operating Reserve represents working capital maintained by the Operating Fund to cover day-to-day expenses and maintain enough funds to cover accounts receivables if there are supplier issues, periods of lower than expected water sales, or unforeseen cost increases. The reserve will maintain a minimum balance of 90 days of operating expenses, once fully funded
- Construction Reserve represents funds used for unforeseen and unbudgeted capital costs. Once fully funded, this reserve will maintain a minimum balance of 12-months of the following year’s planned CIP.

- Rate Stabilization Reserve represents funds used to absorb revenue shortfall due to short-term decreases in water sales. The reserve will maintain a minimum balance of 10% of water and recycled water sales revenue when fully funded. This reserve stabilizes water and recycled water rate revenue and is an effort to avoid wide swings in rates charged to customers over time.
- Pension Stabilization Reserve represents funds used to pay for the unfunded pension liabilities and the increase in the City's share of pension costs due to factors such as higher CalPERS rates and negotiated pay increases. The reserve target is \$3.0M for the Water Utility and \$150,000 for the Recycled Water Utility by FY 2030.

Appropriate reserve levels help the Water and Recycled Water Utilities attain and keep better bond ratings, which in turn, leads to lower borrowing costs.

2.8 PROJECTED OPERATING RESULTS

The revenue requirements of the Water and Recycled Water Utilities consist of O&M expenses, debt service, capital expenditures, and reserve requirements.

In order to fully understand the current condition of the Water and Recycled Water Utilities, it was important to examine the cash flow projections under the status quo scenario. In this scenario, the Water and Recycled Water Utilities would not impose any revenue increases over the Study Period and continue to incur O&M expenses, pay for the execution of the planned CIP, and transfer to reserves. As shown in Figure 2-2 and Figure 2-3, the status quo conditions would project that both utilities would operate from an annual deficit position, thus requiring the use of reserves to keep operating.

Figure 2-2 Status Quo Operating Cash Flow (Water)

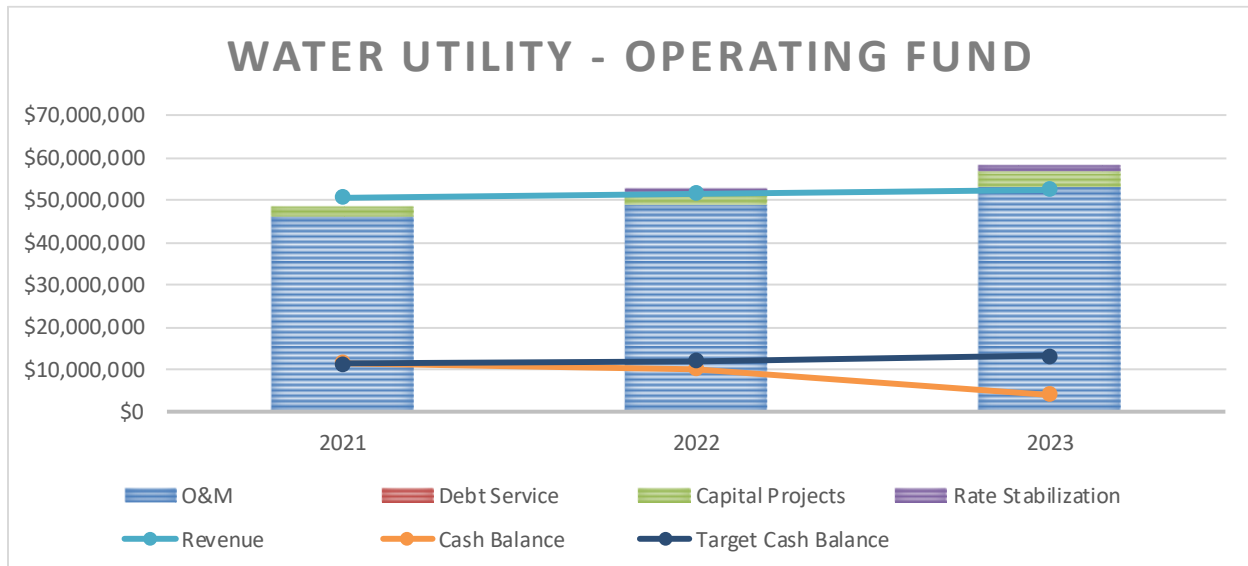
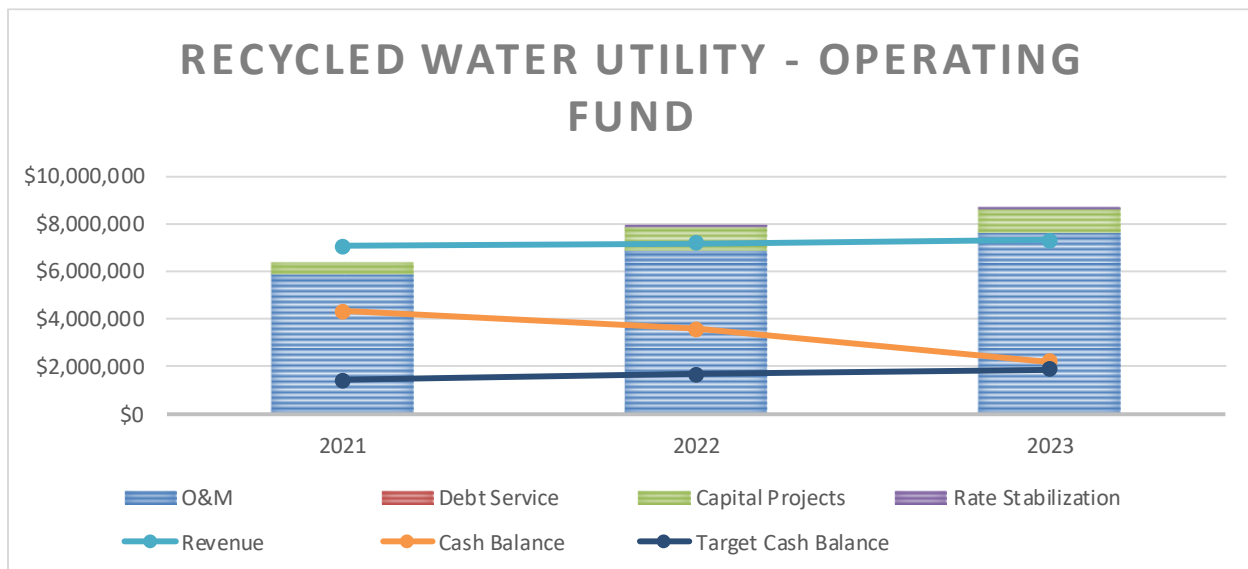


Figure 2-3 Status Quo Operating Cash Flow (Recycled Water)



To help the Water and Recycled Water Utilities maintain healthy positions, it is recommended to implement the revenue increases as shown in Table 2-9 and Table 2-10. The revenue increases represent the overall total revenue adjustment needed to meet revenue requirements. The revenue adjustment does not represent adjustments to the individual rates but reflects the overall level of revenue needed to meet the Water and Recycled Water Utilities' obligations.

The suggested revenue increases help the Water and Recycled Water Utilities meet the following goals:

- Meet budgeted operating obligations in the three FY's.
- Meet planned capital investments in the three FY's.
- Maintain an operating reserve of 90 days of operating expenses.
- Maintain construction reserve of 12-months of next year's CIP.
- Continue transfers for the rate stabilization reserve to meet the goal of 10% of rate revenues.
- Continue transfers for the pension stabilization reserve to meet the FY 2030 goal.

Shown in Table 2-9 and Table 2-10 is a summary of the proposed Operating Funds for the Study Period. The Operating Funds consists of two parts: 1) Revenue and 2) Revenue Requirements.

Revenue

- Line 1 is the revenue under existing rates.
- Lines 2 through 4 is the additional revenue generated from the required annual revenue increases. The additional revenue generated is a direct reflection of the number of months the increase is effective for, and therefore amount might calculate at less than that stated amount.
- Line 6 is the total revenue generated from user charges.

- Line 14 for the Water Utility and Line 9 for the Recycled Water Utility represent other operating revenues.
- Line 15 for the Water Utility and Line 10 for the Recycled Water Utility represent total revenues for the enterprises.

Revenue Requirements

- Line 17 for the Water Utility and Line 12 for the Recycled Water Utility represent O&M expenses. The O&M expenses include water production and water purchase.
- Line 20 for the Water Utility and Line 15 for the Recycled Water Utility represent debt service payments. The City has no debt on the books.
- Line 25 for the Water Utility and Line 19 for the Recycled Water Utility represent transfers. The transfers include money to the Rate Stabilization Fund, Other Fund, Pension Fund and Construction Fund.
- Line 26 for the Water Utility and Line 20 for the Recycled Water Utility represent total revenue requirements for the enterprises.

Line 29 for the Water Utility and Line 23 for the Recycled Water Utility represent the net cumulative cash balance within the Operating Funds. The net cumulative cash balance intends to match, to the extent possible, Line 30 for the Water Utility and Line 24 for the Recycled Water Utility. The reserve target minimum is 90 days of O&M expenses. The cash balance reserve is required to ensure the Operation Fund can continue in the event of a supplier interruption, market price fluctuations of critical equipment or supplies or an abrupt drop in account receivables.

Table 2-9 Operating Fund (Water)

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
		(\$)	(\$)	(\$)
Revenue				
Rate Revenue				
1	Revenue from Existing Rates	49,418,600	50,345,000	51,289,800
	Year Months Effective Rate Adj			
2	FY 2021 12 3.30%	1,630,800	1,661,400	1,692,600
3	FY 2022 12 3.30%		1,716,200	1,748,400
4	FY 2023 12 3.30%			1,806,100
5	Increased Revenue Due to Adjustments	1,630,800	3,377,600	5,247,100
6	Subtotal Rate Revenue	\$ 51,049,400	\$ 53,722,600	\$ 56,536,900
Other Operating Revenue				
7	Solar System Maintenance	75,700	75,700	75,700
8	Water System Maintenance	42,200	42,200	42,200
9	Water Construction	0	0	0
10	Water System Operations	0	0	0
11	Administration Design	1,118,100	1,129,800	1,141,800
12	Water Quality	0	0	0
13	Water Resources	72,400	72,400	72,400
14	Subtotal Other Operating Revenue	\$ 1,308,400	\$ 1,320,100	\$ 1,332,100
15	Total Revenue	\$ 52,357,800	\$ 55,042,700	\$ 57,869,000
Revenue Requirements				
Operating & Maintenance				
16	O&M Expenses	46,121,000	49,213,500	53,372,800
17	Subtotal O&M	\$ 46,121,000	\$ 49,213,500	\$ 53,372,800
Debt Service				
18	Existing Revenue Bonds	0	0	0
19	Proposed Revenue Bonds	0	0	0
20	Total Debt Service	\$ -	\$ -	\$ -
Transfers				
21	Transfer to Rate Stabilization Fund	0	1,200,000	1,250,000
22	Transfer to Other Fund	1,151,800	0	0
23	Transfer to Pension Stabilization Fund	199,400	199,400	199,400
24	Transfer to Water Construction Fund	2,500,000	2,500,000	3,750,000
25	Total Transfers	\$ 3,851,200	\$ 3,899,400	\$ 5,199,400
26	Total Revenue Requirements	\$ 49,972,200	\$ 53,112,900	\$ 58,572,200
27	Net Annual Cash Balance	2,385,600	1,929,800	(703,200)
28	Beginning Fund Balance	10,752,200	13,137,800	15,067,600
29	Net Cumulative Fund Balance	\$ 13,137,800	\$ 15,067,600	\$ 14,364,400
30	Minimum Operating Reserves (90 Days)	\$ 11,372,300	\$ 12,134,800	\$ 13,160,400

Table 2-10 Operating Fund (Recycled Water)

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
		(\$)	(\$)	(\$)
Revenue				
Rate Revenue				
1	Revenue from Existing Rates	6,553,700	6,684,400	6,818,100
	Year Months Effective Rate Adj			
2	FY 2021 12 4.00%	262,100	267,400	272,700
3	FY 2022 12 3.00%		208,600	212,700
4	FY 2023 12 3.00%			219,100
5	Increased Revenue Due to Adjustments	262,100	476,000	704,500
6	Subtotal Rate Revenue	\$ 6,815,800	\$ 7,160,400	\$ 7,522,600
Other Operating Revenue				
7	System Maintenance	87,600	89,300	91,100
8	South Bay Water Recycling System Maintena	411,800	411,800	411,800
9	Subtotal Other Operating Revenue	\$ 499,400	\$ 501,100	\$ 502,900
10	Total Revenue	\$ 7,315,200	\$ 7,661,500	\$ 8,025,500
Revenue Requirements				
Operating & Maintenance				
11	O&M Expenses	5,865,300	6,876,900	7,588,600
12	Subtotal O&M	5,865,300	6,876,900	7,588,600
Debt Service				
13	Existing Revenue Bonds	0	0	0
14	Proposed Revenue Bonds	0	0	0
15	Total Debt Service	0	0	0
Transfers				
16	Transfer to Rate Stabilization Fund	0	70,000	70,000
17	Transfer to Pensiotn Stabilization Fund	9,800	9,800	9,800
18	Transfer to Recycled Water Const Fund	500,000	1,000,000	1,000,000
19	Total Transfers	509,800	1,079,800	1,079,800
20	Total Revenue Requirements	\$ 6,375,100	\$ 7,956,700	\$ 8,668,400
21	Net Annual Cash Balance	940,100	(295,200)	(642,900)
22	Beginning Fund Balance	3,667,400	4,607,500	4,312,300
23	Net Cumulative Fund Balance	\$ 4,607,500	\$ 4,312,300	\$ 3,669,400
24	Minimum Operating Reserves (90 Days)	\$ 1,446,200	\$ 1,695,700	\$ 1,871,200

Figure 2-4 presents the proposed Water Utility Operating Fund, and Figure 2-5 presents the Recycled Water Utility Operating Fund.

Figure 2-4 Water Operating Cash Flow

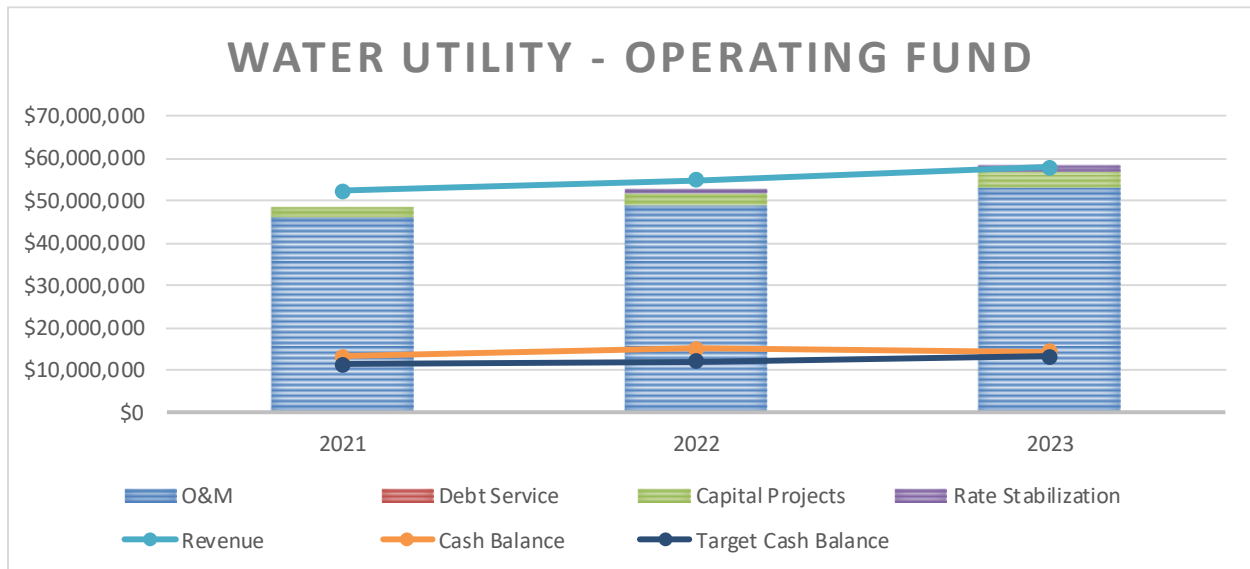
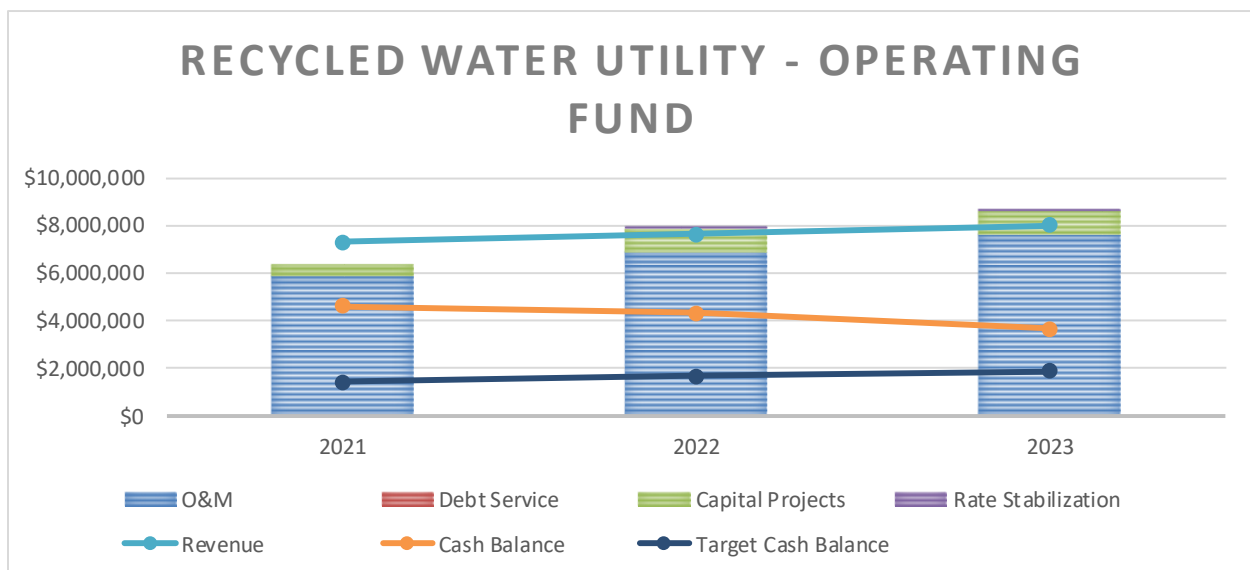


Figure 2-5 Recycled Water Operating Cash Flow



3 Cost of Service Analysis

Cost of Service analysis requires recovery of the City's needed revenues from rates for water and recycled water service, which are allocated to customer classes according to the service rendered. An equitable rate structure allocates the capture of revenue requirements to customer classes based on the quantity of water consumed; peak flows, the number of customer connections and other relevant factors.

In analyzing the Water and Recycled Water Utility cost of service for allocation to its customer classes, Black & Veatch selected the annual revenue requirements for FY 2021 as the Test Year ("TY") requirements to demonstrate the development of cost-of-service water and recycled water rates. Table 3-1 summarizes the total costs of service that needs to be recovered from water user rates, and Table 3-2 summarizes the total costs of service that needs to be recovered from recycled water user rates. Both tables represent TY 2021.

Table 3-1 Cost of Service Revenue from Rates (Water)

Line No.	Description	Operating Expense	Capital Cost	Total Cost
		(\$)	(\$)	(\$)
Revenue Requirements				
1	O&M Expenses	46,121,000	0	46,121,000
2	Debt Service	0	0	0
3	Transfers	1,351,200	2,500,000	3,851,200
4	Subtotal	47,472,200	2,500,000	49,972,200
Less Revenue Requirements Met from Other Sources				
5	Solar System Maintenance	75,700	0	75,700
6	Water System Maintenance	42,200	0	42,200
7	Water Construction	0	0	0
8	Water System Operations	0	0	0
9	Administration Design	1,118,100	0	1,118,100
10	Water Quality	0	0	0
11	Water Resources	72,400	0	72,400
12	Subtotal	1,308,400	0	1,308,400
Adjustments				
13	Adjustment for Annual Cash Balance	(2,385,600)	0	(2,385,600)
14	Adjustment to Annualize Rate Increase	0	0	0
15	Subtotal	(2,385,600)	0	(2,385,600)
16	Cost of Service to be Recovered from Rates	\$ 48,549,400	\$ 2,500,000	\$ 51,049,400

Table 3-2 Cost of Service Revenue from Rates (Recycled Water)

Line No.	Description	Operating Expense (\$)	Capital Cost (\$)	Total Cost (\$)
Revenue Requirements				
1	O&M Expenses	5,865,300	0	5,865,300
2	Debt Service	0	0	0
3	Transfers	9,800	500,000	509,800
4	Subtotal	5,875,100	500,000	6,375,100
Less Revenue Requirements Met from Other Sources				
5	System Maintenance	87,600	0	87,600
6	South Bay Water Recycling System Maintenance	411,800	0	411,800
7	Subtotal	499,400	0	499,400
Adjustments				
8	Adjustment for Annual Cash Balance	(940,100)	0	(940,100)
9	Adjustment to Annualize Rate Increase	0	0	0
10	Subtotal	(940,100)	0	(940,100)
11	Cost of Service to be Recovered from Rates	\$ 6,315,800	\$ 500,000	\$ 6,815,800

Shown in Line 4 is the total revenue requirement that corresponds with Table 2-9, Line 24 and Table 2-10, Line 19. To derive the net revenue requirement recovered via rates, it is necessary to deduct revenues from other sources as shown in Line 12 for the Water Utility and Line 7 for the Recycled Water Utility.

Line 13 for the Water Utility and Line 8 for the Recycled Water Utility represent the net annual cash balance during the TY. If the enterprise is drawing down funds already in the Operating Fund, then this number is positive. The number will be negative if the enterprise is replacing funds. In the case of the Water Utility, the \$2.4M figure indicates that the forecast is projecting a positive cash balance for the year. In the case of the Recycled Water Utility, the \$0.9M figure indicates that the forecast is projecting a positive cash balance for the year.

Since the City expects to implement the revenue adjustment starting in July 2020, the final cost of service recovered from rates does not require an adjustment. Therefore, Line 14 for the Water Utility and Line 9 for the Recycled Water Utility represents almost no additional revenues generated. The minimal amount represented is due to rounding in the Operating Fund.

3.1 FUNCTIONAL COST COMPONENTS

The first step in conducting a cost-of-service analysis involves analyzing the cost of providing water and recycled water service by system function to properly allocate the costs to the various customer classes and subsequently design rates. As a basis for allocating costs of service among customer classes, the study separates costs into the following four basic functional cost components: (1) "Base"; (2) "Extra Capacity"; (3) "Customer"; and (4) "Direct Assignment," described as follows:

- Base costs represent operating and capital costs of the system associated with service to customers to the extent required under constant or average annual load conditions without the elements necessary to meet water consumption variations or peak demands.
- Extra Capacity costs represent those operating and capital costs incurred in meeting peaking demands. Peaking demands represent water consumption in excess of the average rate of use.
- Customer costs are those expenditures that tend to vary in proportion to the number of customers connected to the system. These include meter reading, billing, collecting and accounting, and maintenance and capital costs associated with meters and services.
- Directly assigned costs are costs specifically identified as those incurred to serve specific customers. These costs include fire protection and cross connections for the Water Utility. The Recycled Water Utility has no direct assigned categories.

3.2 ALLOCATION TO COST COMPONENTS

The next step of the cost-of-service process involves allocating each element of cost to functional cost components based on the parameter or parameters having the most significant influence on the magnitude of that element of cost. O&M expenses are allocated directly to appropriate cost components. A detailed allocation of related capital investment is used as a proxy for allocating capital and replacement costs. The separation of costs into functional components provides a means for distributing such costs to the various classes of customers based on their respective responsibilities for each type of service.

3.2.1 System Base, Max Day, and Max Hour Allocations

The water and recycled water systems consist of various facilities, each designed and operated to fulfill a given function. For the systems to provide adequate service to its customers, it must be capable of meeting not only the annual volume requirements, but also the maximum demand rates placed on the system. Because not all customers and types of customers exert maximum demand at the same time, the capacities of the various facilities must meet the maximum coincidental demand of all classes of customers. Each water and recycled water service facility within the systems has an underlying average demand, exerted by the customers for whom the base cost component applies. For those facilities designed solely to meet average day demand, 100% of the costs go to the base cost component. Extra capacity requirements associated with coincidental demands in excess of average use consist of maximum daily and maximum hourly demand subcomponents.

For volume-related cost allocations, the first step in determining the allocation percentages is to assign system peaking factors. The base element is equal to the average daily demand (“ADD”) and assigned a value of 1.0. Based on the City’s 2002 Water Master Plan, the Water Utility’s maximum day (“max day”) demand is 1.5 times the ADD. Thus, the max day factor is assigned a value of 1.5. The maximum hourly (“max hour”) demand is 1.8 times the ADD. Thus, the max hour factor is assigned a value of 1.8. Black & Veatch used these same peaking factors for the Recycled Water Utility.

The costs associated with facilities required to meet maximum day demand are allocable to base and maximum day extra capacity as follows:

- $\text{Base} = (1.0/1.5) \times 100 = 66.7\%$
- $\text{Max Day} = (1.5 - 1.0)/1.5 \times 100 = 33.3\%$

These calculations indicate that the average or base use requires 66.7% of the capacity of facilities designed and generated to meet maximum day demand and the remaining 33.3% meets maximum day extra capacity requirements.

The costs associated with facilities required to meet maximum hour demand are allocable to base, maximum day extra capacity and maximum hour extra capacity as follows:

- Base = $(1.0/1.8) \times 100 = 55.6\%$
- Max Day = $(1.5 - 1.0)/1.8 \times 100 = 27.7\%$
- Max Hour = $(1.8 - 1.5)/1.8 \times 100 = 16.7\%$

3.2.2 Allocation of Operating and Maintenance Expenses

In the allocation of O&M expenses for Test Year (2021), costs are directly allocated to the cost components to the extent possible. The Water and Recycled Water Utilities book operating costs by functional categories. Therefore, Black & Veatch used the factors noted in Section 3.1 to allocate the operating expenses to the cost components. The study based the allocation of Administration and Transfer cost elements on the average of all other costs. Table 3-3 and Table 3-4 represent the allocation of O&M to the cost components. Next, revenues are subtracted from other sources as shown in Table 3-1 and Table 3-2, Lines 12 and 15 for the Water Utility and the analysis deducts any drawdown of available cash balances and normalizes the rate adjustments for a full year as shown in Lines 7 and 10 for the Recycled Water Utility to determine the net O&M costs for each utility. The direct assignment represents fire protection and cross connections for the Water Utility.

Table 3-3 Allocation of O&M Expenditures (Water)

Line No.	Description	Total Costs	Common to All Customers					Fire Protection	Cross Connection
			Base	Extra Capacity		Customer			
			Base	Max. Day	Max. Hour	Meters	Cust/Bill.		
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Water Utility									
Operating Expenses									
	1532 Solar System Maintenance	280,200	0	0	0	280,200	0	0	0
1	1422 Water System Maintenance								
2	Customer Service	321,300	0	0	0	0	321,300	0	0
3	Backflow Prevention	846,500	0	0	0	0	0	0	846,500
4	All Other	668,200	364,900	185,200	111,400	0	0	6,700	0
	1423 Water Construction	3,732,100	2,038,500	1,034,300	622,000	0	0	37,300	0
5	1424 Water System Operations								
6	Generation & Pumping	951,700	625,700	316,500	0	0	0	9,500	0
7	Customer Billing & Meter Reading	679,700	0	0	0	0	679,700	0	0
8	Meters	243,800	0	0	0	243,800	0	0	0
	Hydrants	1,099,900	0	0	0	0	0	1,099,900	0
9	All Other	5,331,400	2,912,000	1,477,500	888,600	0	0	53,300	0
10	1411 Administration Design	4,173,900	2,858,800	299,900	161,400	522,300	99,600	147,700	84,200
11	1412 Water Quality	302,500	248,100	0	0	51,400	0	3,000	0
12	1413 Water Resources								
	Water Purchase	26,905,300	22,062,300	0	0	4,573,900	0	269,100	0
13	All Other	584,600	479,400	0	0	99,400	0	5,800	0
14	Transfers	1,351,200	925,500	97,100	52,200	169,100	32,200	47,800	27,300
15	Total O&M Expenses	\$ 47,472,300	\$ 32,515,200	\$ 3,410,500	\$ 1,835,600	\$ 5,940,100	\$ 1,132,800	\$ 1,680,100	\$ 958,000
Less Other Revenue									
16	Miscellaneous Revenues	1,308,400	896,200	94,000	50,600	163,700	31,200	46,300	26,400
17	Other Adjustments	(2,385,600)	(1,634,100)	(171,400)	(92,200)	(298,500)	(56,900)	(84,400)	(48,100)
18	Net Operating Expenses	\$ 48,549,500	\$ 33,253,100	\$ 3,487,900	\$ 1,877,200	\$ 6,074,900	\$ 1,158,500	\$ 1,718,200	\$ 979,700

Table 3-4 Allocation of O&M Expenditures (Recycled Water)

Line No.	Description	Total Costs	Common to All Customers				
			Base	Extra Capacity		Customer	
			Base	Max. Day	Max. Hour	Meters	Cust./Bill.
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Recycled Water Utility							
Operating Expenses							
1	1522 System Maintenance						
2	Water Purchase	4,883,600	4,883,600	0	0	0	0
3	Customer Billing & Meter Reading	3,300	0	0	0	0	3,300
4	Meters	348,200	0	0	0	348,200	0
5	All Other	292,500	162,600	81,100	48,800	0	0
6	1525 South Bay Water Recycling System Mai	337,800	225,500	112,300	0	0	0
7	Transfers	9,800	8,800	300	100	600	0
8	Total O&M Expenses	\$ 5,875,200	\$ 5,280,500	\$ 193,700	\$ 48,900	\$ 348,800	\$ 3,300
Less Other Revenue							
9	Miscellaneous Revenues	499,400	448,800	16,500	4,200	29,600	300
10	Other Adjustments	(940,100)	(845,000)	(31,000)	(7,800)	(55,800)	(500)
11	Net Operating Expenses	\$ 6,315,900	\$ 5,676,700	\$ 208,200	\$ 52,500	\$ 375,000	\$ 3,500

3.2.3 Allocation of Capital Investments

In the allocation of capital investment for Test Year (2021), the existing fixed assets (which serve as a proxy for the current capital investments) are allocated directly to cost components to the extent possible. The allocation of costs into the costs components provides a basis for annual investment in water and recycled water system facilities. Table 3-5 and Table 3-6 show the total allocation of existing system investment serving water and recycled water customers. The total net system investment of \$41.8M shown on Line 11 for the Water Utility and \$1.2M in Line 9 for the Recycled Water Utility represents the Test Year original cost less accumulated depreciation of the system in service. The total net system investment reflects the Water and Recycled Water Utilities fixed asset listing ending June 30, 2017. This value represents book value of the assets. Using the distribution of total net system investment across the functional cost components, planned capital costs can then be allocated.

Table 3-5 Allocation of Capital Costs (Water)

Line No.	Description	Total Costs	Common to All Customers					Fire Protection	Cross Connection
			Base	Extra Capacity		Customer			
			Base	Max. Day	Max. Hour	Meters	Cust/Bill.		
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Water Utility									
Plant Assets									
1	Water Production	9,771,900	8,013,000	0	0	1,661,200	0	97,700	0
2	Pumping	1,868,200	1,228,200	621,300	0	0	0	18,700	0
3	Treatment	879,400	578,100	292,500	0	0	0	8,800	0
4	Transmission & Distribution	20,761,500	11,339,900	5,753,700	3,460,300	0	0	207,600	0
5	Meters & Services	6,275,900	0	0	0	6,275,900	0	0	0
6	Fire Hydrants	532,300	0	0	0	0	0	532,300	0
7	General Plant	1,734,900	915,800	288,500	149,700	343,500	0	37,400	0
8	Total Plant Assets	\$ 41,824,100	\$ 22,075,000	\$ 6,956,000	\$ 3,610,000	\$ 8,280,600	\$ 0	\$ 902,500	\$ 0
Less Other Revenue									
9	Miscellaneous Revenues	0	0	0	0	0	0	0	0
10	Other Adjustments	0	0	0	0	0	0	0	0
11	Net Capital Expenses	\$ 41,824,100	\$ 22,075,000	\$ 6,956,000	\$ 3,610,000	\$ 8,280,600	\$ 0	\$ 902,500	\$ 0

Table 3-6 Allocation of Capital Costs (Recycled Water)

Line No.	Description	Total Costs	Common to All Customers				
			Base	Extra Capacity		Customer	
			Base	Max. Day	Max. Hour	Meters	Cust./Bill.
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Recycled Water Utility							
Plant Assets							
1	Water Production	0	0	0	0	0	0
2	Pumping	0	0	0	0	0	0
3	Treatment	0	0	0	0	0	0
4	Transmission & Distribution	1,181,600	657,200	327,500	196,900	0	0
5	Meters	0	0	0	0	0	0
6	Total Plant Assets	\$ 1,181,600	\$ 657,200	\$ 327,500	\$ 196,900	\$ 0	\$ 0
Less Other Revenue							
7	Miscellaneous Revenues	0	0	0	0	0	0
8	Other Adjustments	0	0	0	0	0	0
9	Net Capital Expenses	\$ 1,181,600	\$ 657,200	\$ 327,500	\$ 196,900	\$ 0	\$ 0

3.3 UNITS OF SERVICE

Following the allocation of costs, the total cost responsibility for each customer class is developed using unit costs of service for each cost function and subsequently assigning those costs to the customer classes based on the respective service requirements of each. To properly recognize the cost of service, each customer class receives its share of base, maximum day, peak hour, and customer costs. The number of units of service required by each customer class provides a means for the proportionate distribution of costs previously allocated to respective cost categories.

Table 3-7 summarizes the estimated Test Year (2021) units of service for the various customer classes. Base costs vary with the volume of water consumed and distributed to customer classes on that basis. Extra Capacity costs are those associated with meeting peak demand rates of water use and distributed to customer classes based on the respective class capacity requirements in excess of average rates of use. Black & Veatch followed the capacity factor methodology outlined in Appendix A of the AWWA M1 Manual to derive peak consumption information from the monthly consumption records in the City's Customer Information System ("CIS") which helps provide the basis for estimating maximum day and peak hour ratios. The number of bills for each customer class serves as the basis for distributing customer billing requirements. Customer meter requirements are allocated based on the number of equivalent meters serving each customer class. The estimated number of equivalent meters for each customer class relies on the total number of various sizes of meters serving respective classes and the ratio of the cost of meters for the various sizes to the cost of 5/8 x 3/4-inch meter. The equivalent meter ratios adopted in this analysis are consistent with those established in AWWA M1 Manual. Private fire protection costs allocations use equivalent fire hydrants.

3.4 COST OF SERVICE ALLOCATIONS

To determine the cost of service for each customer class, the study applies the unit costs of service to each customer classes' respective service requirements. The total unit costs of service applied to the respective requirements for each customer class results in the total cost of service for each customer class.

3.4.1 Units Costs of Service

The Test Year (2021) unit cost of service for each functional cost component is simply the total cost divided by the applicable units of service as shown in Table 3-8 and Table 3-10. On Line 4, the total costs represent the cost that rates need to recover shown as demonstrated in Table 3-1, Line 16 for the Water Utility and Table 3-2, Line 11 for the Recycled Water Utility. The net O&M cost includes O&M (which includes water purchase) less revenue from other sources and adjustments. The total capital cost includes debt service payments and transfers to the Construction Fund. Line 6 represents the unit costs for the entire water and recycled water systems regardless of customer classes. After that, the unit costs are used to allocate the costs to the specific customer classes.

3.4.2 Distribution of Costs of Service to Customer Classes

Applying the unit costs to the units for each customer class produces the customer class costs. This process is illustrated in Table 3-9 and Table 3-11, in which unit costs are applied to the customer class units of service for Test Year (2021). The costs attributable to each customer class reflect the functional costs components described in Section 3.1. Each customer class places a burden on the system in different ways and thus the allocation of the units is representative of this burden.

An example of the application of unit costs is shown below for illustrative purposes.

	Base Component
Unit Cost (Table 3-8, Line 6)	\$ 4.67 per HCF
General Customer Consumption (Table 3-9, Line 2)	7,397,861 HCF
Total Allocated Cost	\$ 34,572,500

Please note that the numbers within the tables are rounded, yet the calculations are done based on non-rounded values; therefore, results might vary.

Table 3-7 Units of Service (Water and Recycled Water)

Line No.	Description	Consumption		Factor	Maximum Day		Factor	Maximum Day		Meters	Cust/Bills	Fire Protection	Cross Connection
		Annual	Avg. Day		Total	Extra		Total	Extra				
	Column Reference	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Units of Measure	(HCF)	(HCF/day)		(HCF/day)	(HCF/day)		(HCF/day)	(HCF/day)	(EMs)	(bills)	(EHs)	(EMs)
Water Utility													
1	General Customer	7,397,861	20,268	200%	40,536	20,268	260%	52,697	12,161	44,349	315,131	0	0
2	Subtotal	7,397,861	20,268		40,536	20,268		52,697	12,161	44,349	315,131		
Fire Service													
3	Public Fire	0	0		574	574		4,593	4,019	0	0	3,501	0
4	Private Fire	0	0		268	268		2,145	1,877	0	14,698	1,635	0
5	Subtotal	0	0		842	842		6,738	5,896	0	14,698	5,136	0
Cross Connection													
6	Cross Connection										31,296	0	7,144
7	Subtotal	0	0		0	0		0	0	0	31,296	0	7,144
8	Total Water System	7,397,861	20,268		41,378	21,110		59,435	18,057	44,349	361,125	5,136	7,144
Recycled Water Utility													
9	General Customer	1,802,282	4,938	200%	9,876	4,938	260%	12,838	2,963	2,292	3,160	0	0
10	Subtotal	1,802,282	4,938		9,876	4,938		12,838	2,963	2,292	3,160	0	0

Table 3-8 Units Cost of Service (Water)

Line No.	Description	Total Costs	Common to All Customers					Fire Protection	Cross Connection
			Base	Extra Capacity		Customer			
			Base	Max. Day	Max. Hour	Meters	Cust/Bill.		
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	
Water Utility									
1	Net Operating Expense	48,549,400	33,253,000	3,487,900	1,877,200	6,074,900	1,158,500	1,718,200	979,700
2	Debt Service	0	0	0	0	0	0	0	0
3	Capital Costs	2,500,000	1,319,500	415,800	215,800	495,000	0	53,900	0
4	Total Cost of Service	\$ 51,049,400	\$ 34,572,500	\$ 3,903,700	\$ 2,093,000	\$ 6,569,900	\$ 1,158,500	\$ 1,772,100	\$ 979,700
5	Units of Service (Total)		7,397,861	21,110	18,057	44,349	361,125	5,136	7,144
			HCF	HCF/Day	HCF/Day	Eq. Meters	Bills	Eq. Hydrants	Eq. Meters
6	Cost per Unit		\$ 4.67	\$ 184.92	\$ 115.91	\$ 148.14	\$ 3.21	\$ 345.04	\$ 137.15
			per HCF	per HCF/Day	per HCF/Day	per Eq. Meter	per Bill	per Eq. Hydrant	per Eq. Meter

Table 3-9 Distribution of Costs to Customer Classes (Water)

Line No.	Description	Total Costs	Common to All Customers					Fire Protection	Cross Connection
			Base	Extra Capacity		Customer			
			Base	Max. Day	Max. Hour	Meters	Cust/Bill.		
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	
Water Utility									
General Customer									
1	Units		7,397,861	20,268	12,161	44,349	315,131	0	0
2	Allocation of costs of service	47,310,800	34,572,500	3,747,900	1,409,600	6,569,900	1,010,900	0	0
Public Fire									
3	Units		0	574	4,019	0	0	3,501	0
4	Allocation of costs of service	1,780,100	0	106,200	465,900	0	0	1,208,000	0
Private Fire									
5	Units		0	268	1,877	0	14,698	1,635	0
6	Allocation of costs of service	878,400	0	49,600	217,500	0	47,200	564,100	0
Cross Connection									
7	Units		0	0	0	0	31,296	0	7,144
8	Allocation of costs of service	1,080,100	0	0	0	0	100,400	0	979,700
7	TOTAL COSTS OF SERVICE	\$ 51,049,400	\$ 34,572,500	\$ 3,903,700	\$ 2,093,000	\$ 6,569,900	\$ 1,158,500	\$ 1,772,100	\$ 979,700

Table 3-10 Units Cost of Service (Recycled Water)

Line No.	Description	Total Costs	Common to All Customers				
			Base	Extra Capacity		Customer	
			Base	Max. Day	Max. Hour	Meters	Cust./Bill.
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Recycled Water Utility							
1	Net Operating Expense	6,315,800	5,676,600	208,200	52,500	375,000	3,500
2	Debt Service	0	0	0	0	0	0
3	Capital Costs	500,000	278,100	138,600	83,300	0	0
4	Total Cost of Service	\$ 6,815,800	\$ 5,954,700	\$ 346,800	\$ 135,800	\$ 375,000	\$ 3,500
5	Units of Service (Total)		1,802,282	4,938	2,963	2,292	3,160
			HCF	HCF/Day	HCF/Day	Eq. Meters	Bills
6	Cost per Unit		\$ 3.30	\$ 70.23	\$ 45.84	\$ 163.62	\$ 1.11
			per HCF	per HCF/Day	per HCF/Day	per Eq. Meter	per Bill

Table 3-11 Distribution of Costs to Customer Classes (Recycled Water)

Line No.	Description	Total Costs	Common to All Customers				
			Base	Extra Capacity		Customer	
			Base	Max. Day	Max. Hour	Meters	Cust/Bill.
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Recycled Water Utility							
General Customer							
1	Units		1,802,282	4,938	2,963	2,292	3,160
2	Allocation of costs of service	6,815,800	5,954,700	346,800	135,800	375,000	3,500
3	TOTAL COSTS OF SERVICE	\$ 6,815,800	\$ 5,954,700	\$ 346,800	\$ 135,800	\$ 375,000	\$ 3,500

4 Rate Design

The initial consideration in the derivation of rate schedules for water and recycled water service is the establishment of equitable charges to the customers commensurate with the cost of providing that service. While the cost of service allocations to customer classes should not be construed as literal or exact determinations, they offer a guide to the necessity for, and the extent of, rate adjustments. Practical considerations sometimes modify rate adjustments by considering additional factors such as the extent of bill impacts, existing contracts, and historical local policies and practices.

4.1 EXISTING RATES

The Water and Recycled Water Utilities' existing rates consist of a fixed component in the form of minimum monthly service charge and a variable component in the form of a consumption charge. The minimum monthly service charge is based on meter size and applied when consumption does not exceed the consumption allowance. The consumption charge is based on units of consumption (1 unit = 1 HCF = 748 gallons). The City has separate fixed charges for fire services and cross connections. Table 2-3 presented earlier in this report summarized the existing water and recycled water rates.

4.2 PROPOSED RATES

The cost of service analysis described in preceding sections of this report provides a basis for the design of water and recycled water rates.

4.2.1 Monthly Service Charge

The minimum monthly service charge recovers a portion of the costs associated with wholesale water purchase, meter maintenance and services, meter reading, bill issuance, and maintenance and capacity costs associated with public fire protection regardless of the level of water consumed. Black & Veatch used meter ratios based on maximum operating capacities by meter size as shown in AWWA M1, Table B-1, which recognizes that as meter size increases, so does the capacity. For example, customers with a 4" meter expects to be able to use more water (at a higher flow capacity) than customers with a ¾" meter. Consequently, the City's water system must maintain assets sized accordingly and capable of providing customers the level of service expected from their meter connection when the tap turns on.

The minimum monthly service charge structure will continue to assume an approximate allowance for consumption. The allowance is designed to provide a minimum quantity of water considered to be essential for health and safety under the World Health Organization Technical Note No. 9 guidelines. Based on these recommendations, each person should have access to at least 26.4 gallons per day which results in approximately 3 HCF per month for an average household. Therefore, the recommended minimum monthly service charge structure incorporates the following approximate allowances.

Meter Size	Existing Allowance
	(HCF)
5/8" x 3/4"	3
1"	6
1-1/2"	9
2"	9
3"	9
4"	9
6"	9
8"	9
10"	9
12"	9

The allowances increase by approximate multiples of 3 HCF up till the 1-1/2" meter size based on expected number of residents. The meter sizes between 5/8" and 1-1/2" typically represents residential customers. Residential customers rely on City services for the minimum quantity of water to survive. Therefore the allowance is targeted at the residential customer. Non-residential customers represent commercial businesses with typical meter sizes of 2" and above. These customers typically exceed the allowance and are not dependent on water quantities to survive.

Based on the changes, Table 4-1 demonstrates the cost elements incorporated into the minimum monthly service charge for FY 2021. Table 4-2 shows the three-year fixed service charge rate schedule.

Table 4-1 Costs within the Minimum Monthly Service Charge for FY 2021

Meter Size	Meter & Public Fire Protection				Billing			Total Service Charge
	Mtr Unit Cost	FP Unit Cost	Meter Ratio	Adjusted Unit Cost	Unit Cost	Bill Ratio	Adjusted Unit Cost	
	per EM	per EM		\$	per Bill		\$	\$/Month
5/8" x 3/4"	12.35	3.34	1.00	15.69	3.21	1.00	3.21	18.90
1"	12.35	3.34	1.67	26.15	3.21	1.00	3.21	29.36
1-1/2"	12.35	3.34	3.33	52.30	3.21	1.00	3.21	55.51
2"	12.35	3.34	5.33	83.68	3.21	1.00	3.21	86.89
3"	12.35	3.34	10.67	167.36	3.21	1.00	3.21	170.57
4"	12.35	3.34	16.67	261.50	3.21	1.00	3.21	264.71
6"	12.35	3.34	33.33	523.00	3.21	1.00	3.21	526.21
8"	12.35	3.34	53.33	836.80	3.21	1.00	3.21	840.01
10"	12.35	3.34	80.00	1,255.20	3.21	1.00	3.21	1,258.41
12"	12.35	3.34	112.50	1,765.13	3.21	1.00	3.21	1,768.34

Table 4-2 Proposed Minimum Monthly Service Charge

Customer Class	Proposed		
	FY 2021	FY 2022	FY 2023
	\$/mo	\$/mo	\$/mo
Minimum Monthly Meter Rates (\$/Month)			
5/8" x 3/4"	18.90	19.71	20.64
1"	29.36	30.67	32.27
1-1/2"	55.51	58.08	61.34
2"	86.89	90.96	96.21
3"	170.57	178.66	189.22
4"	264.71	277.32	293.86
6"	526.21	551.36	584.52
8"	840.01	880.22	933.31
10"	1,258.41	1,318.69	1,398.36
12"	1,768.34	1,853.09	1,965.15

4.2.2 Fire Service

The fire service charge includes costs of issuing bills, as well as maintenance and capacity costs associated with private fire protection. The fire service charge increases as pipeline diameter size increases. The Water Utility provides fire service to approximately 1,225 private fire service accounts. These customers have a water line connection to the water system that is specifically for fire protection. To meet fire protection demands, the Water Utility must design, operate, and maintain a water system that can meet peak fire demand requirements. The Water Utility charges these accounts a fire service charge based on the diameter of the line that connects their fire protection system to the water system. Table 4-3 demonstrates the costs incorporated into the fire service charge, and Table 4-4 shows the three-year rate schedule based on unit costs in future years.

Table 4-3 Costs within the Fire Service Charge for FY 2021

Meter Size	Private Fire Protection			Total Service Charge
	Unit Cost	Meter Ratio	Adjusted Unit Cost	
	per EH			\$/Month
2"	44.77	0.06	2.69	2.69
4"	44.77	0.34	15.22	15.22
6"	44.77	1.00	44.77	44.77
8"	44.77	2.13	95.37	95.37
10"	44.77	3.83	171.48	171.48
12"	44.77	6.19	277.15	277.15

Table 4-4 Proposed Fire Service Charge

Customer Class	Proposed		
	FY 2021	FY 2022	FY 2023
	\$/mo	\$/mo	\$/mo
Fire Service (\$/Month)			
2"	2.69	2.75	2.78
4"	15.22	15.57	15.78
6"	44.77	45.80	46.41
8"	95.37	97.56	98.84
10"	171.48	175.43	177.73
12"	277.15	283.52	287.25

4.2.3 Cross Connection

The cross-connection charge includes costs of issuing bills and maintenance and replacement costs associated with backflow devices. The cross-connection charge increases as pipeline diameter size increases. The Water Utility provides backflow services to approximately 2,608 accounts. These customers have a backflow device that prevents possible contaminated water from entering the water system. To ensure that the devices are working properly, the Water Utility maintains and replaces the devices accordingly. The Water Utility charges the accounts a cross connection charge based on the diameter of the line that connects their service to the water system. Table 4-5 demonstrates the costs incorporated into the cross-connection charge, and Table 4-6 shows the three-year rate schedule.

Table 4-5 Costs within the Cross-Connection Charge for FY 2021

Meter Size	Cross Connection			Total Service Charge
	Unit Cost	Meter Ratio	Adjusted Unit Cost	
	per EM			\$/Month
1"	12.60	0.63	7.88	7.88
2"	12.60	1.00	12.60	12.60
3"	12.60	2.00	25.20	25.20
4"	12.60	3.13	39.38	39.38
6"	12.60	6.25	78.75	78.75
8"	12.60	10.00	126.00	126.00
10"	12.60	15.00	189.00	189.00

Table 4-6 Proposed Cross Connection Charge

Customer Class	Proposed		
	FY 2021	FY 2022	FY 2023
	\$/mo	\$/mo	\$/mo
Cross Connection (\$/Month)			
1"	7.88	8.06	7.93
2"	12.60	12.89	12.68
3"	25.20	25.78	25.36
4"	39.38	40.28	39.63
6"	78.75	80.56	79.26
8"	126.00	128.89	126.82
10"	189.00	193.34	190.23

4.2.4 Consumption Charge

This consumption charge is designed to recover costs associated with the base and extra capacity demands. These costs include fixed and variable costs that are incurred by the water and recycled water system while providing the average rate of use and peaking demand use. While most of the costs are fixed in nature such personnel and direct and indirect charges, variable costs represent most of the costs through water production and water purchase. Table 4-7 shows the three-year rate schedule for both the Water and Recycled Water Utilities. For the Recycled Water Utility, the industrial process, industrial process (private well) and landscape irrigation (private well) are now part of general customers.

Table 4-7 Proposed Consumption Charges

Customer Class	Proposed		
	FY 2021	FY 2022	FY 2023
	\$/HCF	\$/HCF	\$/HCF
Consumption Charges (\$/HCF)			
Water Utility			
General Customer	6.43	6.64	6.87
Recycled Water Utility			
General Customers	3.74	3.85	3.97

4.3 TYPICAL MONTHLY COSTS UNDER PROPOSED CHARGES

Table 4-8 and Table 4-9 presents a comparison of typical monthly costs under existing rates and the proposed schedule of water and recycled water user rates derived in this study.

Table 4-8 Typical Monthly Bill (Water)

Customer Class	Typical Monthly Usage	FY 2020 Existing Rates	FY 2021 Proposed Rates
	(HCF)	(\$)	(\$)
Water Utility			
General Customer	0	\$18.59	\$18.90
	3	\$18.59	\$18.90
	5	\$31.10	\$32.16
	10	\$62.20	\$64.32
	12	\$74.64	\$77.19
	20	\$124.40	\$128.64
	30	\$186.60	\$192.97
	40	\$248.80	\$257.29
	50	\$311.00	\$321.61

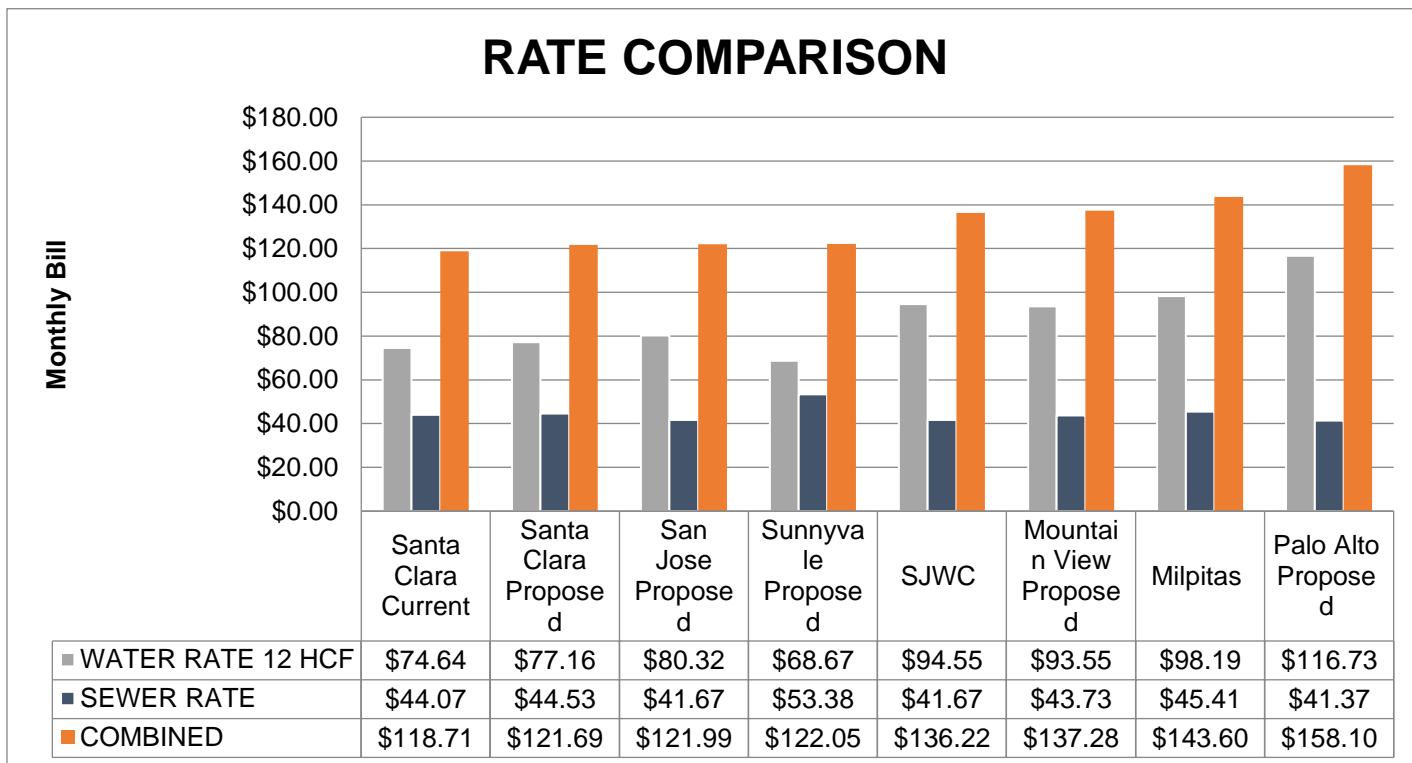
Table 4-9 Typical Monthly Bill (Recycled Water)

Customer Class	Typical Monthly Usage (HCF)	FY 2020 Existing Rates (\$)	FY 2021 Proposed Rates (\$)
Recycled Water Utility			
General Customer	0	\$18.59	\$18.90
	3	\$18.59	\$18.90
	5	\$18.70	\$18.70
	10	\$37.40	\$37.40
	12	\$44.88	\$44.89
	20	\$74.80	\$74.81
	30	\$112.20	\$112.21
	40	\$149.60	\$149.62
	50	\$187.00	\$187.02

4.4 NEIGHBORING WATER UTILITIES

Presented in Figure 4-1 are the proposed rates compared to rates of neighboring cities, for a single-family residential customer with a 5/8" x 3/4" meter consuming 12 units of water. Based on the comparison, the City is currently one of the lowest water providers in the area. With the proposed rate increases, the City remains the lowest water provider of the surveyed communities. All surveyed community rates are current as of May 2020.

Figure 4-1 Comparison to Neighboring Water Utilities



Sewer Rate Study

5 Revenue and Revenue Requirements

To meet the costs associated with providing sewer services to its customers, the Sewer Utility derives revenue from a variety of sources including sewer user charges (rates), outlet charges, conveyance fees, connection charges, interest earned from the investment of available funds, engineering fees, and other miscellaneous revenues. The Sewer Utility is also actively looking for other sources of revenue, such as grants. Black & Veatch has projected the level of future revenue generated in the Study through a combination of an analysis of historical and future system growth in terms of the number of EDUs, bills and billed sewage flow. This section also projects the expenses, or revenue requirements, necessary to operate and maintain the system, invest in capital improvements, make debt service payments and cover other expenses of the sewer system.

5.1 CUSTOMER AND WATER CONSUMPTION PROJECTIONS

5.1.1 Customer Classes

The Sewer Utility's customers include both residential and non-residential customers. The City has the following customer classes:

- Residential: Single-family residential and multi-family residential.
- Non-Residential: Amusement Parks; Auto Dealers & Service Stations; Churches; Electric & Electronic Equipment; Food & Kindred Products; Hospitals & Convalescent Homes; Industrial Chemical; Industrial Water Treatment; Laundries; Machinery Manufacturers; Metal Plating; Motels & Hotels; Paper; Repair Shops & Car Washes; Restaurants; Schools & Colleges; and Commercial/Industrial/Miscellaneous (catch-all for remainder of non-residential customers).
- Major Users: Major Users customer class is composed of major commercial and industrial users who are identified based on the following²:
 - Have a sewage discharge of at least 25,000 gallons per day; or
 - Have a daily discharge which is intermittent or irregular in strength, amount or nature.

5.1.2 Equivalent Dwelling Units

The City provides sewer services to approximately 26,000 customers. All customers generating sewage flow connect to the sewer system. Since the City bills residential customers based on EDUs, a review of historical EDUs patterns for customers and anticipated growth within the City, the projected total number of EDUs are expected to grow at 0.1% annually over the Study Period. An EDU represents a single-

² City Website, Schedule S-16 Monthly Sewer Service Charges, <<http://www.santaclaraca.gov/government/departments/water-sewer-utilities/water-sewer-and-recycled-water-rates/sewer-rates>>

family residential customer equivalent with a flow of 245 gallons per day and strengths of 250 mg/L of Biological Oxygen Demand (“BOD”), 250 mg/L of Total Suspended Solids (“TSS”) and 35 mg/L of Ammonia (“NH3”).

Table 5-1 summarizes the projected number of EDUs for the Sewer Utility.

Table 5-1 EDUs

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
		(EDUs)	(EDUs)	(EDUs)
1	Single Family	241,169	241,410	241,651
2	Multi Family	286,930	287,217	287,504
3	Total	528,099	528,627	529,155

5.1.3 Minimum Bills

The City bills non-residential customers primarily on sewage flow and imposes a minimum bill on these customers whose flow charges do not exceed the monthly service charge. Therefore, a review of historical minimum bills patterns for non-residential customers and anticipated growth within the City, the projected total number of minimum bills are expected to grow 0.5% annually over the Study Period. The City refers to these bills as minimum monthly service bills.

Table 5-2 summarizes the projected number of minimum monthly service bills for the Sewer Utility.

Table 5-2 Minimum Monthly Service Bills

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
		(Bills)	(Bills)	(Bills)
1	Amusement Parks	163	164	165
2	Auto Dealers & Service Station	542	545	548
3	Churches	431	433	435
4	Commercial/Industrial/Miscellaneous	19,622	19,720	19,819
5	Electric & Electronic Equip.	1,063	1,068	1,073
6	Food and Kindred Products	55	55	55
7	Hospitals & Convalescent Homes	466	468	470
8	Industrial Chemical	109	110	111
9	Industrial Water Treatment	0	0	0
10	Laundries	92	92	92
11	Machinery Manufacturers	1,070	1,075	1,080
12	Metal Plating	203	204	205
13	Motels & Hotels	12	12	12
14	Paper	0	0	0
15	Repair Shops & Car Washes	574	577	580
16	Restaurants	278	279	280
17	Schools & Colleges	1,340	1,347	1,354
18	Total	26,020	26,149	26,279

5.1.4 Billed Sewage Flow

The City charges all its non-residential customers based on sewage flow, which is determined by multiplying water consumption by a return factor. In determining the projected sewage flow, Black & Veatch analyzed historical patterns of sewage flow in conjunction with a projected estimate of future water consumption. Over the past three years, water consumption has increased from historic lows experienced during the drought restrictions. Despite the increase, the City's Water Shortage Contingency Plan remain in effect, and City customers have made conservation a way of life. The Water Utility, therefore, expects consumption to continue to rebound slowly. Past experience would indicate that after strict water conservation measures are lifted, the rebound in consumption is usually associated with discretionary water such as irrigation. Much of this water does not make it to the sewer system; therefore, the City projects that sewage flow will grow at 0.5% annually over the Study period.

Table 5-3 shows the projected sewage flow generated for the Study Period. The City bills sewage flow in units of HCF for non-residential customers.

Table 5-3 Billed Sewage Flow

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021 (HCF)	FY 2022 (HCF)	FY 2023 (HCF)
1	Amusement Parks	70,055	70,405	70,757
2	Auto Dealers & Service Station	21,194	21,300	21,407
3	Churches	20,824	20,928	21,033
4	Commercial/Industrial/Miscellaneous	1,400,725	1,407,729	1,414,768
5	Electric & Electronic Equip.	457,559	459,847	462,146
6	Food and Kindred Products	17,547	17,635	17,723
7	Hospitals & Convalescent Homes	121,873	122,482	123,094
8	Industrial Chemical	12,001	12,061	12,121
9	Industrial Water Treatment	0	0	0
10	Laundries	26,345	26,477	26,609
11	Machinery Manufacturers	38,096	38,286	38,477
12	Metal Plating	6,776	6,810	6,844
13	Motels & Hotels	54,700	54,974	55,249
14	Paper	0	0	0
15	Repair Shops & Car Washes	11,961	12,021	12,081
16	Restaurants	134,650	135,323	136,000
17	Schools & Colleges	49,681	49,929	50,179
18	Total (HCF)	2,443,987	2,456,207	2,468,488
19	Total (AF)	5,611	5,639	5,667

5.1.5 Major Users

The City charges major commercial and industrial sewer customers based on sewage flow and strength loadings. Major users are identified independently of each other as each customer places different burdens on the sewer system. In FY 2020, the City had one identified Major User customer.

Table 5-4 shows the flow and loadings associated with this customer over the Study period.

Table 5-4 Major Users

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
Major Users				
Operating and Maintenance Cost Recovery				
1	Volume (MG)	91	91	91
2	BOD (1,000 lbs)	949	949	949
3	SS (1,000 lbs)	423	423	423
4	NH3 (1,000 lbs)	7	7	7
Annual Capital Cost Recovery				
5	Volume (MGD)	0.25	0.25	0.25
6	BOD (1,000 lbs/day)	2.60	2.60	2.60
7	SS (1,000 lbs/day)	1.16	1.16	1.16
8	NH3 (1,000 lbs/day)	0.02	0.02	0.02

5.2 REVENUE UNDER EXISTING RATES

Sewer user rates serve as the primary source of revenue for the Sewer Utility. Therefore, the level of future rate revenue is important in the development of a long-range financial plan. Rate revenue is determined by multiplying the projected system growth in terms of number of EDUs, minimum monthly service bills, billed sewage flow, and major user flow and loadings by the applicable rates to determine sewer rate revenue.

Table 5-5 shows the Sewer Utility's current schedule of charges. It is important to note that the minimum monthly service charge applies to non-residential customers that do not exceed the base amount. Therefore, the minimum monthly service charge serves a baseline cost that the City needs to recover. The City maintains a separate schedule of rates based on the customer classes identified in Section 5.1.

Table 5-5 Existing Sewer Rates

Description	Existing FY 2020	Description	Existing FY 2020
Residential	(\$/EDU)	Major Commercial and Industrial Users	
Single Family	44.07	Annual Capital Cost Recovery	
Multi-Family	44.07	Volume (per MGD)	1,138,880
Non-Residential [1]	(\$/HCF)	BOD [2] (per 1,000 lbs/day)	94,070
Amusement Parks	5.92	SS [3] (per 1,000 lbs/day)	53,421
Auto Dealers & Service Station	5.97	NH3 [4] (per 1,000 lbs/day)	349,107
Churches	5.27	Operating and Maintenance Cost Recovery	
Com/Ind/Misc	5.32	Volume (per MG)	2,373.21
Electric & Electronic Equip.	4.94	BOD [2] (per 1,000 lbs)	370.42
Food and Kindred Products	12.91	SS [3] (per 1,000 lbs)	520.88
Hospitals & Convalescent Homes	6.17	NH3 [4] (per 1,000 lbs)	4,438.06
Industrial Chemical	9.15		
Industrial Water Treatment	3.62		
Laundries	5.56		
Machinery Manufacturers	7.59		
Metal Plating	3.98		
Motels & Hotels	6.54		
Paper	11.05		
Repair Shops & Car Washes	5.10		
Restaurants	13.27		
Schools & Colleges	5.77		

1. In no case shall the minimum charge be less than \$44.07 per month.

Table 5-6 represents a summary of projected sewer rate revenue under existing rates. As shown, the revenue generated stays flat over the Study period in conjunction with the number of EDUs, minimum bills, billed sewage flow and major user's volume and loadings. The projected Sewer Utility revenues increase from \$40.2M in FY 2021 to \$40.4M in FY 2023.

Table 5-6 Projected Revenue under Existing Rates

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
		(\$)	(\$)	(\$)
1	Single Family	10,628,300	10,638,900	10,649,600
2	Multi-Family	12,645,000	12,657,700	12,670,300
3	Amusement Parks	421,900	424,000	426,200
4	Auto Dealers & Service Station	150,400	151,200	152,000
5	Churches	128,700	129,400	130,000
6	Com/Ind/Misc	8,316,600	8,358,200	8,400,000
7	Electric & Electronic Equip.	2,307,100	2,318,700	2,330,300
8	Food and Kindred Products	228,900	230,100	231,200
9	Hospitals & Convalescent Homes	772,500	776,300	780,200
10	Industrial Chemical	114,600	115,200	115,800
11	Industrial Water Treatment	0	0	0
12	Laundries	150,600	151,300	152,000
13	Machinery Manufacturers	336,300	338,000	339,600
14	Metal Plating	35,900	36,100	36,200
15	Motels & Hotels	358,200	360,000	361,800
16	Paper	0	0	0
17	Repair Shops & Car Washes	86,300	86,700	87,200
18	Restaurants	1,799,100	1,808,000	1,817,000
19	Schools & Colleges	345,800	347,500	349,200
20	Major Users - Customer 1	1,419,300	1,419,300	1,419,300
21	Major Users - Customer 2	0	0	0
22	Total	\$ 40,245,500	\$ 40,346,600	\$ 40,447,900

5.3 OTHER REVENUE

There are other operating sources which include charges for revenue from other agencies served by Santa Clara, sewer lateral video inspections, sewer cleanout installations, interest on investments, and other miscellaneous revenues. In total, other operating revenues represent 4.7% of the Sewer Utility's total revenue. The City anticipates that these revenues will remain relatively constant for the duration of the Study Period.

5.4 OPERATING AND MAINTENANCE EXPENSES

Table 5-7 summarizes the Sewer Utility's projected O&M expenses for the Study Period. These expenses include costs related to salaries and benefits, materials and supplies, contract and professional services, SJSCRWF costs, indirect and direct costs, and routine capital outlay. The City anticipates that all O&M expenditures, excluding Water Pollution Control Plant costs, will increase on average 4.2% annually from the FY 2021.

The Sewer Utility receives treatment services from the SJSCRWF operated and maintained by the City of San Jose. While the City has an ownership stake in the SJSCRWF, the City must still pay for O&M associated with operating the facility. Based on estimates from the City of San Jose, the City expects SJSCRWF O&M costs to increase by approximately 3.5% annually over the Study period.

Table 5-7 O&M Expenses

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
		(\$)	(\$)	(\$)
1	Salaries	2,878,430	2,993,500	3,113,200
2	Benefits	1,429,600	1,486,600	1,545,900
3	Materials/Services/Supplies	561,344	583,800	607,100
4	Interfund Services	4,123,085	4,304,100	4,493,300
5	Resource & Production	17,849,085	18,473,800	19,120,400
6	Capital Outlay	0	0	0
7	Total	\$ 26,841,544	\$ 27,841,800	\$ 28,879,900

As shown in Table 5-7, the Sewer Utility's O&M expenses increase from \$26.8M in FY 2021 to \$28.9M in FY 2023.

5.5 DEBT SERVICE REQUIREMENTS

Table 5-8 represents the Sewer Utility's existing and proposed debt service obligations. This table shows the combined principal and interest requirements on the existing debt over the Study period. It is common practice for utilities to debt finance large capital improvement projects such as in the case of Trimble Road sewer trunk line replacement in Santa Clara. By financing the cost of the projects, the City can fund large projects immediately and spread the payment over a specified time frame, thereby helping to offset the impact on rate-payers.

Table 5-8 Long-Term Debt Service

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
		(\$)	(\$)	(\$)
1	2016 Installment Agreement (Trimble Road)	937,449	937,449	937,449
2	Future Revenue Bonds	594,100	807,900	1,007,700
3	Total	\$ 1,531,549	\$ 1,745,349	\$ 1,945,149

5.6 CAPITAL IMPROVEMENT PROGRAM

The Sewer Utility develops a five-year Capital Improvement Plan on an annual basis to identify sewer system needs including ongoing assessments, maintenance, and renewal and replacement requirements.

Table 5-9 summarizes the Sewer Utility's CIP for FY 2021 through FY 2023. The Sewer Utility is projecting \$107.3M in CIP over the Study Period, which includes both capital and replacement projects. For complete details associated with each CIP project, the City has posted the CIP Budget on their website.³

³ The City of Santa Clara. Finance Department. < <http://santaclaraca.gov/government/departments/finance> >

Table 5-9 Capital Improvement Projects

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
		(\$)	(\$)	(\$)
1	1908 SJ-SC Regional Wastewater Facility	28,559,100	25,604,800	31,829,000
2	1909 Sanitary Sewer Capacity Improvements	3,000,000	4,110,000	3,000,000
3	1911 Sanitary Sewer System Condition Assessment	1,000,000	1,000,000	1,000,000
4	1912 Sanitary Sewer System Improvements	2,615,000	2,718,000	2,830,000
5	Total	\$ 35,174,100	\$ 33,432,800	\$ 38,659,000

5.6.1 Capital Improvement Financing Plan

The City funds annual expenditures for the CIP from a combination of available funds on hand, outlet charges, conveyance fees, debt financing, connection charges, developer contributions, and revenues derived from user rates. As shown in Table 5-10, the average annual CIP expenditure is \$35.8M for the Sewer Utility. The planned average annual CIP contribution from the Sewer Utility Operating Fund is \$14.3M per year over the Study Period. Due to the large costs associated with the SJSCRWF, the City plans to issue \$20M in Revenue Bonds in FY 2020, \$15M in FY 2021, \$15M in FY 2022 and \$15M in FY 2023. The City expects to determine the final amount of the revenue bonds by Spring of each fiscal year based on updated financials and advice from their financial advisor.

Table 5-10 Construction Fund Financing Plan

Line No.	Description	Fiscal Year Ending June 30,		
		FY 2021	FY 2022	FY 2023
Source of Funds				
1	Sanitary Outlet Charge	0	0	0
2	Sewer Conveyance Fee	3,495,800	4,180,800	3,570,800
3	Intra Transfer In - Debt Financing	15,000,000	15,000,000	13,000,000
4	Intra Transfer In - Customer Service Charge	16,664,700	15,000,000	15,000,000
5	Connection Charges	0	0	0
6	Developer Contributions	0	0	0
7	Refund from San Jose/Cupertino	0	0	0
8	Total Sources	\$ 35,160,500	\$ 34,180,800	\$ 31,570,800
Use of Funds				
9	Improvements Projects	6,615,000	7,828,000	6,830,000
10	Total Uses	\$ 6,615,000	\$ 7,828,000	\$ 6,830,000
11	Net Annual Cash Balance	28,545,500	26,352,800	24,740,800
12	Beginning Unrestricted Fund Balance	22,118,100	21,604,500	21,852,500
13	Net Cumulative Fund Balance	\$ 50,663,600	\$ 47,957,300	\$ 46,593,300
14	Minimum Construction Reserves	\$ 20,630,400	\$ 22,744,500	\$ 9,067,150

5.7 TRANSFERS

The Sewer Utility will perform transfers over the Study period from the Operating Fund and other funds. The other funds consist of the Rate Stabilization Fund, Pension Stabilization Fund and Construction Fund. See Section 5.8 for further explanation on Rate Stabilization and Pension Stabilization Funds. The Construction Fund transfers represent money to cover planned CIP project expenditures. For all these transfers, they do not represent direct operating expenses for the enterprise, therefore Black & Veatch includes these costs as “below-the-line” cash flow items and not included as O&M expenses. Table 5-11, Lines 19 to 22 for the Sewer Utility reflect these associated amounts.

5.8 RESERVES

A utility typically establishes reserves for several reasons such as covering shortfalls in operating revenues, maintaining strong bond ratings, covering day-to-day operating costs, and easing the burden on ratepayers associated with large rate increases. Per the reserve policy, the Sewer Utility will maintain the following four reserves:

- Operating Reserve represents working capital maintained by the Operating Fund to cover day-to-day expenses and maintain enough funds to cover accounts receivables if there are supplier issues, periods of lower than expected sewer revenues, or unforeseen cost increases. The reserve will maintain a minimum balance of 90 days of operating expenses, once fully funded
- Construction Reserve represents funds used for unforeseen and unbudgeted capital costs. Once fully funded, this reserve will maintain a minimum balance of 12-months of the following year’s planned City CIP and 6-months of the following year’s planned SJSCRWF CIP.
- Rate Stabilization Reserve represents funds used to absorb revenue shortfalls due to short-term decreases in sewer sales. The reserve will maintain a minimum balance of 10% of sewer rate revenue when fully funded. This reserve is designed to stabilize sewer rate revenue and avoid wide swings in rates charged to customers over time.
- Pension Stabilization Reserve represents funds used to pay for the unfunded pension liabilities and the increase in the City’s share of pension costs due to factors such as higher CalPERS rates and negotiated pay increases. The reserve target is \$1.2M for the Sewer Utility by FY 2030.

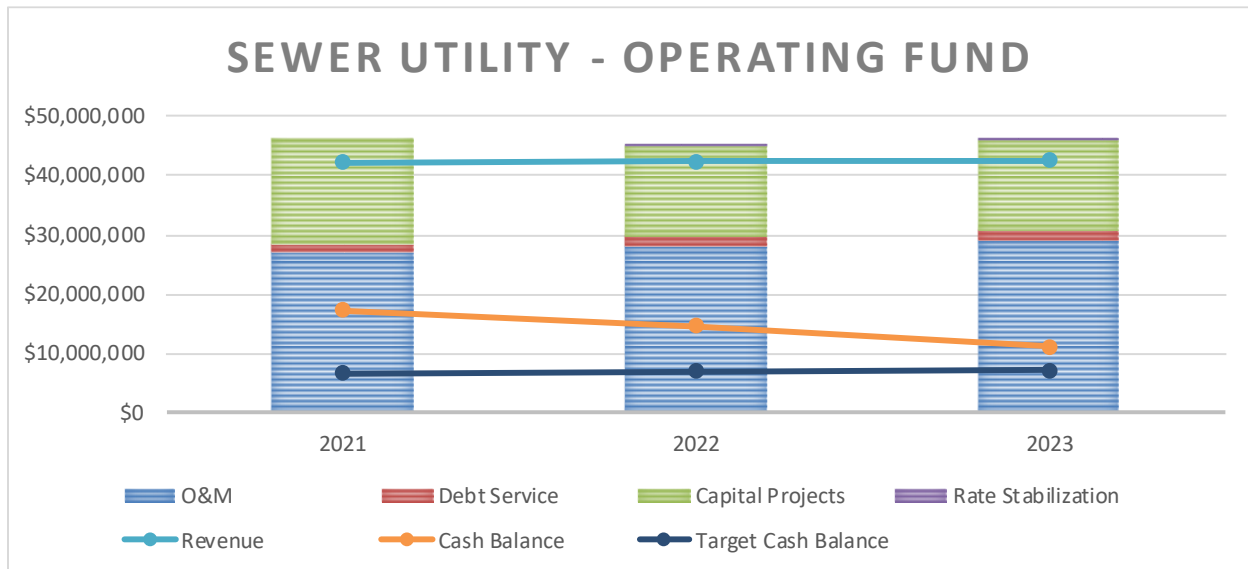
Appropriate reserve levels help the Sewer Utility attain and keep better bond ratings, which in turn, leads to lower borrowing costs.

5.9 PROJECTED OPERATING RESULTS

The revenue requirements of the Sewer Utility consist of O&M expenses, debt service, capital expenditures, and reserve requirements.

It is important to examine the cash flow projections under the status quo scenario in order to fully understand the current condition of the Sewer Utility and the need for revenue adjustments. In this scenario, the Sewer Utility would not impose any revenue increases over the Study Period and continue to incur O&M expenses, pay for the execution of the planned CIP, and transfer to reserves. As shown in Figure 5-1, the status quo conditions would project that the Sewer Utility would operate from an annual deficit position, thus tapping into its reserves. By FY 2023, the Operating Fund would have a zero balance under such a scenario.

Figure 5-1 Status Quo Operating Cash Flow



The Sewer Utility will fall into a deficit position if the City does not implement the revenue increases as shown in Table 5-10. The revenue increases represent the overall total revenue adjustment needed to meet revenue requirements. The revenue adjustment does not represent adjustments to the individual rates but reflects the overall level of revenue needed to meet the Sewer Utility's obligations.

The suggested revenue increases help the Sewer Utility meet the following goals:

- Meet budgeted operating obligations in the three FY's.
- Meet planned capital investments in the three FY's.
- Maintain an operating reserve of 90 days of operating expenses.
- Maintain construction reserve of 12-months of next year's CIP for City projects and 6-months of next year's CIP for the SJSCRWF.
- Continue to fund the rate stabilization reserve to able to reach its goal of 10% of rate revenues.
- Continue transfers for the pension stabilization reserve to meet the FY 2030 goal.

Shown in Table 5-11 is a summary of the proposed Operating Fund for the Study Period. The Operating Fund consists of two parts: 1) Revenue and 2) Revenue Requirements.

Revenue

- Line 1 is the revenue under existing rates.
- Lines 2 through 4 is the additional revenue generated from the required annual revenue increases. The additional revenue generated is a direct reflection of the number of months the increase is effective for, and therefore amount might calculate at less than that stated amount.
- Line 6 is the total revenue generated from user charges.
- Line 12 represents other operating revenues.
- Line 13 represents total revenues for the enterprises.

Revenue Requirements

- Line 15 represents O&M expenses. The O&M expenses include SJSCRWF costs.
- Line 18 represent debt service payments.
- Line 23 represents transfers. The transfers include money to the Rate Stabilization Fund, Other Fund, Pension Fund and Construction Fund.
- Line 24 represents total revenue requirements.

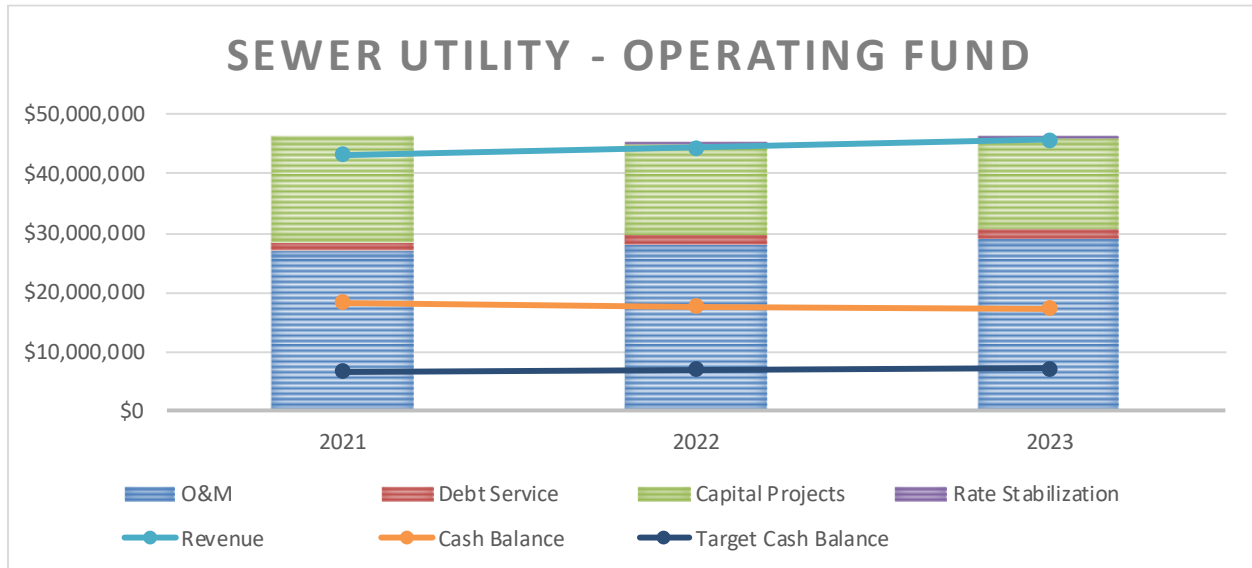
Line 27 represents the net cumulative cash balance within the Operating Funds. The net cumulative cash balance intends to match, to the extent possible, Line 28. The reserve target minimum is 90 days of O&M expenses. The cash balance reserve is required to ensure the Operation Fund can continue in the event of a supplier interruption, market price fluctuations of critical equipment or supplies or an abrupt drop in account receivables. Line 29 represents the debt service coverage. Based on the operating cash flow, the debt service coverage of 1.25x requirement is met in all years as shown. The requirement is set forth by the lending financial institution and based on the ratio between revenues and expenses. Expenses exclude “below-the-line” items such as transfers.

Table 5-11 Operating Fund

Line No.	Description	Fiscal Year Ending June 30,				
		FY 2021	FY 2022	FY 2023		
Revenue						
Rate Revenue						
1	Revenue from Existing Rates	40,245,500	40,346,600	40,447,900		
Months						
	Year	Effective	Rate Adj			
2	2021	12	2.50%	1,006,100	1,008,700	1,011,200
3	2022	12	2.50%		1,033,900	1,036,500
4	2023	12	2.50%			1,062,400
5	Increased Revenue Due to Adjustments			1,006,100	2,042,600	3,110,100
6	Subtotal Rate Revenue			\$ 41,251,600	\$ 42,389,200	\$ 43,558,000
Other Operating Revenue						
7	System Administration (Interest Income)			1,969,900	2,009,300	2,049,500
8	System Maintenance			92,700	92,700	92,700
9	Operations			0	0	0
10	SJ SC Water Pollution Control Plant			0	0	0
11	Storm Pump Maintenance			0	0	0
12	Subtotal Other Operating Revenue			\$ 2,062,600	\$ 2,102,000	\$ 2,142,200
13	Total Revenue			\$ 43,314,200	\$ 44,491,200	\$ 45,700,200
Revenue Requirements						
Operating & Maintenance						
14	O&M Expenses			26,841,500	27,841,800	28,879,900
15	Subtotal O&M			\$ 26,841,500	\$ 27,841,800	\$ 28,879,900
Debt Service						
16	Existing Revenue Bonds			937,400	937,400	937,400
17	Proposed Revenue Bonds			594,100	807,900	1,007,700
18	Total Debt Service			\$ 1,531,500	\$ 1,745,300	\$ 1,945,100
Transfers						
19	Transfer to Rate Stabilization Fund			0	400,000	200,000
20	Transfer to Other Fund			1,245,900	0	0
21	Transfer to Pension Stabilization Fund			78,200	78,200	78,200
22	Transfer to Sewer Construction Fund			16,664,700	15,000,000	15,000,000
23	Total Transfers			\$ 17,988,800	\$ 15,478,200	\$ 15,278,200
24	Total Revenue Requirements			\$ 46,361,800	\$ 45,065,300	\$ 46,103,200
25	Net Annual Cash Balance			(3,047,600)	(574,100)	(403,000)
26	Beginning Fund Balance			21,242,500	18,194,900	17,620,800
27	Net Cumulative Fund Balance			\$ 18,194,900	\$ 17,620,800	\$ 17,217,800
28	Minimum Operating Reserves (90 Days)			\$ 6,618,500	\$ 6,865,100	\$ 7,121,100
29	Debt Service Coverage (Min 1.25)			10.76	9.54	8.65

Figure 5-2 presents the proposed Operating Fund.

Figure 5-2 Operating Cash Flow



6 Cost of Service Analysis

Cost of Service analysis requires that the utility recover needed revenues from rates for sewer service, which are allocated to customer classes according to the service rendered. An equitable rate structure allocates the capture of revenue requirements to customer classes based on sewage volume, strengths, number of customer connections and other relevant factors.

In analyzing the Sewer Utility's cost of service for allocation to its customer classes, Black & Veatch selected the annual revenue requirements for FY 2021 as the Test Year requirements to demonstrate the development of cost-of-service sewer rates. Table 6-1 summarizes the total costs of service that needs to be recovered from sewer user rates. The table represents TY 2021.

Table 6-1 Cost of Service Revenue from Rates

Line No.	Description	Operating Expense	Capital Cost	Total Cost
		(\$)	(\$)	(\$)
Revenue Requirements				
1	O&M Expense	26,841,500	0	26,841,500
2	Debt Service Requirements	0	1,531,500	1,531,500
3	Transfers	78,200	0	78,200
4	Subtotal	\$ 26,919,700	\$ 1,531,500	\$ 28,451,200
Less Revenue Requirements Met from Other Sources				
5	System Administration	1,969,900	0	1,969,900
6	System Maintenance	92,700	0	92,700
7	Operations	0	0	0
8	SJ SC Water Pollution Control Plant	0	0	0
9	Storm Pump Maintenance	0	0	0
10	Subtotal	\$ 2,062,600	\$ 0	\$ 2,062,600
Adjustments				
11	Adjustment for Annual Cash Balance	3,047,600	0	3,047,600
12	Adjustment to Annualize Rate Increase	0	0	0
13	Subtotal	\$ 3,047,600	\$ 0	\$ 3,047,600
14	Cost of Service to be Recovered from Rates	\$ 21,809,500	\$ 1,531,500	\$ 23,341,000

Shown in Line 4 is the total revenue requirement that corresponds with Table 5-11, Line 22. To derive the net revenue requirement recovered via rates, it is necessary to deduct revenues from other sources as shown in Line 12. Line 13 represents the net annual cash balance during the TY. If the enterprise is drawing down funds already in the Operating Fund, then this number is positive. The number will be negative if the enterprise is replacing funds. In the case of the Sewer Utility, the \$3.0M figure indicates that the forecast is projecting a negative cash balance for the year. Since the City expects to implement the revenue adjustment starting in July 2020, the final cost of service recovered from rates does not require an adjustment. Therefore, Line 12 represents almost no additional revenues generated. The minimal amount represented is due to rounding in the Operating Fund.

6.1 FUNCTIONAL COST COMPONENTS

The first step in conducting a cost-of-service analysis involves analyzing the cost of providing sewer service by system function to properly allocate the costs to the various customer classes and subsequently design rates. As a basis for allocating costs of service among customer classes, costs are separated into the following four basic functional cost components: (1) “Base”; (2) “Strength”; (3) “Customer”; and (4) “Direct Assignment,” described as follows:

- Base costs represent operating and capital costs of the system associated with collection. The collection costs vary directly with the quantity of sewage flow.
- Strength costs represent those operating and capital costs associated with treatment. The treatment costs are specifically related to strength parameters such as Biological Oxygen Demand, Total Suspended Solids and Ammonia.
- Customer costs are those expenditures that tend to vary in proportion to the number of customers connected to the system. These include meter reading, billing, collecting and accounting, and maintenance and capital costs associated with meters and services.
- Directly assigned costs are costs specifically identified as those incurred to serve specific customers. The Sewer Utility has no directly assigned categories.

6.2 ALLOCATION TO COST COMPONENTS

The next step of the cost-of-service process involves allocating each element of cost to functional cost components based on the parameter or parameters having the most significant influence on the magnitude of that element of cost. O&M expense items are allocated directly to appropriate cost components. A detailed allocation of related capital investment is used as a proxy for allocating capital and replacement costs. The separation of costs into functional components provides a means for distributing such costs to the various classes of customers based on their respective responsibilities for each type of service.

6.2.1 Volume and Strength Allocations

The sewer system consists of various facilities; each designed and operated to fulfill a given function. For the system to provide adequate service to its customers, it must be capable of meeting not only the annual volume requirements but also the strength loading demands placed on the system. Because not all customers and types of customers exert volume and strength loading demands similarly, the capacities of the various facilities must be designed to accommodate the demands of all classes of customers. Each sewer service facility within the system has an underlying volume demand, exerted by all customers for whom the base cost component applies. For those facilities designed solely to meet volume demand, 100% of the costs go to the base cost component. For those facilities designed to meet strength loading demands, the percentage of the costs all allocated to the different strength cost component based on their specific function.

6.2.2 Allocation of Operating and Maintenance Expenses

In the allocation of O&M expense for Test Year (2021), the costs are directly allocated to the cost components to the extent possible. The Sewer Utility books operating costs by functional categories. Therefore, Black & Veatch used the factors noted in Section 5.1 to allocate the operating expenses to the cost components. The allocation of Administration and Transfer cost elements are based on the average of

all other costs. Table 6-2 represents the allocation of O&M to the cost components. Revenues are subtracted from other sources as shown in Table 6-1, Lines 10 and any drawdown of the cash balance is deducted and normalized for partial rate adjustments as shown in Line 13 to determine the net O&M costs.

Table 6-2 Allocation of O&M Expenditures

Line No.	Description	Total Cost	Common to All Customers				
			Volume	BOD	TSS	NH3	Customer
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Operation & Maintenance							
1	1511 System Administration	4,024,300	1,918,300	670,000	682,600	701,000	52,400
2	1512 System Maintenance	2,481,900	2,481,900	0	0	0	0
3	1514 Operations	1,355,900	1,355,900	0	0	0	0
4	1515 SJ SC Water Pollution Control Plant						
5	Treatment	17,717,900	6,074,300	3,798,700	3,870,100	3,974,800	0
6	Customer Billing & Meter Reading	296,900	0	0	0	0	296,900
7	All Other	795,600	795,600	0	0	0	0
8	1516 Storm Pump Maintenance	169,000	169,000	0	0	0	0
9	Transfers	1,324,100	631,200	220,400	224,600	230,700	17,200
10	Total O&M Expenses	\$ 28,165,600	\$ 13,426,200	\$ 4,689,100	\$ 4,777,300	\$ 4,906,500	\$ 366,500
Less Other Revenue							
11	Miscellaneous Revenues	2,062,600	983,300	343,400	349,800	359,300	26,800
12	Other Adjustments	3,047,600	1,452,700	507,400	516,900	530,900	39,700
13	Net Operating Expenses	\$ 23,055,400	\$ 10,990,200	\$ 3,838,300	\$ 3,910,600	\$ 4,016,300	\$ 300,000

6.2.3 Allocation of Capital Investments

In the allocation of capital investment for Test Year (2021), the existing fixed assets (which serve as a proxy for the current capital investments) are allocated directly to cost components to the extent possible. The allocation of costs into the cost components provides a basis for annual investment in sewer system facilities. Table 6-3 shows the total allocation of existing system investment serving sewer customers for the Test Year (2021). The total net system investment of \$29.8M shown on Line 7 represents the Test Year original cost less accumulated depreciation of the system in service. The total net system investment reflects the Sewer Utility's fixed asset listing ending June 30, 2017. This value represents book value of the assets. Using the distribution of total net system investment across the functional cost components, planned capital costs can then be allocated.

Table 6-3 Allocation of Capital Costs

Line No.	Description	Total Cost	Common to All Customers				
			Volume	BOD	TSS	NH3	Customer
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Plant Assets							
1	Collection	27,067,100	27,067,100	0	0	0	0
2	Lift Station	2,703,600	2,703,600	0	0	0	0
3	General Plant	16,100	16,100	0	0	0	0
4	Total Plant Assets	\$ 29,786,800	\$ 29,786,800	\$ 0	\$ 0	\$ 0	\$ 0
Less Other Revenue							
5	Miscellaneous Revenues	0	0	0	0	0	0
6	Other Adjustments	0	0	0	0	0	0
7	Net Operating Expenses	\$ 29,786,800	\$ 29,786,800	\$ 0	\$ 0	\$ 0	\$ 0

6.3 UNITS OF SERVICE

Following the allocation of costs, the total cost responsibility for each customer class is developed using unit costs of service for each cost function and subsequently assigning those costs to the customer classes based on the respective service requirements of each. To properly recognize the cost of service, each customer class receives its share of base, strength and customer costs. The number of units of service required by each customer class provides a means for the proportionate distribution of costs previously allocated to respective cost categories.

Table 6-4 summarizes the estimated Test Year units of service for the various customer classes. Base costs vary with the volume of sewage flow produced and distributed to customer classes on that basis. Black & Veatch derived sewage flow information from the monthly water consumption records in the City's CIS multiplied by a return factor. Strength costs are those associated with pollutant characteristics, and the Study allocated these costs to customer classes based on loadings. The pollutant loadings for each customer class come from recommendations of the State Water Resources Control Board, Revenue Program Guidelines, Appendix G and the City of San Jose. The City's commercial and industrial class consists of 17 distinct types of businesses such as retail, offices, restaurants, and hospitals. Since sampling is not an immediate possibility, the City has relied on industry standards used by the State of California. The number of bills for each customer class serves as the basis for distributing customer billing requirements.

6.4 COST OF SERVICE ALLOCATIONS

To determine the cost of service for each customer class, unit costs of service are applied to each customer classes' respective service requirements. The total unit costs of service applied to the respective requirements for each customer class results in the total cost of service for each customer class.

6.4.1 Units Costs of Service

The Test Year (2021) unit cost of service for each functional cost component is simply the total cost divided by the applicable units of service as shown in Table 6-5. The capital costs on Line 3 and 4 represent capital costs associated with City projects and SJSCRWF projects. These costs have been separated to determine the collection and treatment costs independently. On Line 5, the total costs represent the cost that rates need to recover shown as demonstrated in Table 6-1, Line 14. The net O&M cost includes O&M (which includes SJSCRWF) less revenue from other sources and adjustments. The total capital cost includes debt service payments and transfers to the Construction Fund. Line 6 represents the unit costs for the entire sewer system regardless of customer classes. After that, these unit costs are applied in allocating the costs to the specific customer classes.

6.4.2 Distribution of Costs of Service to Customer Classes

Applying the unit costs to the units for each customer class produces the customer class costs. This process is illustrated in Table 6-6, in which the study applies the unit costs to the customer class units of service. The costs attributable to each customer class are based on the functional cost components described in Section 6.1. Each customer class places a burden on the system in different ways, and thus the allocation of the units is representative of this burden.

An example of the application of unit costs is shown below for illustrative purposes.

	Vol Component
Unit Cost (Table 6-5, Line 7)	\$ 4.23 per HCF
General Customer Consumption (Table 6-6, Line 5)	70,055 HCF
Total Allocated Cost	\$ 296,300

Please note that the numbers within the tables are rounded, yet the calculations are done based on non-rounded values; therefore, results might vary.

Table 6-4 Units of Service

Line No.	Description	Contributed	Contributed	BOD Loadings		TSS Loadings		NH3 Loadings		Bills
		Units	Volume	Factor	Loading	Factor	Loading	Factor	Loading	
	Units of Measure	(EDUs/M Bills)	(HCF)	(mg/L)	(lbs)	(mg/L)	(lbs)	(mg/L)	(lbs)	(bills)
1	Single Family	241,169	1,260,979	250	1,966,700	250	1,966,700	35	275,300	250,323
2	Multi-Family	286,930	1,483,983	250	2,314,500	250	2,314,500	35	324,000	27,700
3	Amusement Parks	163	70,055	130	56,800	80	35,000	11	4,800	381
4	Auto Dealers & Service Station	542	21,194	180	23,800	280	37,000	11	1,500	955
5	Churches	431	20,824	130	16,900	80	10,400	11	1,400	820
6	Com/Ind/Misc	19,622	1,400,725	130	1,136,000	80	699,100	11	96,100	34,816
7	Electric & Electronic Equip.	1,063	457,559	30	85,600	15	42,800	15	42,800	2,417
8	Food and Kindred Products	55	17,547	1,120	122,600	690	75,500	0	0	215
9	Hospitals & Convalescent Homes	466	121,873	230	174,900	85	64,600	15	11,400	1,071
10	Industrial Chemical	109	12,001	360	27,000	720	53,900	0	0	173
11	Industrial Water Treatment	0	0	130	0	80	0	11	0	0
12	Laundries	92	26,345	150	24,700	110	18,100	5	800	340
13	Machinery Manufacturers	1,070	38,096	290	68,900	550	130,700	0	0	2,182
14	Metal Plating	203	6,776	10	400	60	2,500	1	0	320
15	Motels & Hotels	12	54,700	310	105,800	121	41,300	7	2,400	96
16	Paper	0	0	1,250	0	560	0	10	0	0
17	Repair Shops & Car Washes	574	11,961	180	13,400	280	20,900	0	0	834
18	Restaurants	278	134,650	1,250	1,050,100	560	470,400	10	8,400	932
19	Schools & Colleges	1,340	49,681	130	40,300	100	31,000	30	9,300	2,074
20	Major Users - Customer 1		121,984		949,000		423,400		7,300	6
21	Total		5,310,933		8,177,400		6,437,800		785,500	325,655

Table 6-5 Units Cost of Service

Line No.	Description	Total Cost	Common to All Customers				
			Volume	BOD	TSS	NH3	Customer
1	Net Operating Expense	23,055,400	10,990,200	3,838,300	3,910,600	4,016,300	300,000
2	Debt Service	1,531,500	1,531,500	0	0	0	0
3	Capital Costs (City)	3,134,000	3,134,000	0	0	0	0
4	Capital Costs (SJSC)	13,530,700	6,807,900	4,337,000	1,112,000	1,273,800	0
5	Total Cost of Service	\$ 41,251,600	\$ 22,463,600	\$ 8,175,300	\$ 5,022,600	\$ 5,290,100	\$ 300,000
6	Units of Service		5,310,933 HCF	8,177,400 lbs	6,437,800 lbs	785,500 lbs	325,661 bills
7	Cost per Unit		\$ 4.23 per HCF	\$ 1.00 per lbs	\$ 0.78 per lbs	\$ 6.73 per lbs	\$ 0.92 per bill

Table 6-6 Distribution of Costs to Customer Classes

Line No.	Description	Total Cost	Common to All Customers				
			Volume	BOD	TSS	NH3	Customer
1	Cost per Unit		\$ 4.23 per HCF	\$ 1.00 per lbs	\$ 0.78 per lbs	\$ 6.73 per lbs	\$ 0.92 per bill
	Single Family						
2	Units		1,260,979	1,966,700	1,966,700	275,300	250,323
3	Allocation of costs of service	10,911,800	5,326,800	1,966,100	1,534,300	1,854,200	230,400
	Multi-Family						
4	Units		1,483,983	2,314,500	2,314,500	324,000	27,700
5	Allocation of costs of service	12,603,900	6,276,800	2,313,900	1,805,700	2,182,000	25,500
	Amusement Parks						
6	Units		70,055	56,800	35,000	4,800	381
7	Allocation of costs of service	413,100	296,300	56,800	27,300	32,300	400
	Auto Dealers & Service Station						
8	Units		21,194	23,800	37,000	1,500	955
9	Allocation of costs of service	153,300	89,600	23,800	28,900	10,100	900
	Churches						
10	Units		20,824	16,900	10,400	1,400	820
11	Allocation of costs of service	123,300	88,100	16,900	8,100	9,400	800
	Com/Ind/Misc						
12	Units		1,400,725	1,136,000	699,100	96,100	34,816
13	Allocation of costs of service	8,285,000	5,924,600	1,135,700	545,400	647,200	32,100
	Electric & Electronic Equip.						
14	Units		457,559	85,600	42,800	42,800	2,417
15	Allocation of costs of service	2,344,700	1,935,300	85,600	33,400	288,200	2,200
	Food and Kindred Products						
16	Units		17,547	122,600	75,500	0	215
17	Allocation of costs of service	255,900	74,200	122,600	58,900	0	200
	Hospitals & Convalescent Homes						
18	Units		121,873	174,900	64,600	11,400	1,071
19	Allocation of costs of service	818,600	515,500	174,900	50,400	76,800	1,000
	Industrial Chemical						
20	Units		12,001	27,000	53,900	0	173
21	Allocation of costs of service	120,100	50,800	27,000	42,100	0	200

Line No.	Description	Total Cost	Common to All Customers				
			Volume	BOD	TSS	NH3	Customer
1	Cost per Unit		\$ 4.23 per HCF	\$ 1.00 per lbs	\$ 0.78 per lbs	\$ 6.73 per lbs	\$ 0.92 per bill
	Laundries						
22	Units		26,345	24,700	18,100	800	340
23	Allocation of costs of service	155,900	111,400	24,700	14,100	5,400	300
	Machinery Manufacturers						
24	Units		38,096	68,900	130,700	0	2,182
25	Allocation of costs of service	334,000	161,100	68,900	102,000	0	2,000
	Metal Plating						
26	Units		6,776	400	2,500	0	320
27	Allocation of costs of service	31,400	28,700	400	2,000	0	300
	Motels & Hotels						
28	Units		54,700	105,800	41,300	2,400	96
29	Allocation of costs of service	385,700	231,400	105,800	32,200	16,200	100
	Repair Shops & Car Washes						
30	Units		11,961	13,400	20,900	0	834
31	Allocation of costs of service	81,100	50,600	13,400	16,300	0	800
	Restaurants						
32	Units		134,650	1,050,100	470,400	8,400	932
33	Allocation of costs of service	2,043,800	569,500	1,049,800	367,000	56,600	900
	Schools & Colleges						
34	Units		49,681	40,300	31,000	9,300	2,074
35	Allocation of costs of service	339,100	210,100	40,300	24,200	62,600	1,900
	Major Users (O&M) - Customer 1						
36	Units		91	949	423	7	0
37	Allocation of costs of service	999,200	259,300	445,400	257,200	37,300	0
	Major Users (Capital) - Customer 1						
38	Units		0	3	1	0	0
39	Allocation of costs of service	851,700	263,500	503,300	73,100	11,800	0
40	TOTAL COSTS OF SERVICE	\$ 41,251,600	\$ 22,463,600	\$ 8,175,300	\$ 5,022,600	\$ 5,290,100	\$ 300,000

7 Rate Design

The initial consideration in the derivation of rate schedules for sewer service is the establishment of equitable charges to the customers commensurate with the cost of providing that service. While the cost of service allocations to customer classes should not be construed as literal or exact determinations, they offer a guide to the necessity for, and the extent of, rate adjustments. Practical considerations sometimes modify rate adjustments by considering additional factors such as the extent of bill impacts, existing contracts, and historical local policies and practices.

7.1 EXISTING RATES

The Sewer Utility's existing rates consist of a fixed component in the form of monthly service charge and a variable component in the form of consumption charge. The monthly service charge is a flat fee based on EDUs and is applied to residential customers. The monthly service charge also serves as minimum charge for non-residential customers and applies when consumption does not exceed the charge. Non-residential customers also have a consumption charge based on units of water consumption (1 unit = 1 HCF = 748 gallons) multiplied by a return factor. The City has separate charges for major users consisting of O&M and capital components. Table 5-5 presented earlier in this report summarizes the existing sewer rates.

7.2 PROPOSED RATES

The costs of service analysis described in preceding sections of this report provide a basis for the design of sewer rates.

7.2.1 Monthly Service Charge

The monthly service charge is designed to recover residential costs associated with sewage flow, strength loadings, and billing, collecting and accounting, and maintenance and capital costs. The charge is a flat monthly fee based on EDUs. An EDU is defined in Section 5.1

The monthly service charge also serves as the minimum monthly service charge for non-residential customers. The minimum service charge will recover non-residential costs associated with volume, strength, and meter reading, billing, collecting and accounting, and maintenance and capital costs. The minimum monthly service charge incorporates an allowance of sewage flow. Once a customer exceeds the allowance, the minimum monthly service charge goes away.

Table 7-1 shows the forecasted proposed three-year monthly service charge rate schedule.

Table 7-1 Proposed Monthly Service Charge

Line No.	Customer Class	Proposed		
		FY 2021	FY 2022	FY 2023
	Monthly Service Charge (\$/EDU)	\$/mo	\$/mo	\$/mo
1	Single Family	44.53	45.82	47.12
2	Multi-Family	44.53	45.82	47.12
	Minimum Bill Charge (\$/Month)	\$/mo	\$/mo	\$/mo
3	All Customers	44.53	45.82	47.12

7.2.2 Consumption Charge

The consumption charges are designed to recover the remainder of the cost component costs not recovered through the monthly service charge for non-residential customers. Table 7-2 shows the forecasted proposed three-year rate schedule for the Sewer Utility.

Table 7-2 Proposed Consumption Charges

Line No.	Customer Class	Proposed		
		FY 2021	FY 2022	FY 2023
	Commodity Charge (\$/HCF)	\$/HCF	\$/HCF	\$/HCF
1	Amusement Parks	5.79	5.93	6.03
2	Auto Dealers & Service Station	6.10	6.24	6.36
3	Churches	5.00	5.11	5.19
4	Com/Ind/Misc	5.29	5.42	5.50
5	Electric & Electronic Equip.	5.02	5.17	5.23
6	Food and Kindred Products	14.45	14.51	15.00
7	Hospitals & Convalescent Homes	6.55	6.68	6.81
8	Industrial Chemical	9.60	9.81	10.07
9	Industrial Water Treatment	3.62	3.62	3.62
10	Laundries	5.76	5.90	5.99
11	Machinery Manufacturers	7.52	7.69	7.87
12	Metal Plating	3.31	3.39	3.39
13	Motels & Hotels	7.04	7.15	7.30
14	Paper	11.05	11.05	11.05
15	Repair Shops & Car Washes	4.64	4.76	4.83
16	Restaurants	15.09	15.11	15.64
17	Schools & Colleges	5.62	5.77	5.88

7.2.3 Major Users

The major commercial and industrial user charge is designed to recover the costs associated with O&M and capital for major users. Major users are classified based on requirements in Section 5.1. These customers are monitored monthly for volume and strength loadings. Major users are charged the unit charges identified in Table 6-5, Line 7. Note that the major user charges consist of specifically identified O&M and capital components. Charges for all other customers incorporate these charges as well but the City has combined them into a single rate for simplicity. Table 7-3 shows the three-year rate schedule based on unit costs in future years.

Table 7-3 Proposed Major User Charges

Line No.	Customer Class	Proposed		
		FY 2021	FY 2022	FY 2023
Major Commercial and Industrial Users				
Operating and Maintenance Cost Recovery				
1	Volume (per MG)	2,667.35	2,997.95	3,255.63
2	BOD [2] (per 1,000 lbs)	425.59	488.98	535.93
3	SS [3] (per 1,000 lbs)	578.32	642.10	693.20
4	NH3 [4] (per 1,000 lbs)	4,902.37	5,415.25	5,830.98
Annual Capital Cost Recovery				
5	Volume (per MGD)	1,087,067	1,037,611	983,440
6	BOD [2] (per 1,000 lbs/day)	121,093	155,878	175,138
7	SS [3] (per 1,000 lbs/day)	54,616	55,839	57,007
8	NH3 [4] (per 1,000 lbs/day)	411,021	483,915	534,849

7.3 TYPICAL MONTHLY COSTS UNDER PROPOSED CHARGES

Table 7-4 presents a comparison of typical monthly costs under existing rates and the proposed schedule of sewer user rates derived in this study for both residential and non-residential customers.

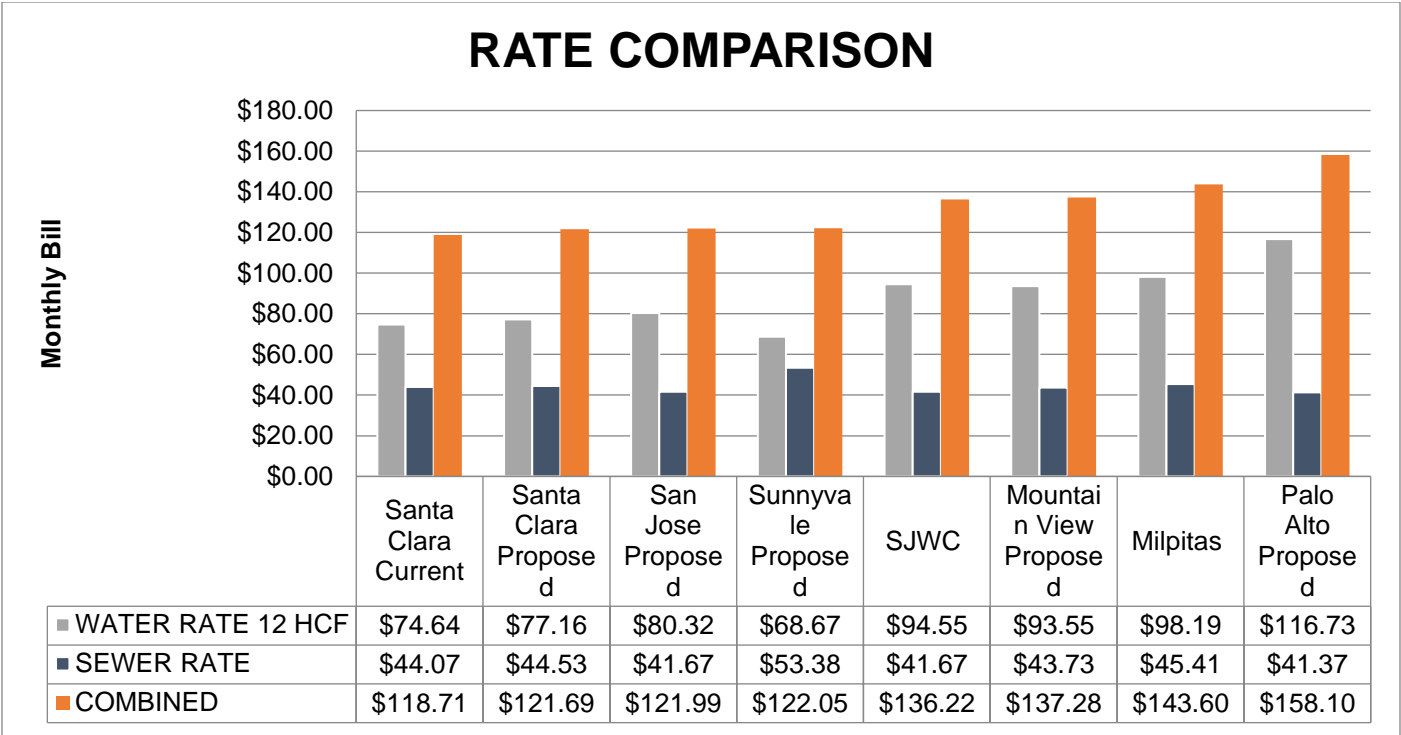
Table 7-4 Typical Monthly Bill

Customer Class	Typical Monthly Usage	FY 2020 Existing Rates	FY 2021 Proposed Rates
	(HCF)	(\$)	(\$)
Residential		\$44.07	\$44.53
Non-Residential	0	\$44.07	\$44.53
	10	\$63.64	\$65.00
	20	\$127.27	\$129.99
	30	\$190.91	\$194.99
	40	\$254.55	\$259.99
	50	\$318.19	\$324.98
	100	\$636.37	\$649.96
	250	\$1,590.94	\$1,624.91

7.4 NEIGHBORING SEWER UTILITIES

Presented in Figure 7-1 is the proposed rates compared to rates of neighboring jurisdictions, for a single-family residential customer. Based on the comparison, the City is currently a higher cost sewer provider in the area. With the proposed rate increases, the City remains one of the higher sewer providers of the surveyed communities. All surveyed community rates are best estimates as of May 2020.

Figure 7-1 Comparison to Neighboring Sewer Utilities



Appendix A – Ten-Year Financial Plan

WATER UTILITY

Line No.	Description	Fiscal Year Ending June 30,									
		FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Revenue											
Rate Revenue											
1	Revenue from Existing Rates	49,418,600	50,345,000	51,289,800	52,253,300	53,235,900	54,238,200	55,260,300	56,302,700	57,365,900	58,450,200
2	Increased Revenue Due to Adjustments	1,630,800	3,377,600	5,247,100	9,953,600	15,210,900	16,892,000	18,659,700	20,518,000	22,470,800	24,522,500
3	Subtotal Rate Revenue	\$ 51,049,400	\$ 53,722,600	\$ 56,536,900	\$ 62,206,900	\$ 68,446,800	\$ 71,130,200	\$ 73,920,000	\$ 76,820,700	\$ 79,836,700	\$ 82,972,700
Other Operating Revenue											
4	Solar System Maintenance	75,700	75,700	75,700	75,700	75,700	75,700	75,700	75,700	75,700	75,700
5	Water System Maintenance	42,200	42,200	42,200	42,200	42,200	42,200	42,200	42,200	42,200	42,200
6	Water Construction	0	0	0	0	0	0	0	0	0	0
7	Water System Operations	0	0	0	0	0	0	0	0	0	0
8	Administration Design	1,118,100	1,129,800	1,141,800	1,154,000	1,166,500	1,179,200	1,192,200	1,205,400	1,218,900	1,232,700
9	Water Quality	0	0	0	0	0	0	0	0	0	0
10	Water Resources	72,400	72,400	72,400	72,400	72,400	72,400	72,400	72,400	72,400	72,400
11	Subtotal Other Operating Revenue	\$ 1,308,400	\$ 1,320,100	\$ 1,332,100	\$ 1,344,300	\$ 1,356,800	\$ 1,369,500	\$ 1,382,500	\$ 1,395,700	\$ 1,409,200	\$ 1,423,000
12	Total Revenue	\$ 52,357,800	\$ 55,042,700	\$ 57,869,000	\$ 63,551,200	\$ 69,803,600	\$ 72,499,700	\$ 75,302,500	\$ 78,216,400	\$ 81,245,900	\$ 84,395,700
Revenue Requirements											
Operating & Maintenance											
13	O&M Expenses	46,121,000	49,213,500	53,372,800	57,610,300	62,245,300	65,226,700	68,355,600	71,639,900	75,086,400	78,704,600
14	Subtotal O&M	\$ 46,121,000	\$ 49,213,500	\$ 53,372,800	\$ 57,610,300	\$ 62,245,300	\$ 65,226,700	\$ 68,355,600	\$ 71,639,900	\$ 75,086,400	\$ 78,704,600
Debt Service											
15	Existing Revenue Bonds	0	0	0	0	0	0	0	0	0	0
16	Proposed Revenue Bonds	0	0	0	0	0	0	0	0	0	0
17	Total Debt Service	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Transfers											
18	Transfer to Rate Stabilization Fund	0	1,200,000	1,250,000	1,250,000	1,250,000	500,000	500,000	400,000	400,000	300,000
19	Transfer to Other Fund	1,151,800	0	0	0	0	0	0	0	0	0
20	Transfer to Pension Stabilization Fund	199,400	199,400	199,400	199,400	199,400	199,400	199,400	199,400	199,400	199,400
21	Transfer to Water Construction Fund	2,500,000	2,500,000	3,750,000	4,500,000	4,500,000	4,800,000	5,000,000	5,000,000	5,000,000	5,000,000
22	Total Transfers	\$ 3,851,200	\$ 3,899,400	\$ 5,199,400	\$ 5,949,400	\$ 5,949,400	\$ 5,499,400	\$ 5,699,400	\$ 5,599,400	\$ 5,599,400	\$ 5,499,400
23	Total Revenue Requirements	\$ 49,972,200	\$ 53,112,900	\$ 58,572,200	\$ 63,559,700	\$ 68,194,700	\$ 70,726,100	\$ 74,055,000	\$ 77,239,300	\$ 80,685,800	\$ 84,204,000
24	Net Annual Cash Balance	2,385,600	1,929,800	(703,200)	(8,500)	1,608,900	1,773,600	1,247,500	977,100	560,100	191,700
25	Beginning Fund Balance	10,752,200	13,137,800	15,067,600	14,364,400	14,355,900	15,964,800	17,738,400	18,985,900	19,963,000	20,523,100
26	Net Cumulative Fund Balance	\$ 13,137,800	\$ 15,067,600	\$ 14,364,400	\$ 14,355,900	\$ 15,964,800	\$ 17,738,400	\$ 18,985,900	\$ 19,963,000	\$ 20,523,100	\$ 20,714,800
27	Minimum Operating Reserves (90 Days)	\$ 11,372,300	\$ 12,134,800	\$ 13,160,400	\$ 14,205,300	\$ 15,348,200	\$ 16,083,300	\$ 16,854,800	\$ 17,664,600	\$ 18,514,500	\$ 19,406,600

RECYCLED WATER UTILITY

Line No.	Description	Fiscal Year Ending June 30,									
		FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Revenue											
Rate Revenue											
1	Revenue from Existing Rates	6,553,700	6,684,400	6,818,100	6,954,200	7,093,000	7,234,600	7,379,100	7,526,400	7,676,600	7,829,900
2	Increased Revenue Due to Adjustments	262,100	476,000	704,500	1,370,900	2,119,800	2,961,000	3,436,100	3,946,200	4,375,500	4,831,800
3	Subtotal Rate Revenue	\$ 6,815,800	\$ 7,160,400	\$ 7,522,600	\$ 8,325,100	\$ 9,212,800	\$ 10,195,600	\$ 10,815,200	\$ 11,472,600	\$ 12,052,100	\$ 12,661,700
Other Operating Revenue											
4	System Maintenance	87,600	89,300	91,100	92,900	94,800	96,700	98,600	100,600	102,600	104,700
5	South Bay Water Recycling System Maintena	411,800	411,800	411,800	411,800	411,800	411,800	411,800	411,800	411,800	411,800
6	Subtotal Other Operating Revenue	\$ 499,400	\$ 501,100	\$ 502,900	\$ 504,700	\$ 506,600	\$ 508,500	\$ 510,400	\$ 512,400	\$ 514,400	\$ 516,500
7	Total Revenue	\$ 7,315,200	\$ 7,661,500	\$ 8,025,500	\$ 8,829,800	\$ 9,719,400	\$ 10,704,100	\$ 11,325,600	\$ 11,985,000	\$ 12,566,500	\$ 13,178,200
Revenue Requirements											
Operating & Maintenance											
8	O&M Expenses	5,865,300	6,876,900	7,588,600	8,374,900	9,243,700	9,715,900	10,212,100	10,733,300	11,280,800	11,855,800
9	Subtotal O&M	5,865,300	6,876,900	7,588,600	8,374,900	9,243,700	9,715,900	10,212,100	10,733,300	11,280,800	11,855,800
Debt Service											
10	Existing Revenue Bonds	0	0	0	0	0	0	0	0	0	0
11	Proposed Revenue Bonds	0	0	0	0	0	0	0	0	0	0
12	Total Debt Service	0	0	0	0	0	0	0	0	0	0
Transfers											
13	Transfer to Rate Stabilization Fund	0	70,000	70,000	70,000	80,000	80,000	80,000	80,000	80,000	80,000
14	Transfer to Pensiotn Stabilization Fund	9,800	9,800	9,800	9,800	9,800	9,800	9,800	9,800	9,800	9,800
15	Transfer to Recycled Water Const Fund	500,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
16	Total Transfers	509,800	1,079,800	1,079,800	1,079,800	1,089,800	1,089,800	1,089,800	1,089,800	1,089,800	1,089,800
17	Total Revenue Requirements	\$ 6,375,100	\$ 7,956,700	\$ 8,668,400	\$ 9,454,700	\$ 10,333,500	\$ 10,805,700	\$ 11,301,900	\$ 11,823,100	\$ 12,370,600	\$ 12,945,600
18	Net Annual Cash Balance	940,100	(295,200)	(642,900)	(624,900)	(614,100)	(101,600)	23,700	161,900	195,900	232,600
19	Beginning Fund Balance	3,667,400	4,607,500	4,312,300	3,669,400	3,044,500	2,430,400	2,328,800	2,352,500	2,514,400	2,710,300
20	Net Cumulative Fund Balance	\$ 4,607,500	\$ 4,312,300	\$ 3,669,400	\$ 3,044,500	\$ 2,430,400	\$ 2,328,800	\$ 2,352,500	\$ 2,514,400	\$ 2,710,300	\$ 2,942,900
21	Minimum Operating Reserves (90 Days)	\$ 1,446,200	\$ 1,695,700	\$ 1,871,200	\$ 2,065,000	\$ 2,279,300	\$ 2,395,700	\$ 2,518,100	\$ 2,646,600	\$ 2,781,600	\$ 2,923,300

SEWER UTILITY

Line No.	Description	Fiscal Year Ending June 30,									
		FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Revenue											
Rate Revenue											
1	Revenue from Existing Rates	40,245,500	40,346,600	40,447,900	40,549,900	40,652,000	40,754,600	40,857,800	40,961,300	41,065,100	41,169,500
2	Increased Revenue Due to Adjustments	1,006,100	2,042,600	3,110,100	3,991,300	4,894,500	5,819,900	6,768,600	7,740,600	8,736,800	9,757,500
3	Subtotal Rate Revenue	\$ 41,251,600	\$ 42,389,200	\$ 43,558,000	\$ 44,541,200	\$ 45,546,500	\$ 46,574,500	\$ 47,626,400	\$ 48,701,900	\$ 49,801,900	\$ 50,927,000
Other Operating Revenue											
4	System Administration (Interest Income)	1,969,900	2,009,300	2,049,500	2,090,500	2,132,300	2,174,900	2,218,400	2,262,800	2,308,100	2,354,300
5	System Maintenance	92,700	92,700	92,700	92,700	92,700	92,700	92,700	92,700	92,700	92,700
6	Operations	0	0	0	0	0	0	0	0	0	0
7	SJ SC Water Pollution Control Plant	0	0	0	0	0	0	0	0	0	0
8	Storm Pump Maintenance	0	0	0	0	0	0	0	0	0	0
9	Subtotal Other Operating Revenue	\$ 2,062,600	\$ 2,102,000	\$ 2,142,200	\$ 2,183,200	\$ 2,225,000	\$ 2,267,600	\$ 2,311,100	\$ 2,355,500	\$ 2,400,800	\$ 2,447,000
10	Total Revenue	\$ 43,314,200	\$ 44,491,200	\$ 45,700,200	\$ 46,724,400	\$ 47,771,500	\$ 48,842,100	\$ 49,937,500	\$ 51,057,400	\$ 52,202,700	\$ 53,374,000
Revenue Requirements											
Operating & Maintenance											
11	O&M Expenses	26,841,500	27,841,800	28,879,900	29,957,100	31,074,900	32,235,000	33,438,500	34,687,300	35,983,800	37,329,300
12	Subtotal O&M	\$ 26,841,500	\$ 27,841,800	\$ 28,879,900	\$ 29,957,100	\$ 31,074,900	\$ 32,235,000	\$ 33,438,500	\$ 34,687,300	\$ 35,983,800	\$ 37,329,300
Debt Service											
13	Existing Revenue Bonds	937,400	937,400	937,400	937,400	937,400	937,400	937,400	937,400	937,400	937,400
14	Proposed Revenue Bonds	594,100	807,900	1,007,700	4,731,200	4,731,200	4,731,200	4,731,200	4,731,200	4,731,200	4,731,200
15	Total Debt Service	\$ 1,531,500	\$ 1,745,300	\$ 1,945,100	\$ 5,668,600	\$ 5,668,600	\$ 5,668,600	\$ 5,668,600	\$ 5,668,600	\$ 5,668,600	\$ 5,668,600
Transfers											
16	Transfer to Rate Stabilization Fund	0	400,000	200,000	100,000	100,000	200,000	200,000	200,000	200,000	200,000
17	Transfer to Other Fund	1,245,900	0	0	0	0	0	0	0	0	0
18	Transfer to Pension Stabilization Fund	78,200	78,200	78,200	78,200	78,200	78,200	78,200	78,200	78,200	78,200
19	Transfer to Sewer Construction Fund	16,664,700	15,000,000	15,000,000	12,500,000	12,500,000	12,500,000	12,500,000	10,000,000	10,000,000	10,000,000
20	Total Transfers	\$ 17,988,800	\$ 15,478,200	\$ 15,278,200	\$ 12,678,200	\$ 12,678,200	\$ 12,778,200	\$ 12,778,200	\$ 10,278,200	\$ 10,278,200	\$ 10,278,200
21	Total Revenue Requirements	\$ 46,361,800	\$ 45,065,300	\$ 46,103,200	\$ 48,303,900	\$ 49,421,700	\$ 50,681,800	\$ 51,885,300	\$ 50,634,100	\$ 51,930,600	\$ 53,276,100
22	Net Annual Cash Balance	(3,047,600)	(574,100)	(403,000)	(1,579,500)	(1,650,200)	(1,839,700)	(1,947,800)	423,300	272,100	97,900
23	Beginning Fund Balance	21,242,500	18,194,900	17,620,800	17,217,800	15,638,300	13,988,100	12,148,400	10,200,600	10,623,900	10,896,000
24	Net Cumulative Fund Balance	\$ 18,194,900	\$ 17,620,800	\$ 17,217,800	\$ 15,638,300	\$ 13,988,100	\$ 12,148,400	\$ 10,200,600	\$ 10,623,900	\$ 10,896,000	\$ 10,993,900
25	Minimum Operating Reserves (90 Days)	6,618,500	6,865,100	7,121,100	7,386,700	7,662,300	7,948,400	8,245,100	8,553,000	8,872,700	9,204,500
26	Debt Service Coverage (Min 1.25)	10.76	9.54	8.65	2.96	2.95	2.93	2.91	2.89	2.86	2.83

Disclaimer

Black & Veatch has prepared this report for the City, and it is based on information not within the control of Black & Veatch. The City has not requested Black & Veatch to make an independent analysis, to verify the information provided to us, or to render an independent judgment of the validity of the information provided by others. Because of this, Black & Veatch cannot, and does not, guarantee the accuracy thereof to the extent that such information, data, or opinions were based on information provided by others.

In conducting these analyses and in forming an opinion of the projection of future financial operations summarized in this report, Black & Veatch made certain assumptions on the conditions, events, and circumstances that may occur in the future. The methodology utilized in performing the analyses follows generally accepted practices for such projections. Such assumptions and methodologies are reasonable and appropriate for the purpose for which they are used. While we believe the assumptions are reasonable and the projection methodology valid, actual results may differ materially from those projected, as influenced by the conditions, events, and circumstances that occur. Such factors may include the utilities' ability to execute the capital improvement program as scheduled and within budget, regional climate and weather conditions affecting the demand for water, discharge of sewage flow and adverse legislative, regulatory, or legal decisions (including environmental laws and regulations) affecting the utilities' ability to manage the system and meet water quality requirements.