

Running Springs Water District

Water and Wastewater Rate Study and Fire and Ambulance Financial Plan

Final Report / April 2019





April 29, 2019

Mr. Ryan Gross
General Manager
Running Springs Water District
31242 Hilltop Blvd.
Running Springs, CA 92382

Subject: Water and Wastewater Rate Study and Fire and Ambulance Financial Plan

Dear Mr. Gross:

Raftelis is pleased to present this Water and Wastewater Rate Study and Fire and Ambulance Financial Plan Report. The report describes how we projected revenues and expenses and the revenue adjustments and rates needed to maintain financially healthy enterprises.

It was a pleasure working with you and we wish to express our thanks for your support during the project. If you have any questions, please call me at 714.351.2013.

Sincerely,

A handwritten signature in blue ink that reads 'Steve Gagnon'.

Steve Gagnon, PE (AZ)
Manager

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- APPENDIX B: Projected Reserves Balances as a Result of Two Additional CalPERS Payment Options

1. Executive Summary

1.1. Background

In the Fall of 2018, the Running Springs Water District (District) engaged Raftelis Financial Consultants, Inc. (Raftelis) to conduct a Water and Wastewater Rate Study and well as a Financial Plan review for the Fire and Ambulance Department (Study). The Study included a Financial Plan, Cost of Service Study and rate calculation for the Water and Wastewater Enterprises and a Financial Plan for the Fire and Ambulance Department. This report presents the resulting rates for Water and Wastewater for implementation in July 2019.

The District wishes to establish fair and equitable rates that:

1. Meet the District’s fiscal needs in terms of operational expenses, reserve goals, and capital investment to maintain the system;
2. Are fair, equitable, and proportionately allocate the costs of providing service in accordance with California Constitution Article XIII D, section 6 (commonly referred to as Proposition 218); and
3. Result in stable charges for customers and stable revenues for the District over time.

1.2. Results and Recommendations

Note: In this report, the numbers shown are the raw numbers from Microsoft excel calculations. Numbers in excel have many decimal places and therefore the totals shown in some of the tables may not add exactly to the total shown in the Table because of not rounding numbers in Excel.

Table 1-1 shows the revenue adjustments for the water and wastewater enterprises as selected by the Board of Directors after a presentation in January 2019. The revenue adjustments are the additional amount of revenue collected for each enterprise compared to the prior year and do not necessarily reflect what the proposed change in any particular customers actual bill would be.

Table 1-1: Recommended Yearly Revenue Adjustments

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Water Enterprise	3.0%	3.0%	3.0%	3.0%	3.0%
Wastewater Enterprise	3.0%	3.0%	3.0%	3.0%	3.0%

1.2.1. Factors Affecting Revenue Adjustments

The following items affect the District’s revenue requirement (revenues that are necessary to recover its costs) and thus its rates for each enterprise. The District’s expenses include Operations and Maintenance (O&M) expenses, capital expenses, debt service (for water and wastewater) and reserve funding.

1. O&M Expenses: The District’s O&M expenses increase each year in line with general cost inflation and the increasing cost of employee benefits.

2. Water Purchased Costs: The District purchases water from the Crestline Lake Arrowhead Water Agency (CLAWA) and Arrowbear Park County Water District (APCWD). These wholesale rates are expected to increase; however, the District is uncertain as to how much at this time.
3. Capital Investment: The District plans to invest over \$2 Million in the water system and \$2.5 Million in the wastewater system over the next five years.

1.3. Water Enterprise

1.3.1. Current Water Rates

Table 1-2 shows the District’s current water rates, which consist of a fixed monthly service charge, an infrastructure repair and replacement charge, a volumetric charge, and a private fire service charge. The District currently charges different volumetric rates for properties that are served by the District but located outside of the District’s boundaries. Raftelis recommends discontinuing the different rates for customers outside District boundaries. Raftelis also recommends that the monthly service charge for Irrigation customers be the same as all other customers. Lastly, we recommend that the costs currently funded by the infrastructure repair and replacement charge be funded by the monthly service charge.

Table 1-2: Current Water Rates

Meter Size	Monthly Service Charge	Monthly Service Charge -Irrigation	Meter Size	Private Fire Service Charge
5/8" x 3/4"	\$31.42	\$13.13	1" and Smaller	\$15.75
1"	\$70.77	\$32.78	1.5"	\$26.21
1.5"	\$136.29	\$65.54	2"	\$43.58
2"	\$214.95	\$104.87	3"	\$60.95
3"	\$463.97		4"	\$78.32
			6"	\$95.65
			8"	\$113.02
Infrastructure Repair & Replacement	\$1.88			
Volumetric Rate	\$/ cubic foot			
Inside District	\$0.0469			
Outside District	\$0.0519			

1.3.2. Proposed Water Rates

The District’s proposed water rate structure maintains two components: (1) a fixed monthly service charge, and (2) a volumetric charge. Customers that have a private fire suppression system on their property are also charged a separate private fire service in addition to the fixed monthly service charge and volumetric charge. Each of these charges is described below.

1.3.3. Proposed Fixed Monthly Service Charge

The District’s proposed fixed monthly service charge includes two cost components. The first cost component is the meter service charge and it is based on the meter size serving a property. The meter service charge is

calculated to recover the costs to maintain and replace meters as well as capacity costs (fixed costs associated with providing service). The rate structure assumes the cost is proportional to the size of the meter and goes up with meter size according to standards set forth by the American Water Works Association (AWWA). The second cost component is the customer service component. This component recovers costs associated with answering customer calls and billing customers. These costs are not related to meter size. The full derivation of the total service charge is described in Section 5, and the total proposed monthly service charge is shown in Table 1-3. Note that the monthly service charge is set in proportion to the potential flow through each meter size, according to published values by the American Water Works Association. Therefore, realigning this charge in proportion to potential flows caused the rates for the service charge for larger meter sizes to increase more than the 5/8" x 3/4" meters. Table 1-3 shows the proposed rates for the monthly service charge for the next five fiscal years.

Table 1-3: Proposed Monthly Service Charge (\$/Meter Size)

Meter Size	Current Charge	July 2019	July 2020	July 2021	July 2022	July 2023
Revenue Adjustment ----->>			3.0%	3.0%	3.0%	3.0%
5/8" x 3/4"	\$33.30	\$34.19	\$35.22	\$36.28	\$37.36	\$38.49
1"	\$72.65	\$79.01	\$81.38	\$83.82	\$86.33	\$88.93
1.5"	\$138.17	\$153.70	\$158.31	\$163.06	\$167.95	\$172.99
2"	\$216.83	\$243.33	\$250.63	\$258.15	\$265.89	\$273.87
3"	\$465.85	\$482.34	\$496.81	\$511.72	\$527.07	\$542.88

1.3.4. Proposed Volumetric Rate

Table 1-4 shows the proposed volumetric rates which are used to calculate a customer’s volumetric charge for the next 5 fiscal years. Note that “CF” stands for cubic feet of water.

Table 1-4: Proposed Volumetric Rates (\$/CF)

	Current Rate	July 2019 Rate	July 2020 Rate	July 2021 Rate	July 2022 Rate	July 2023 Rate
Revenue Adjustment			3%	3%	3%	3%
Volumetric Rate (\$ / CF)	\$0.0469	\$0.0483	\$0.0498	\$0.0513	\$0.0528	\$0.0544

1.3.5. Proposed Monthly Private Fire Service Charge

Table 1-5 shows the proposed monthly private fire charges. These charges are applicable to customers with private fire service connections.

Table 1-5: Proposed Private Fire Charges

Line No.	Meter Size	Current Charge	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	1" & Smaller	\$15.75	\$3.20	\$3.30	\$3.40	\$3.50	\$3.60
2	1.5"	\$26.21	\$5.40	\$5.56	\$5.73	\$5.90	\$6.07
3	2"	\$43.58	\$9.18	\$9.46	\$9.74	\$10.03	\$10.34
4	3"	\$60.95	\$22.77	\$23.45	\$24.16	\$24.88	\$25.63
5	4"	\$78.32	\$46.20	\$47.59	\$49.02	\$50.49	\$52.00
6	6"	\$95.65	\$130.30	\$134.21	\$138.24	\$142.39	\$146.66
7	8"	\$113.02	\$275.36	\$283.62	\$292.13	\$300.89	\$309.92

1.4. Wastewater Enterprise

1.4.1. Proposed Wastewater Rates

The District’s current wastewater rates include a fixed service charge per Equivalent Dwelling Unit (EDU) and a volumetric charge as shown in Table 1-6. The flow associated with one EDU is based on the District’s Master Plan assumptions for a typical single family residential dwelling. The District can reassess the number of assigned EDUs for each customer to properly estimate sewer flow. For example, if the District determines that a particular camp or other commercial customer is generating significantly more wastewater per EDU per day than a typical single family residential customer, then the District may adjust the number of EDUs for the camp or commercial customer to account for the additional flow. The volumetric portion of a customer’s bill is based on a percentage of the customer’s monthly water usage. Raftelis recommends revising the volumetric charge¹ to be based on estimated sewer discharges, instead of the water bill, and incorporating the infrastructure repair and replacement charge into the fixed service charge. Table 1-7 shows the proposed wastewater rates for the next 5 fiscal years.

Table 1-6: Current Wastewater Rates

Wastewater Current Rates	FY 2019
Fixed Service Charge	\$44.49
Infrastructure R&R	\$5.25
Total Fixed Charge per Equivalent Dwelling Unit	\$49.74
Plus a volumetric charge:	
SFR & Outside District	15% of the water bill
Commercial/Schools	33.3% of the water bill

Table 1-7: Proposed Wastewater Rates

Rate Component	Current Rates	July 2019 FY 2020	July 2020 FY 2021	July 2021 FY 2022	July 2022 FY 2023	July 2023 FY 2024
Revenue Adjustment			3%	3%	3%	3%
Sewer Fixed Charge (Includes IR&R C)	\$49.74	\$50.98	\$52.51	\$54.08	\$55.71	\$57.38
Sewer Volumetric Rate (\$/CF)	15% of water bill 33% of water bill	\$0.0099	\$0.0102	\$0.0105	\$0.0109	\$0.0112

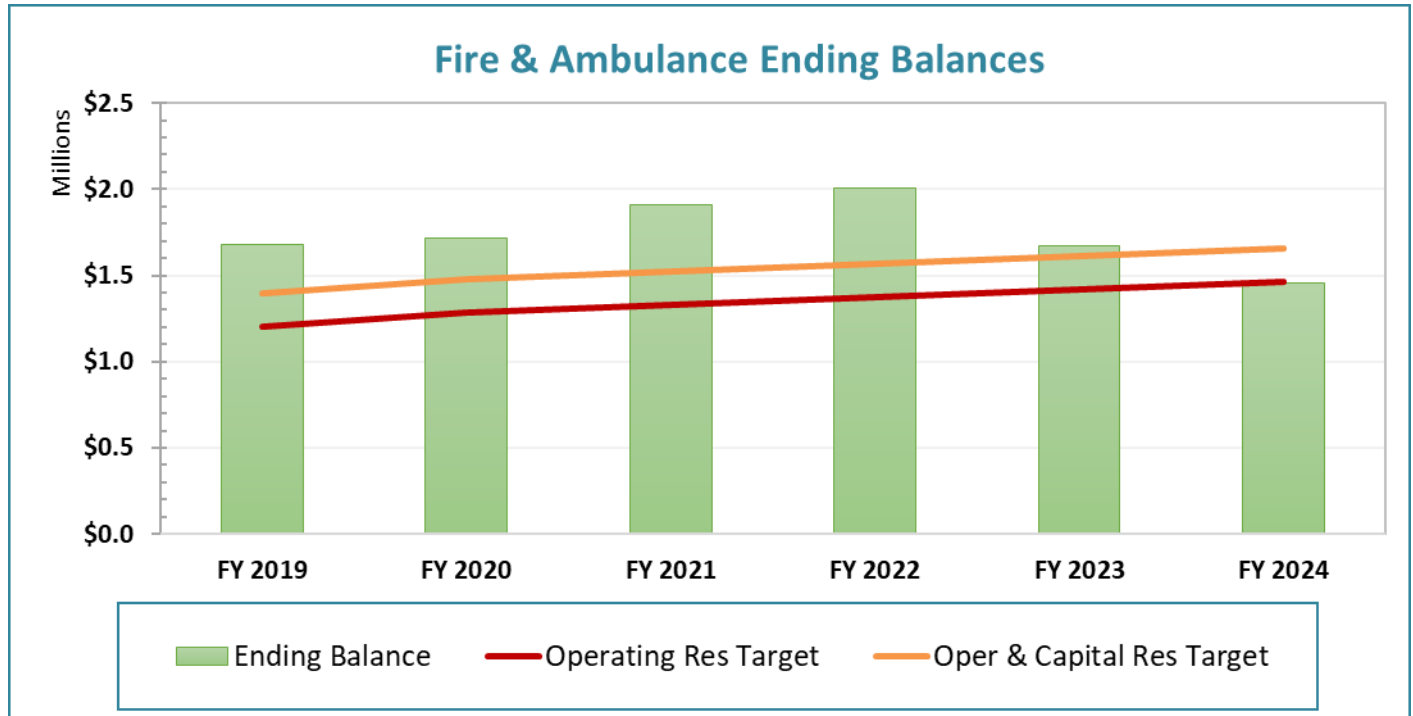
¹ Not that often the terms rate and charge are used interchangeably, however the term rate implies a dollar amount per unit of use (\$/CF) that is applied to a customer’s use to yield a charge.

1.5. Fire and Ambulance

1.5.1. Financial Plan Review

Raftelis prepared a Fire and Ambulance financial plan to project the financial health of the enterprise. We assumed that the only revenue growth was a 1% yearly increase in property tax revenue and that expenses would grow 3 to 4% per year (5% for electricity). The resulting projected reserve balances are shown in Figure 1-1. Fire and Ambulance reserves decrease in FY 2023 due to the planned purchase of a new fire engine. The full Financial Plan is detailed in Section 8.

Figure 1-1: Fire and Ambulance Projected Reserve Balances



2. Water Enterprise

Section 2 describes the water enterprise rate study, starting with the water financial plan, followed by the cost of service analysis, rate design, and customer bill impacts.

2.1. Water System Background

The District’s water distribution system consists of 9 pressure zones, 13 storage reservoirs, and 14 booster pumping stations that lift water to upper zones or to replenish storage and meet demand. The District has approximately 43 miles of water mains ranging in size from 2 to 16 inches in diameter. The 2-inch lines are back-lot lines planned to be systematically replaced.

The District acquires water from local wells and two wholesale water suppliers: CLAWA and APCWD.

2.2. Financial Plan Assumptions

2.2.1. Number of Accounts, Account growth

The District provided water use and account data which Raftelis used to project revenue and develop a financial plan for fiscal years (FY) 2019 through FY 2024 (also known as the study period). Raftelis calculated rate revenue (without rate adjustments) by multiplying the number of accounts by the fixed monthly service charge and multiplying the total water use by the volumetric charge rates (in \$/cf, where cf stands for cubic foot).

The revenue calculated for each fiscal year in the Financial Plan is a function of the number of accounts, account growth, water use trends, and existing rates. Table 2-1 shows the assumed account growth rates and water demand growth. The account growth equates to about two or three new homes a year and we assumed water use would remain unchanged over the study period given the low projected account growth rate. We projected the number of accounts using FY 2018 account data provided by the District and escalated the number of accounts using the account growth factor shown in Table 2-1.

Table 2-1: Account Growth and Water Use Assumptions

Revenue Growth	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
SFR Account Growth	0.07%	0.07%	0.07%	0.07%	0.07%	0.07%
Water Use	100%	100%	100%	100%	100%	100%

Based on the assumptions in Table 2-1, Table 2-2 shows the projected number of water accounts, including private fire service accounts (i.e., accounts that have private fire suppression systems), by meter size for the study period. FY 2020 is known as the “test year” or the year used to develop rates. Raftelis projected the number of meters using FY 2018 meter data provided by the District. The number of accounts is used to forecast the amount of fixed revenue the District will receive from fixed monthly service charges.

Table 2-2: Projected Potable and Private Fire Service Accounts by Meter Size

Meter Size	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
5/8" x 3/4"	2,928	2,930	2,932	2,934	2,936	2,938
1"	30	30	30	30	30	30
1.5"	1	1	1	1	1	1
2"	5	5	5	5	5	5
3"	1	1	1	1	1	1
Total	2,965	2,967	2,969	2,971	2,973	2,975
Private Fire Connections						
1"	20	20	20	20	20	20
1.5"	-	-	-	-	-	-
2"	1	1	1	1	1	1
3"	-	-	-	-	-	-
4"	3	3	3	3	3	3
6"	1	1	1	1	1	1
8"	2	2	2	2	2	2
10"	-	-	-	-	-	-
Total	27	27	27	27	27	27

2.2.2. Water Use

Table 2-3 shows the estimated FY 2020 number of accounts and water use by customer class. The number of accounts and water use were projected from FY 2018 account and water use data using an escalation factor based on the account and water use growth assumptions shown in Table 2-1.

Table 2-3: Accounts and Water Use in Cubic Feet by Customer Class

Customer Class	FY 2020 No. of Accounts	FY 2020 Water Use (cubic feet)	Percent of Water Use
Single Family Residential	2,903	15,537,925	92.2%
Commercial	59	1,121,568	6.7%
Schools	1	109,692	0.7%
Irrigation	3	49,345	0.3%
Outside District	1	30,950	0.2%
Total	2,967	16,849,480	100%

2.2.3. Inflationary and Water Purchase Cost Assumptions

To ensure future O&M costs are reasonably projected, Raffelis, in consultation with District staff, made informed assumptions about inflationary factors, water costs and water use projections. Table 2-4 shows the inflationary categories that were used to escalate the District's FY 2020 O&M expense budget (for the water, wastewater and fire/ambulance enterprises). The inflationary factors shown in Table 2-4 reflect long-term

averages for general inflation and energy prices. The District provided the salary and benefit inflationary factors reflecting employee salary and benefit obligations. Note that the personnel budget for FY 2020 was lower due to the elimination of one position.

The District’s wholesale water suppliers have not raised rates in 26 years, resulting in the conservative water wholesale cost escalation factors from the customer’s point of view as shown in Table 2-4. The District has three potable water sources: 1) local groundwater wells; 2) Arrowbear Park County Water District; and 3) Crestline Lake Arrowhead Water Agency. Table 2-4 shows the estimated increases in wholesale water rates from these two agencies. Should the wholesale rates increase significantly more than as shown in Table 2-4, the District could rely on reserves and/or elect to pass-through wholesale rate increases that are greater than 2%. The District plans on describing a Pass Through Adjustment provision in its Public Hearing Notice.

Table 2-4: O&M and Water Purchase Inflationary Assumptions

O&M (Cost) Inflation	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
General	Budget	Budget	3.0%	3.0%	3.0%	3.0%
Salary	Budget	Budget	3.0%	3.0%	3.0%	3.0%
Benefits	Budget	Budget	4.0%	4.0%	4.0%	4.0%
Electricity	Budget	Budget	5.0%	5.0%	5.0%	5.0%
Water Purchase Cost Escalation						
Arrowbear Park County Water District (APCWD)	Budget	Budget	2.0%	2.0%	2.0%	2.0%
Crestline Lake Arrowhead Water Agency (CLAWA)	Budget	Budget	2.0%	2.0%	2.0%	2.0%

Table 2-5 shows the estimated water purchase costs in the bottom line, over the study period. It assumes an average rainfall year. Actual water purchase costs may vary depending on rainfall and drought conditions.

Table 2-5: Projected Water Purchases Costs

Water Purchase Costs	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Groundwater	\$300	\$309	\$318	\$328	\$338	\$348
APCWD	\$1,050	\$1,071	\$1,092	\$1,114	\$1,137	\$1,159
CLAWA	\$1,150	\$1,173	\$1,196	\$1,220	\$1,245	\$1,270
Volume from Each Agency (Acre Feet)						
Groundwater - Acre Feet (All Wells)	246	240	265	265	265	265
APCWD	70	32	32	32	32	32
CLAWA	110	154	128	129	129	129
Total	426	426	425	426	426	426
Water Purchase Cost						
Groundwater	\$73,800	\$74,160	\$84,342	\$86,872	\$89,478	\$92,162
APCWD	\$73,500	\$34,272	\$34,957	\$35,657	\$36,370	\$37,097
CLAWA	\$126,500	\$180,642	\$153,555	\$156,961	\$160,443	\$164,001
Total	\$273,800	\$289,074	\$272,854	\$279,490	\$286,290	\$293,260

Raftelis used the assumptions shown in Table 2-1 through Table 2-5 to project revenues and costs used in the District’s Water Financial Plan. The plan uses projected annual operating expenses and revenues, capital expenditures, reserve fund balances, and annual debt service coverage ratios to estimate the amount of

additional rate revenue needed per year. The following section provides a discussion of projected O&M expenses, the Capital Improvement Plan (CIP), reserve funding, projected revenue under existing rates, and the revenue adjustments necessary to ensure the fiscal sustainability and solvency of the water enterprise.

2.3. Water System Expenses

The District’s expenses include O&M expenses, capital expenses, and debt service payments, each of which is described below.

2.3.1. O&M Expenses

The District’s current and projected O&M expenses are shown by fiscal year in Table 2-6, which incorporate the inflationary factors discussed in Table 2-4. In FY 2020, water purchase costs make up approximately 14% of the total annual O&M budget. The FY 2020 budget includes expense reductions due to the elimination of one position.

Table 2-6: Current & Projected O&M Expenses

Expenses	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Salaries and Benefits	\$656,722	\$694,577	\$717,911	\$742,044	\$767,006	\$792,824
Repairs & Maint, Supplies, Utilities	\$30,720	\$30,652	\$31,572	\$32,519	\$33,494	\$34,499
Pumping Power and Vehicles	\$6,600	\$6,600	\$6,798	\$7,002	\$7,212	\$7,428
Water Purchases	\$273,800	\$289,074	\$272,854	\$279,490	\$286,290	\$293,260
Water Testing & Analysis	\$25,848	\$23,358	\$24,059	\$24,781	\$25,524	\$26,290
Administrative	\$593,475	\$543,407	\$559,709	\$576,500	\$593,796	\$611,609
Total	\$1,587,165	\$1,587,668	\$1,612,902	\$1,662,336	\$1,713,322	\$1,765,910

2.3.2. Capital Improvement Plan (CIP)

Table 2-7 shows the District’s Capital Improvement Plan (CIP) summary. The District is planning to fund capital investments through rate revenue and reserve funds (also known as PAY-GO funding). The detailed CIP showing project names and projected costs is included in Appendix A. The FY 2019 budget accounts for a \$400,000 grant received for automated meter infrastructure.

Table 2-7: Capital Improvement Plan Summary

Water Capital Expenses	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
All Other Projects	\$798,250	\$631,000	\$391,750	\$182,000	\$172,000	\$282,000
Tank Replacement 0.1 to 0.5 MGD						\$650,000
Total Water	\$798,250	\$631,000	\$391,750	\$182,000	\$172,000	\$932,000

2.3.3. Existing Debt Service

Table 2-8 shows the District’s existing annual debt service payments. The Financial Plan presented in this section assumes no additional debt.

Table 2-8: Existing Water Annual Debt Service

Water Debt Service	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
2015 Ayers Acres Groundwater Well Loan	\$65,341	\$65,341	\$65,341	\$65,341	\$65,341	\$65,341
AMR Technology Upgrade	\$0	\$24,043	\$24,043	\$24,043	\$24,043	\$24,043
Total	\$65,341	\$89,384	\$89,384	\$89,384	\$89,384	\$89,384

2.4. Revenue Adjustments

Using the number of accounts, water use and current rates, Raftelis estimated annual revenue and subtracted the expenses discussed in the prior sections to develop a financial plan for the study period (FY 2020 to FY 2024). The financial plan is used to determine the overall revenue adjustments required to ensure water enterprise financial stability. This study establishes rates from FY 2020 to FY 2024.

The proposed revenue adjustments allow the District to fund operating expenses, capital expenditures, and comply with bond covenants. Financial Plan modeling assumes the FY 2020 revenue adjustment will occur in July of 2019, with subsequent annual adjustments occurring every July. The proposed revenue adjustments would enable the District to cover operating expenses (shown in Table 2-6) and execute the CIP (shown in Table 2-7) and meet its debt service coverage requirement of 115% in each year beyond FY 2020.

Table 2-9 shows the proposed revenue adjustments selected by the District Board at a Board Meeting in January 2019. The rates presented in Section 5 are based on these revenue adjustments.

Table 2-9: Proposed Revenue Adjustments

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Revenue Adjustment	3.0%	3.0%	3.0%	3.0%	3.0%

2.4.1. Cash Flow Analysis (i.e., the Financial Plan)

Table 2-10 shows the District’s cash flow projections over the study period, assuming the revenue adjustments shown in Table 2-9. Line 10 shows the total additional revenue from the revenue adjustments. Line 37 shows the yearly ending cash flow after subtracting expenses, debt service and capital expenses from total projected revenue. The District has a yearly operating surplus to fund reserves for the tank replacement in FY 2024. Line 38 shows that the District meets its debt service coverage requirement of 115% each year. Debt service coverage is calculated by subtracting O&M expenses from revenues (net revenues) and dividing the net revenue by debt service (line 20 - line 29 / line 33).

Table 2-10: Water Enterprise Proposed Financial Plan (Cash Flow Projections)

Line		FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Service Charge Revenue	1,226,551	1,227,373	1,228,016	1,228,839	1,229,663	1,230,488
2	Volumetric Revenue	789,886	790,395	790,905	791,416	791,927	792,438
3							
4	FY 2020		\$60,533	\$60,568	\$60,608	\$60,648	\$60,688
5	FY 2021			\$62,385	\$62,426	\$62,467	\$62,508
6	FY 2022				\$64,299	\$64,341	\$64,384
7	FY 2023					\$66,271	\$66,315
8	FY 2024						\$68,305
9	Revenue Adjustments		\$60,533	\$122,952	\$187,332	\$253,727	\$322,200
10	Total Revenue from Rates	\$2,016,437	\$2,078,302	\$2,141,874	\$2,207,588	\$2,275,317	\$2,345,125
11	Credit Card Fee Revenue	\$1,567	\$1,571	\$1,575	\$1,579	\$1,583	\$1,587
12	Meter Turn-on & Shut-Off Charge	\$17,000	\$17,043	\$17,085	\$17,128	\$17,171	\$17,214
13	Delinquent Fees	\$20,000	\$20,050	\$20,100	\$20,150	\$20,201	\$20,251
14	Admin Expense Reimbursements	\$159,792	\$0	\$0	\$0	\$0	\$0
15	Water Service Standby/Avail Charges	\$38,750	\$38,750	\$38,847	\$38,944	\$39,041	\$39,139
16	Connection Charges	\$3,180	\$3,180	\$3,188	\$3,196	\$3,204	\$3,212
17	Interest Income	\$19,126	\$16,687	\$17,498	\$23,114	\$31,244	\$32,732
18	Misc Income	\$25,000	\$25,000	\$25,063	\$25,125	\$25,188	\$25,251
19	San Bernardino Library Leasing	\$11,060	\$11,204	\$11,232	\$11,260	\$11,288	\$11,316
20	Total Revenue	\$2,311,912	\$2,211,787	\$2,276,462	\$2,348,084	\$2,424,237	\$2,495,827
21							
22	Expenses						
23	Salaries and Benefits	\$656,722	\$694,577	\$717,911	\$742,044	\$767,006	\$792,824
24	Repairs & Maint, Supplies, Utilities	\$30,720	\$30,652	\$31,572	\$32,519	\$33,494	\$34,499
25	Pumping Power and Vehicles	\$6,600	\$6,600	\$6,798	\$7,002	\$7,212	\$7,428
26	Water Purchases	\$273,800	\$289,074	\$272,854	\$279,490	\$286,290	\$293,260
27	Water Testing & Analysis	\$25,848	\$23,358	\$24,059	\$24,781	\$25,524	\$26,290
28	Administrative	\$593,475	\$543,407	\$559,709	\$576,500	\$593,796	\$611,609
29	Subtotal Expenses	\$1,587,165	\$1,587,668	\$1,612,902	\$1,662,336	\$1,713,322	\$1,765,910
30							
31	Net Revenue	\$724,747	\$624,119	\$663,559	\$685,749	\$710,916	\$729,917
32							
33	Debt Service	\$89,384	\$89,384	\$89,384	\$89,384	\$89,384	\$89,384
34							
35	Capital Projects	\$798,250	\$631,000	\$391,750	\$182,000	\$172,000	\$932,000
36							
37	Net Cash Flows (All Reserves)	\$ (162,887)	\$ (96,265)	\$ 182,426	\$ 414,365	\$ 449,532	\$ (291,467)
38	Debt Coverage Ratio	8.11	6.98	7.42	7.67	7.95	8.17

2.4.2. Graphical Financial Plan

Figure 2-1 through Figure 2-3 display the Financial Plan from Table 2-10 in graphical format. The blue bars in Figure 2-1 signify the projected revenue adjustments and the green line shows the calculated debt coverage ratio. As shown, the debt coverage ratio exceeds the minimum required debt coverage ratio of 1.15 or 115%.

Figure 2-1: Revenue Adjustments and Debt Coverage

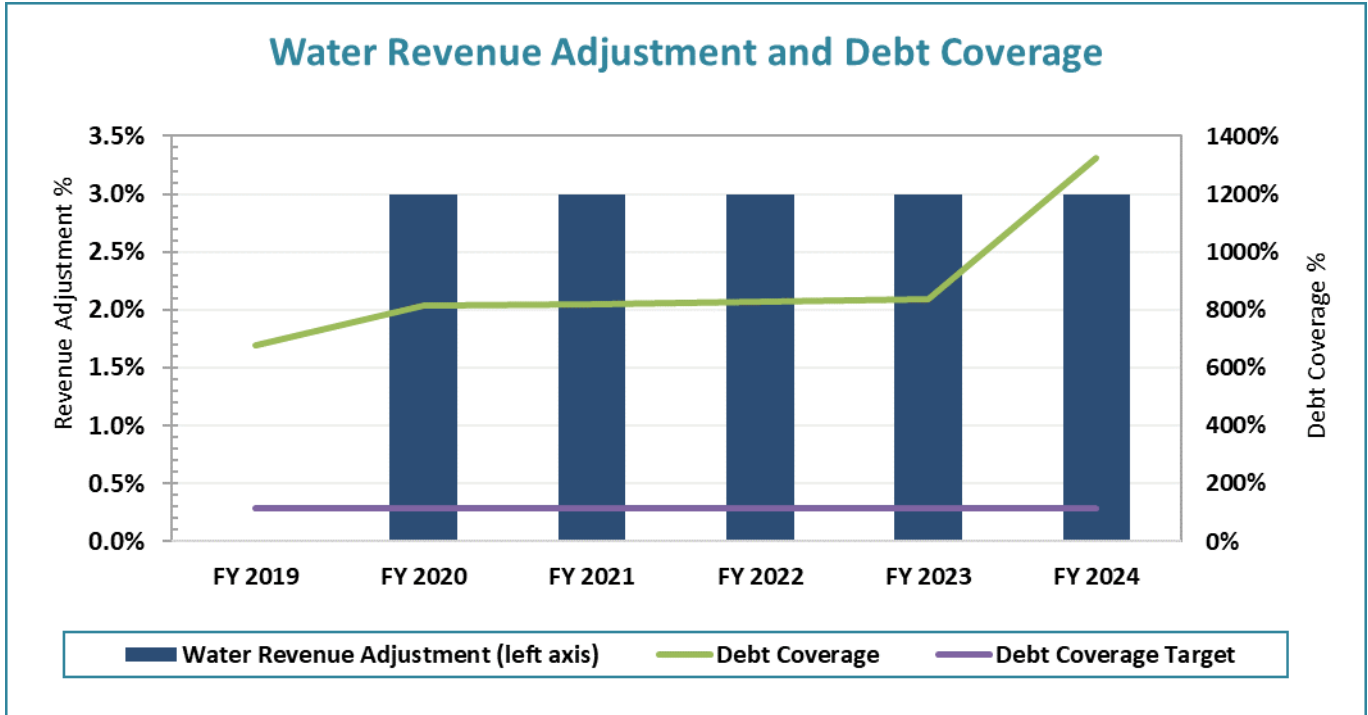


Figure 2-2 compares projected current (blue line) and proposed (orange line) revenue against expenses shown by the stacked bars broken down into the categories shown in the legend. The District has a large capital expenditure planned in FY 2024 (a tank expansion and replacement) and will use reserves to fund this project, as shown by the purple area below the x-axis.

Figure 2-2: Revenue and Expenses

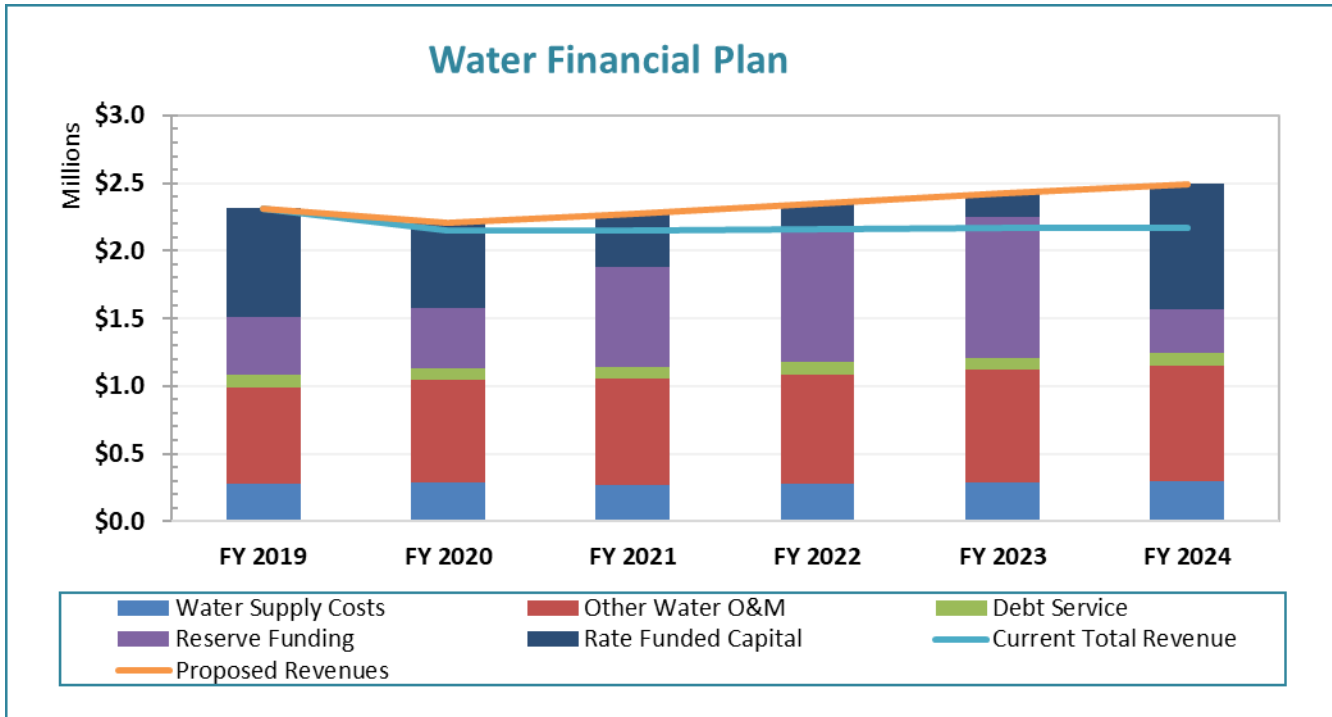
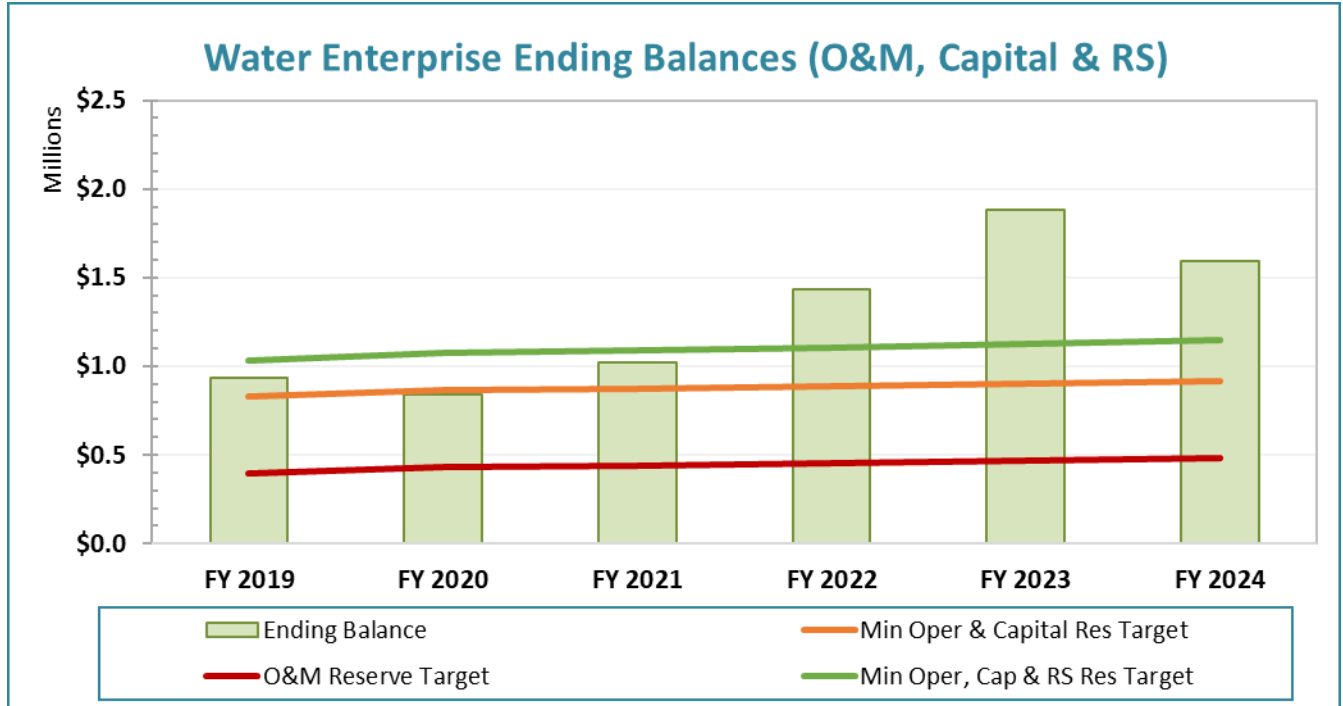


Figure 2-3 shows the District’s projected ending reserve balances. The red line is the Operating and Maintenance Reserve (25% of O&M expenses), the orange line is the sum of the O&M and capital reserve target (the average yearly capital expense), and the green line is the sum of the O&M, capital and rate stabilization reserve (10% of rate revenue). Note that in any given year, should actual reserves vary from projected reserves, the District Board can choose to implement revenue adjustments lower than those shown in Table 2-9. Appendix B shows the projected reserve balances with two options for additional CalPERS pension obligation payments.

Figure 2-3: Projected Fiscal Year Ending Reserve Balances



3. Cost of Service Analysis

The water rates were developed using cost of service principles set forth by the American Water Works Association M1 Manual titled *Principles of Water Rates, Fees, and Charges* (AWWA M1 Manual). Cost of service principles endeavor to distribute costs to customer classes in accordance with the way each class uses the water system. Raftelis allocated the District's revenue requirement (yearly revenue needed) using the Base-Extra Capacity Method of the AWWA M1 Manual to distribute costs. Cost causation components are the cost centers used to distribute costs to customer classes based on their water use characteristics. The cost causation components include:

1. Base (average) costs
2. Peaking costs (maximum day and maximum hour)
3. Meter service
4. Billing and customer service
5. Fire protection
6. Conservation
7. General and administrative costs

Base costs are costs that are associated with meeting average daily demand needs and include operations and maintenance costs and capital costs designed to meet average load conditions. A cost of service study analysis considers both the average quantity of water consumed (base costs) and the peak rate at which it is consumed. Peaking costs (i.e., extra capacity costs) are costs associated with meeting peak demand.² Peaking costs are further divided into maximum day and maximum hour demand. The maximum day demand is the maximum amount of water used in a single day in a year. The maximum hour demand is the maximum hour usage on the maximum usage day. Both maximum day and maximum hour peaking demand is used to calculate peaking unit rates to distribute costs to customer classes. Certain facilities, such as distribution and storage facilities, are designed to meet the peaking demands of customers. Therefore, extra capacity costs include the O&M and capital costs associated with meeting peak customer demand. Billing and customer service costs are costs associated with serving customers, such as meter reading, billings and collections, customer service, etc. Fire protection costs are related solely to the fire protection function of a water system, such as fire hydrants and related branch mains and valves. Conservation costs are costs associated with the District's water conservation and efficiency program. General and administrative costs are all other costs not otherwise assigned to any of the other cost causation components.

3.1. Allocation of Expenses to Cost Components

To allocate costs to cost components, Raftelis used system-wide peaking factors, as provided in the District's Water Master Plan, which are shown in column B, Table 3-1. The system-wide peaking factors are used to derive the cost component allocation bases (i.e., percentages) shown in columns C through E of Table 3-1.

² System capacity is the system's ability to supply water to all delivery points at the time when demanded. Coincident peaking factors are calculated for each customer class at the time of greatest system demand. The time of greatest demand is known as peak demand. Both the operating costs and capital asset related costs incurred to accommodate the peak flows are allocated to each customer class based upon the class's contribution to the peak day and hour event.

Expenses are *functionalized* or grouped into the various cost categories related to providing water service. For the water utility, this typically includes supply, treatment, transmission and distribution, storage, meter servicing, customer billing, direct fire protection, direct private fire protection, general and administration, and conservation cost categories. This step is largely accomplished by the utility’s accounting system. For this study, the functionalized expenses are then allocated to the cost components using the allocation bases shown in column A. To understand the interpretation of the percentages shown in columns B through E we must first establish the base use as the average daily demand during the year – which is assigned an allocation basis of 1.0. If the base allocation basis is used to allocate an expense, it means that the costs associated with that expense are to meet average daily demand (base) related costs.

Expenses that are allocated to the cost causation components using the maximum day bases (line 2) attribute 50% (1.00/2.00) of the demand (and therefore costs) to base (average daily demand) use and the remaining 50% to maximum day (peaking) use. Expenses allocated using the maximum hour bases assume 25% (1.00/4.00) of costs are due to base demands, 25% due to max day ((2.00-1.00/4.00)) and 50% ((4.00-2.00)/4.00) are due to max hour costs. Collectively, the maximum day and hour cost components are known as peaking costs. These allocation bases are used to allocate District O&M functions, shown in column A of Table 3-2, to the cost causation components also shown across the top of Table 3-2. Note that the total expenses in line 11 equal the expenses shown in Table 2-10 for FY 2020.

Table 3-1: System-Wide Peaking Factors and Allocation to Cost Components

Line No.	Allocation Basis (A)	Peaking Factor (B)	Base (C)	Max Day (D)	Max Hour (E)	Total (F)	System MDD/ System	Max Hour /Max Day
1	Base	1.00	100%			100%		
2	Max Day	2.00	50%	50%		100%	1.31	
3	Max Hour	4.00	25%	25%	50%	100%		2.00

Table 3-2: Allocation of O&M Expenses to Cost Causation Components

Line No.	Functions (A)	FY 2020 Budget (B)	Allocation Basis (C)	Supply (D)	Base (E)	Max Day (F)	Max Hour (G)	Meter Service (H)	Customer Billing (I)	Con servation (J)	Direct Fire Protection (K)	Direct Private Fire Protection (L)	Gen & Admin (M)	Sub -Total (N)
1	Supply	\$384,844	Base	100%										100%
2	Treatment	\$65,793	Max Day		50%	50%								100%
3	Transmission & Distribution	\$139,639	Max Day		50%	50%								100%
4	Storage	\$139,639	Max Hour		25%	25%	50%							100%
5	Meter Service	\$119,030	Meter					100%						100%
6	Customer Billing	\$118,078	Customer						100%					100%
7	Direct Fire Protection	\$9,484	Direct Fire								100%			100%
8	Direct Costs -Private Fire Proteciton	\$534	Private Fire									100%		100%
9	Gen & Admin	\$593,226	General										100%	100%
10	Conservation	\$17,402	Conservation							100%				100%
11	Total	\$1,587,668		\$384,844	\$137,626	\$137,626	\$69,819	\$119,030	\$118,078	\$17,402	\$9,484	\$534	\$593,226	\$1,587,668
12	O&M Expense Allocation			24.2%	8.7%	8.7%	4.4%	7.5%	7.4%	1.1%	0.6%	0.03%	37.4%	100.00%

Total Expenses equal FY 2020 Expenses Shown in Table 2-10

The allocation bases, shown in Column C, are used to allocate the functionalized costs, shown in Column A, to each cost causation component. For example, 25% of the storage expense is allocated to the base cost component. Lines 11 and 12 show the total O&M costs allocated to each cost component and the corresponding percentage of the O&M budget allocated to each cost component, respectively.

We chose the allocation bases, in column C, based on the type of cost for each line item and the proportion of those costs associated with each cost causation component (maximum day, maximum hour, general, conservation, etc.). For example, Transmission & Distribution costs, line 3, are allocated using the maximum day basis since transmission & distribution costs are associated with serving both average day demands and peak day demands. This is because the transmission & distribution system must be sized and operated to meet maximum and average day demands. Certain cost bases are identical to the cost causation components – such as Meter Service and Customer Billing – and therefore are easily allocated to the cost component with the same name.

The total O&M expenses in line 11, column N, equals the total FY 2020 O&M in line 29 of Table 2-10. This resulting allocation is used to allocate the District's operating revenue requirement (discussed in Section 3.2) to the cost components.

The District provided a database of their current assets and allocated these assets to the cost causation components as shown in Table 3-3. The resulting total asset allocation is derived in the same manner as the O&M allocation in Table 3-2. Raftelis functionalized, shown in lines 1 through 10, the District's assets and then allocated them to the cost causation components in the same manner as O&M expenses. Part of the District's revenue requirement includes rate funded capital – which is discussed in Section 3-2. The capital portion of the revenue requirement is allocated to the cost causation components using the asset allocation shown in line 14 of Table 3-3.

Table 3-3: Allocation of Assets to Cost Causation Components

Line No.	Functions (A)	RCLD (B)	Allocation Basis (C)	Supply (D)	Base (E)	Max Day (F)	Max Hour (G)	Meter Service (H)	Customer Billing (I)	Con servation (J)	Direct Fire Protection (K)	Direct Private Fire Protection (L)	Gen & Admin (M)	Capital (N)	Sub -Total (P)
1	Land	\$1,695,744	Base		100%										100%
2	Supply	\$2,079,500	Max Day	100%											100%
3	Treatment	\$69,869	Max Day		50%	50%	0%								100%
4	Storage	\$1,430,061	Max Hour		25%	25%	50%								100%
5	Trans/Dist	\$7,725,844	Max Day		50%	50%	0%								100%
6	Fire Hydrants	\$105,113							100%						100%
7	Meter Service	\$128,928						100%							100%
8	General & Admin	\$602,679											100%		100%
9	Vehicles	\$0											100%		100%
10	Total	\$13,837,738		\$2,079,500	\$5,951,116	\$4,255,372	\$715,030	\$128,928	\$105,113	\$0	\$0	\$0	\$602,679	\$0	\$13,837,738
11	Allocation w/o Gen & Admin			16%	45%	32%	5%	1%	1%	0%	0%	0%			100%
12	Reallocated Gen & Admin			\$94,693	\$270,993	\$193,775	\$32,560	\$5,871	\$4,786	\$0	\$0	\$0	\$0	\$0	\$602,679
13	Total Capital Allocation to Cost Components			\$2,174,194	\$6,222,109	\$4,449,147	\$747,590	\$134,798	\$109,899	\$0	\$0	\$0		\$0	\$13,837,738
14	Capital Alloc			15.7%	45.0%	32.2%	5.4%	1.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

3.2. Revenue Requirement Determination

Table 3-4 shows the revenue requirement derivation. The total revenue required from water rates is shown on line 28. The total in line 28, column B, is the O&M revenue requirement that is allocated to the cost components using the percentages derived in line 12 of Table 3-2. The capital revenue requirement in line 28, column C, is allocated to the cost components using the percentages derived in line 14 of Table 3-3.

Raftelis calculated the revenue requirement using FY 2020 expenses (this is known as the test year), which include the items shown in lines 2 – 9 of Table 3-4. To arrive at the rate revenue requirement in line 28, column D, the total revenue offsets (shown in line 22) are subtracted from the total revenue requirement in line 10 and an adjustment is made for the yearly ending balance in line 25. The adjustment, shown as negative values, are subtracted (therefore added, as a result of subtracting a negative number) to arrive at the total revenue required from District rates in line 28, column D. This is the total amount the District's fixed service charges and volumetric rates are designed to collect in FY 2020 if rates were applied for a full Fiscal Year.

Line 10, column B, is the same as line 29 for FY 2020 in Table 2-10. The revenue offsets are taken from lines 11 through 19, in the FY 2020 column in Table 2-10. These non-rate revenues decrease the revenue required from rates. The adjustment for cash balance, in line 25, is the net cash balance taken from Table 2-10.

Table 3-4: Revenue Requirement Determination

Line No.	FY 2020 (A)	Operating (B)	Capital (C)	Total (D)
1	Revenue Requirement			
2	Salaries and Benefits	\$694,577		\$694,577
3	Repairs & Maint, Supplies, Utilities	\$30,652		\$30,652
4	Pumping Power and Vehicles	\$6,600		\$6,600
5	Water Purchases	\$289,074		\$289,074
6	Water Testing & Analysis	\$23,358		\$23,358
7	Administrative	\$543,407		\$543,407
8	Existing Debt Service		\$89,384	\$89,384
9	Rate Funded Capital		\$631,000	\$631,000
10	Total - Revenue Requirement	\$1,587,668	\$720,384	\$2,308,052
11				
12	Revenue Offsets			
13	Credit Card Fee Revenue	\$1,571		\$1,571
14	Meter Turn-on & Shut-Off Charge	\$17,043		\$17,043
15	Delinquent Fees	\$20,050		\$20,050
16	Administrative Expense Reimbursement	\$0		\$0
17	Water Service Standby / Avail Charges	\$38,750		\$38,750
18	Connection Charges		\$3,180	\$3,180
19	Interest Income	\$16,687		\$16,687
20	Misc Income		\$25,000	\$25,000
21	San Bernardino County Library Leasing	\$11,204		\$11,204
22	Total - Revenue Offsets	\$105,305	\$28,180	\$133,485
23				
24	Adjustments			
25	Adjustment for Cash Balance	\$96,265		\$96,265
26	Total - Adjustments	\$96,265	\$0	\$96,265
27				
28	Revenue Required from Rates	\$1,386,098	\$692,204	\$2,078,302

3.3. Allocation of Costs to Cost Components

The next step is to allocate the total revenue requirement in Table 3-4, to the cost components as shown in Table 3-5. Lines 1 and 2 in Table 3-5 allocate the operating and capital revenue requirements (for operating and capital revenue requirement in Table 3-5, lines 1 and 2 respectively, add lines 28 and line 22 in Table 3-4) and line 3 allocates the revenue offsets (column D, line 22) to the cost components in proportion to the O&M and capital allocations from Table 3-2 and Table 3-3, respectively. Lines 5 and 6 reallocate general costs (column M) to the other cost components in proportion to each component's share of total costs. This reflects the fact that general costs support the other functions in proportion to their share of costs. The total revenue requirement by cost component is shown in line 7 which is then divided by the units of service (line 9) to yield the unit cost of service in line 11. Line 10 shows the units for the unit costs of service.

Table 3-5: Expense Allocation to Cost Components

Line Nc	Cost of Service Allocation	Allocation Bases	Supply	Base	Max Day	Max Hour	Meter Service	Customer Billing	Con servation	Direct Fire Protection	Direct Private Fire Protection	Gen & Admin	Capital	Sub Total	
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	FY
1	Operating Expenses	O&M Alloc	\$361,510	\$129,281	\$129,281	\$65,586	\$111,813	\$110,919	\$16,347	\$8,909	\$501	\$557,257	\$0	\$1,491,403	
2	Capital Expenses	Capital Cost	\$113,187	\$323,919	\$231,620	\$38,919	\$7,018	\$5,721	\$0	\$0	\$0	\$0	\$0	\$720,384	
3	Revenue Offset	Revenue Offsets	-\$23,772	-\$48,107	-\$35,210	-\$6,882	-\$3,442	-\$3,241	-\$360	-\$196	-\$11	-\$12,265	\$0	-\$133,485	
4	Total Cost of Service		\$450,925	\$405,093	\$325,691	\$97,623	\$115,389	\$113,399	\$15,987	\$8,713	\$490	\$544,992	\$0	\$2,078,302	
5	Percent Excluding Gen & Admin		29.4%	26.4%	21.2%	6.4%	7.5%	7.4%	1.0%	0.6%	0.0%			100.00%	
6	Allocation of General Admin		\$160,274	\$143,984	\$115,762	\$34,699	\$41,013	\$40,306	\$5,682	\$3,097	\$174	-\$544,992		\$0	
7	Total Adjusted Cost of Service		\$611,199	\$549,077	\$441,453	\$132,322	\$156,402	\$153,705	\$21,669	\$11,809	\$664	\$0	\$0	\$2,078,302	
8	Rev Req. Allocated to Cost Components		29.4%	26.4%	21.2%	6.4%	7.5%	7.4%	1.0%	0.6%	0.0%	0.0%			
9	Unit of Service		168,495	168,495	651	4,322	3,066	2,967	168,495	3,066	27	3,066	3,066		
10	Units		hcf	hcf	hcf/day	hcf/day	equiva- lent meters	bills	hcf	hcf	hcf	hcf	equiva- lent meters		
11	Unit Cost of Service		\$3.63	\$3.26	\$677.67	\$30.62	\$51.01	\$51.80	\$0.13	\$3.85	\$24.61	\$0.00	\$0.00		

HCF = Hundred Cubic Feet

3.4. Public and Private Fire Protection Costs

3.4.1. Fire Protection Costs

Line 11 of Table 3-5 shows the max day and max hour unit costs in dollars per hundred cubic feet per day (\$/hcf /day). Converting these costs into dollars per thousand gallons per day (\$/1,000 gal/day) yields the unit cost of service shown in line 1 of Table 3-6. These are used to calculate public and private fire protection costs. Raftelis derived the total costs to maintain fire capacity in the water system by assuming a two-hour fire requiring 2,000 gallons per minute (gpm) – and therefore requiring a maximum day and maximum hour capacity (in 1,000 gallons per day) as shown in line 4 of Table 3-6. A 2-hour fire needing 2,000 gpm is appropriate for residential neighborhoods. Line 5, which is the total cost to maintain the capacity to fight a 2-hour fire, is line 4 multiplied by line 1. We allocate the total fire protection costs in line 5, to public and private fire costs in proportion to the potential flow to fire hydrants and private fire connections. The potential flow for public and private fire connections is shown in Table 3-7.

Table 3-6: Derivation of Total, Public and Private Fire Protection Costs

Line No.	Fire Protection Cost Allocation	Max Day	Max Hour	Total
	(A)	(B)	(C)	(D)
1	Unit Cost of Service	\$905.97	\$40.93	
2	Unit	\$ / 1,000 gal /day	\$ / 1,000 gal /day	
3	Fire Protection			
4	Units of Service (1,000 gallons)	240	2,640	
5	Allocated Cost of Service	\$217,434	\$108,066	\$325,500
6	Public Fire Protection	\$210,720	\$104,729	\$315,450
7	Private Fire Service	\$6,713	\$3,337	\$10,050

In Table 3-7, we calculate the potential fire demand (known as equivalent demand) of public and private fire accounts in lines 3 and 14 of Table 3-7, respectively. Line 1 calculates the potential flow through public fire hydrants using the Hazen Williams equation for pipe flow. Lines 5 through 13 calculate the potential flow through private fire connections also using the Hazen Williams equation³. The resulting potential fire demand, and therefore cost allocation for public fire and private fire costs, is shown in lines 16 and 17 of Table 3-7. The total demand units in column D are calculated by multiplying the potential demand (column B) by the number of connections/hydrants in service (column C). Table 3-7, lines 16 and 17, show the proportion of public and private fire protection costs allocated to public and private fire accounts.

³ The Hazen Williams equation states that the flow through a conduit is proportional to the diameter raised to the 2.63 power.

Table 3-7: Derivation of Potential Flow to Private and Public Fire Connections

Line No.	Fire Line Size - Public Hydrants (A)	Fire Demand (B)	Number of Fire Hydrants (C)	Equivalent Demand (D)
1	1-4" x 2-2" Type	50.70	450	22,815
2				
3	Total		450	22,815
4	Fire Line Size - Private Fire	Fire Demand	Number of Lines	Equivalent Demand
5	3/4"	0.47	0	0.0
6	1"	1.00	20	20.0
7	1.5"	2.90	0	0.0
8	2"	6.19	1	6.2
9	3"	17.98	0	0.0
10	4"	38.32	3	115.0
11	6"	111.31	1	111.3
12	8"	237.21	2	474.4
13	10"	426.58	0	0.0
14	Total		27	727
15				
16	Percent Allocated to Public Fire Protection			96.9%
17	Percent Allocated to Private Fire Protection			3.1%

After calculating public and private fire protection costs, we complete the cost of service cost component allocation by making final adjustments for fire protection costs shown in Table 3-8.

Line 1 in Table 3-8 is the same as line 7 in Table 3-5. We reallocate costs to other cost components so that the District can collect these costs through the fixed monthly meter service charge to meet revenue stability goals. This is further discussed in Section 4-3.

In line 2 of Table 3-8, we reallocate the private fire protection costs we derived above to the private fire cost component in column K. In line 3 we reallocate public fire protection costs from the max day and hour component, derived in line 6 of Table 3-6, to the meter service component in column F so that public fire protection costs will be collected through the meter service charge. Direct private fire protection, in column J, is the cost to manage backflow prevention devices. This cost will be collected through private fire protection charges and will be derived in Section 4.

The last adjustment is shown in line 4 of Table 3-8. The District collects a majority of its revenue through a fixed charge to 1) meet fixed revenue goals for revenue stability and 2) equitably charge absentee customers for costs associated with maintaining a water system in a ready-to-serve status. To do so we reallocate maximum day, maximum hour, and base costs as shown in columns C, D and E to the meter service & capacity component, so that the District can collect these costs through a fixed charge. Reallocating peaking to the Meter Service & Capacity component is a common way to provide greater revenue stability. It also increases equity between full-time District residents and absentee owners who don't use as much water as full-time residents, as it causes full time residents to bear the cost burden associated with fixed water system costs.

The final Cost of Service allocation to the cost components is shown in line 5 of Table 3-8. Once we have allocated the District's expenses to the cost causation components, the total costs shown in column L of Table 3-8 are proportionately allocated to each customer class. The allocation is based on each customer class's cost causation (i.e., benefits received from and burdens placed on the system and its resources). Once costs are allocated, we can derive the revenues from each customer class required to achieve cost-based rates. This process is discussed in detail in Section 4.

Table 3-8: Final Cost of Service Allocation to Cost Components

Line No.	Cost of Service Allocation (A)	Supply (B)	Base (C)	Max Day (D)	Max Hour (E)	Meter Service & Capacity (F)	Customer Billing (G)	Con-servation (H)	Direct Fire Protection (I)	Direct Private Fire Protection (J)	Capacity for Private Fire Protection (K)	Sub Total (L)
1	Cost of Service	\$611,199	\$549,077	\$441,453	\$132,322	\$156,402	\$153,705	\$21,669	\$11,809	\$664		\$2,078,302
2	Private Fire Protection			-\$6,713	-\$3,337						\$10,050	\$0
3	Alloc Public Fire to Meter Service			-\$210,720	-\$104,729	\$315,450			\$0			
4	Allocation of Peaking to Meter		-\$367,333	-\$224,019	-\$24,256	\$615,608						\$0
5	Total Adjusted Cost of Service	\$611,199	\$181,745	\$0	\$0	\$1,087,460	\$153,705	\$21,669	\$11,809	\$664	\$10,050	\$2,078,302
6	% Allocated to Cost Component	29.4%	8.7%	0.0%	0.0%	52.3%	7.4%	1.0%	0.6%	0.0%	0.5%	100%

4. Rate Derivation

4.1. Existing Rate Structure and Rates

The District’s existing rate structure consists of a fixed monthly service charge determined by meter size. The current rates are the same for all customers except irrigation customers as shown in Table 4-1. The District also charges a monthly infrastructure repair and replacement (IR&R) charge, which is also the same for each meter size. The volumetric charges have different rates for customers located within District boundaries except for customer located outside District boundaries. Table 4-1 also shows the current private fire service charges. This charge is imposed only on customers that have private fire suppression systems. Raftelis recommends three changes to the rate structure and rates:

- 1) Discontinue imposing different rates for the volumetric charge for the one customer located outside of the District charges to meet Proposition 218 requirements;
- 2) Implement the same monthly fixed service charge for all customers, thereby eliminating the separate irrigation monthly fixed service charge; and
- 3) Eliminate the IR&R charge and instead recover the infrastructure repair and replacement costs from the monthly service charge in proportion to meter size. Recovering these costs in proportion to meter size is one reason why the proposed rates of the monthly fixed service charge increase more for larger meter sizes than compared to the 5/8” x 3/4” meters.

Table 4-1: Existing Rate Structure and Rates

Meter Size	Monthly Service Charge	Monthly Service Charge -Irrigation	Meter Size	Private Fire Service Charge
5/8" x 3/4"	\$31.42	\$13.13	1" and Smaller	\$15.75
1"	\$70.77	\$32.78	1.5"	\$26.21
1.5"	\$136.29	\$65.54	2"	\$43.58
2"	\$214.95	\$104.87	3"	\$60.95
3"	\$463.97		4"	\$78.32
			6"	\$95.65
			8"	\$113.02
Infrastructure Repair & Replacement	\$1.88			
Volumetric Rate	\$/ cubic foot			
Inside District	\$0.0469			
Outside District	\$0.0519			

4.2. Proposed Rate Structure

Note: In this report, the numbers shown are the raw numbers from Microsoft excel calculations. Numbers in excel have many decimal places and therefore the totals shown in some of the tables may not add exactly to the total shown in the Table because of not rounding numbers in Excel.

In Table 3-8, the District’s revenue requirement was allocated to each cost causation component. Table 4-2 shows how the District will collect each cost component – through a fixed monthly service charge, private fire service charge, or a volumetric charge. The total in Table 4-2 matches the total in column L of Table 3-8. Table 4-2 shows that the District will collect approximately 60% (including private fire service protection in line 12) through the monthly service charge and private fire service charges, and 40% through volumetric charges. The percentage of revenue collected through the fixed service charge is slightly higher than the norm to account for a large proportion of absentee ownership and provide revenue stability. The District has many seasonal vacation homes which are vacant for weeks or months at a time, hence these properties consume little water. A rate structure which collects more fixed costs through the volumetric charge would charge full-time residents a disproportionately greater share of these costs. The District’s fixed costs of operating and maintaining the water system are incurred regardless of whether the District treats or sells any water. Thus, charging a higher fixed service charge to recover the District’s fixed costs proportionately allocates these costs to all customers and ensures that the system is ready and available to be used upon demand.

Table 4-2: Fixed vs Volumetric Charge Revenue Collection

Line No.	Cost Component	Revenue	%
1	Supply	\$611,199	
2	Delivery	\$181,745	
3	Conservation	\$21,669	
4	Subtotal Volumetric Revenue	\$814,613	39.2%
5	Meter Service & Extra Capacity	\$772,010	
6	Customer Billing	\$153,705	
7	Public Fire Protection	\$315,450	
8	Direct Public Fire Protection	\$11,809	
9	Subtotal Fixed Charge	\$1,252,975	60.3%
10	Direct Private Fire Protection	\$664	
11	Capacity for Private Fire Protection	\$10,050	
12	Subtotal Private Fire Protection	\$10,714	0.5%
13	Total	\$2,078,302	100.0%

4.2.1. Proposed Monthly Service Charge

To derive the rates of the monthly service charge we must first calculate the number of equivalent meters by meter size as shown in Table 4-3. This is used to derive the rates of the monthly service charge to collect the amount shown in Table 4-2, line 9. Equivalent meter units account for the potential flow through larger meters and equate this flow to the total flow through the smallest meter – in this case - the 5/8” x 3/4”-inch meter. Equivalent meter units are calculated by multiplying the number of meters by the American Water

Works Association (AWWA) capacity ratios to yield equivalent meters in the right most column. The capacity ratios, which are a function of a meter's safe maximum flow rate, are used to increase the meter service component for larger capacity meters. The meter capacity ratios are shown in column B of Table 4-5. This assumes that the potential capacity (peaking) demand is proportional to the potential flow through each meter size as established by the AWWA hydraulic capacity ratios. The ratios shown in column B of Table 4-5 are the ratio of potential flow through each meter size compared to the flow through a 5/8" x 3/4" meter. The 5/8" x 3/4" meter is used as the base since it is the smallest and most numerous meter size. Larger meters have the potential to demand more peak capacity. For example, column B of Table 4-5 shows that the hydraulic capacity of a 2-inch meter is 8.0 times that of a 5/8" x 3/4" meter and therefore the meter service component is 8.0 times that of the 5/8" x 3/4" meter.

Table 4-3: Derivation of Equivalent Meter Units

Meter Size - All Customer Classes	Capacity (gpm)	AWWA Ratio	Number of Meters	Equivalent Meters
5/8" x 3/4"	20	1.0	2,930	2,930
1"	50	2.5	30	75
1.5"	100	5.0	1	5
2"	160	8.0	5	40
3"	320	16.0	1	16
4"	500	25.0	0	0
6"	1,000	50.0	0	0
8"	1,600	80.0	0	0
10"	2,300	115.0	0	0
Total			2,967	3,066

There are two cost components that comprise the monthly service charge: 1) **meter service and capacity** and 2) **customer service**, described below.

4.2.1.1. Meter Service and Capacity Costs

The meter service and capacity component recovers three types of costs: 1) costs associated with maintaining and servicing meters (meter service component); 2) capacity (also known as peaking costs) costs; and 3) public fire protection costs. The District is collecting capacity costs through the meter service charge to attain revenue stability and to equitably allocate costs discussed in Section 4.2.

The total meter, capacity and public fire protection costs, lines 5,7 and 8 in Table 4-2, are recovered through the monthly service charge and shown on lines 1 and 2 of Table 4-4. We derive the monthly meter and capacity charge components by dividing the total cost in line 3 by the number of equivalent meters to yield the monthly service charge per equivalent meter (i.e., a 5/8" or 3/4" meter) in line 5.

The meter service and capacity charge components is scaled up using the AWWA capacity ratios shown in column B of Table 4-5 to yield the charges shown in column E of Table 4-5.

4.2.1.2. Customer Component

The customer component derivation, shown in lines 7 through 9 of Table 4-4, recovers costs associated with meter reading, customer billing and collection, as well as answering customer calls. These costs are shown in line 6 of Table 4-2. These costs are the same for all meter sizes, as it costs the same amount to read and bill a small meter as it does a larger meter.

4.2.1.3. Total Monthly Service Charge

Table 4-5 shows the derivation of the total monthly service charge by meter size in column G, which is the addition of the meter service and capacity component and the customer service bill component (columns E and F). The total estimated revenue from the monthly service charge is equal to the amount shown in line 9 of Table 4-2.

Table 4-4: Monthly Meter and Capacity Charge Derivation

Line No.	Costs	Amount
1	Total Meter Service & Capacity Costs	\$772,010
2	Public and Direct Public Fire Protection	\$327,259
3	Subtotal	\$1,099,269
4	Number of Equivalent Meters	3,066
5	Monthly Charge per Equivalent Meter	\$29.88
6		
7	Total Customer Billing costs	\$153,705
8	Number of Meters	2,967
9	Monthly Charge per Meter	\$4.32

Table 4-5: Derivation of the Monthly Service Charge (\$/Meter Size)

Line No.	Meter Size (A)	Meter Ratio (5/8" Meter as the Base) (B)	Number of Meters (C)	Equivalent Meters (D)	Meter Service & Capacity (E)	Customer Bill (F)	Proposed Monthly Fixed Charge (G)
1	5/8" x 3/4"	1.00	2,930	2,930	\$29.88	\$4.32	\$34.19
2	1"	2.50	30	75	\$74.69	\$4.32	\$79.01
3	1.5"	5.00	1	5	\$149.38	\$4.32	\$153.70
4	2"	8.00	5	40	\$239.01	\$4.32	\$243.33
5	3"	16.00	1	16	\$478.03	\$4.32	\$482.34
6	4"	25.00	0	0	\$746.92	\$4.32	\$751.23
7	Total		2,967	3,066			

4.2.1.4. Five-Year Monthly Service Charge

Table 4-6 shows the recommended rates for the monthly service charge for the next five fiscal years. They are derived by applying the revenue adjustments shown in Table 2-9 to the service charges for FY 2020 and beyond as shown in Table 4-5.

Table 4-6: Five-Year Rates of Monthly Fixed Service Charge (\$/Meter Size)

Meter Size	Current Charge	July 2019	July 2020	July 2021	July 2022	July 2023
Revenue Adjustment ----->>			3.0%	3.0%	3.0%	3.0%
5/8" x 3/4"	\$33.30	\$34.19	\$35.22	\$36.28	\$37.36	\$38.49
1"	\$72.65	\$79.01	\$81.38	\$83.82	\$86.33	\$88.93
1.5"	\$138.17	\$153.70	\$158.31	\$163.06	\$167.95	\$172.99
2"	\$216.83	\$243.33	\$250.63	\$258.15	\$265.89	\$273.87
3"	\$465.85	\$482.34	\$496.81	\$511.72	\$527.07	\$542.88

4.2.2. Proposed Private Fire Service Charges

The total costs associated with public and private fire protection were derived at the end of Section 3 in Table 3-6. Table 4-7 derives the two components of the monthly private fire service charge: 1) the charge for fire capacity in line 3, and 2) the charge to manage the testing of backflow devices in line 6. The monthly private fire service charge shown in line 3 is calculated by dividing line 1 by line 2. Line 2, the equivalent demand, was derived in column D of Table 3-7. The private fire service charge is divided by 12 to create a monthly rate for the private fire service charge.

The monthly backflow charge in line 6 of Table 4-7, is line 4 divided by the number of private fire service connections. This charge is also divided by 12 to create a monthly charge.

Table 4-7: Calculation of Monthly Private Fire Service for 1" and Smaller Connections

Line No.	Private Fire Protection Derivation	
1	Capacity Costs for Private Fire Protection	\$10,050
2	Equivalent Demand	727
3	Monthly Private Fire Charge for 1" & Smaller	\$1.15
4	Backflow Management Costs	\$664
5	Number of Connections	27
6	Monthly Backflow Management Charge	\$2.05

Table 4-8 shows the derivation of the total monthly rates for the private fire service charge in column I. It is the summation of columns E and F. Note that private fire charge shown in column F is scaled up in proportion to the potential flow through each connection size shown in column C. Private fire charges are calculated in accordance with principles set forth in the AWWA M1 Manual, *Principles of Water Rates, Fees, and Charges*.

Table 4-8: Derivation of Monthly Rates for Private Fire Service Charge for Larger Meter Sizes (\$/Meter Size)

Line No.	Meter Size	Number of Meters	Potential Demand	Equivalent Demand	Backflow Maintenance	Monthly Private Fire Charge	Proposed Total Monthly Rate
	(A)	(B)	(C)	(D)	(E)	(F)	(I)
1	1" & Smaller	20	1.00	20.0	\$2.05	\$1.15	\$3.20
2	1.5"	0	2.90	0.0	\$2.05	\$3.35	\$5.40
3	2"	1	6.19	6.2	\$2.05	\$7.13	\$9.18
4	3"	0	17.98	0.0	\$2.05	\$20.72	\$22.77
5	4"	3	38.32	115.0	\$2.05	\$44.15	\$46.20
6	6"	1	111.31	111.3	\$2.05	\$128.25	\$130.30
7	8"	2	237.21	474.4	\$2.05	\$273.31	\$275.36
8		27		726.9			

The total projected private fire service charge revenue is equal to the amount shown in line 12 of Table 4-2. Rates will increase in subsequent years by the adjustments shown in Table 2-9. The private fire service charges for the study period are shown in Table 4-9.

Table 4-9: Five-Year Monthly Private Service Fire Charges (\$/Meter Size)

Line No.	Meter Size	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	1" & Smaller	\$3.20	\$3.30	\$3.40	\$3.50	\$3.60
2	1.5"	\$5.40	\$5.56	\$5.73	\$5.90	\$6.07
3	2"	\$9.18	\$9.46	\$9.74	\$10.03	\$10.34
4	3"	\$22.77	\$23.45	\$24.16	\$24.88	\$25.63
5	4"	\$46.20	\$47.59	\$49.02	\$50.49	\$52.00
6	6"	\$130.30	\$134.21	\$138.24	\$142.39	\$146.66
7	8"	\$275.36	\$283.62	\$292.13	\$300.89	\$309.92

4.3. Volumetric Rates

4.3.1. Total Volumetric Charge Revenue

Table 4-2, line 4 shows the total amount of revenue the volumetric rates are designed to collect. The next step is to derive each component of the volumetric rate.

4.3.2. Volumetric Rate Derivation

The total volumetric rates (\$/CF) is the summation of unit rates for each cost component: Supply, Delivery, Peaking (also known as extra capacity or maximum day and hour), and Conservation. We derive each unit rate and add them together to get the total volumetric rates for all customers. Each cost component is defined below.

4.3.3. Cost Component Definitions

Raftelis derived the volumetric rates by summing the unit rates (\$ / HCF or \$ / CF)⁴ for:

1. Water Supply
2. Delivery
3. Peaking
4. Conservation

Water Supply costs are costs associated with obtaining and treating water to make it ready for delivery from each District source:

1. Groundwater
2. Arrowbear Park County Water District

⁴ \$ /HCF stands for dollars per hundred cubic feet of water
 \$ / CF stand for dollars per cubic foot of water
 There are 100 cubic feet of water in one HCF

3. Crestline Lake Arrowhead Water Agency

Delivery costs are the operating and capital costs associated with delivering water to all customers through the distribution system (pipelines and storage reservoirs) at a constant average rate of use – also known as serving customers under average daily demand conditions. Therefore, delivery costs are spread over all units of water which results in an equal delivery unit cost for all customers.

Peaking costs, or extra-capacity costs, represent costs incurred to meet customer peak demands in excess of base use (or in excess of average daily demand). Peaking costs are the sum of columns D and E in Table 3-8 – that is maximum day and maximum hour costs. However, in the final derivation of the costs by cost component in Table 3-8, we reallocated the peaking costs in columns D and E to the meter and capacity component to collect these costs through a fixed charge for two reasons:

- 1) To meet the District’s revenue stability goals, and
- 2) To ensure that fixed water system costs are proportionately allocated amongst full-time residents and absentee owners (vacation homes).

The reallocation of peaking costs to the meter and capacity component means we are allocating peaking costs in proportion to the potential flow through each meter size. This is a common way to increase revenue stability, and proportional allocation as described in item 2 above. Therefore, the volumetric rate derivation consists of the three remaining cost components: 1) supply, 2) delivery, and 3) conservation.

Conservation costs are costs which cover water conservation and efficiency programs and efforts. These programs exist to reduce customer demands.

4.3.4. Derivation of the Cost Component Unit Costs

4.3.4.1. Supply Unit Costs (\$ / HCF)⁵

Table 4-10 shows the supply cost derivation for all customers. Line 4 shows the projected water purchase costs for FY 2020 (known as the test year). Line 6 includes water purchase costs plus other costs that are associated with obtaining water supply such as general management and capital costs. It is known as the supply revenue requirement. The supply revenue requirement is allocated to each water supply source in line 6 in proportion to the amount of water from each source. Line 7 shows the weighted average supply rate from all three sources in column E. This is the weighted average water supply rate considering the three District’s water sources. Note that in the following tables we have restated the unit rates in dollars per cubic feet, as this is the unit the District uses to bill customers.

⁵ \$ / HCF = dollars per hundred cubic feet of water

\$ / CF = dollars per cubic foot of water, 1 HCF = 100 cubic feet of water

Table 4-10: Supply Cost Derivation for All Customers

Line No.		Groundwater	Arrowbear Park County Water District	Crestline Lake Arrowhead Water Agency	Total	Source
	(A)	(B)	(C)	(D)	(E)	(F)
1	Acre Feet (AF)	240	32	154	426	
2	Percent of Supply (%)	56%	8%	36%	100%	
3	Water Use by Source (HCF)	94,927	12,657	60,911	168,495	
4	Water Cost (\$)	\$74,160	\$34,272	\$180,642	\$289,074	Table 2-6
5	Proportion of Water Cost (%)	26%	12%	62%	100%	
6	Water Supply Revenue Requirement (\$)	\$156,799	\$72,462	\$381,938	\$611,199	Table 4-2, Line 1
7	Unit Cost (\$ / HCF)	\$1.65	\$5.73	\$6.27	\$3.63	
8	Unit Cost (\$ / CF)	\$0.0165	\$0.0573	\$0.0627	\$0.0363	

4.3.4.2. Delivery Cost

The delivery rate, derived in Table 4-11, is calculated by dividing total delivery costs by total water use and is shown in line 3 of Table 4-11. This is the rate to deliver water under average daily demand conditions.

Table 4-11: Derivation of the Delivery Unit Cost

Line No.	Delivery Rate	\$ / HCF	Source
1	Delivery Costs	\$181,745	Table 5-2, Line 2
2	Total Use	168,495	
3	Delivery Rate (\$ / HCF)	\$1.08	
4	Delivery Rate (\$ / CF)	\$0.0108	

4.3.4.3. Peaking Rate

As described at the beginning of Section 4.3.3, peaking costs (also known as extra capacity costs) were identified and will be collected through the meter and capacity charge component of the volumetric rates, in proportion to the flow through each meter size.

4.3.4.4. Conservation Rate

Table 4-12 shows the conservation rate derivation. The conservation rate, shown in line 3, is derived by dividing the conservation costs, shown in line 1, by total water use, shown in line 2.

Table 4-12: Derivation of Conservation Unit Costs

Line No.	Conservation Rate	\$ / HCF	Source
1	Conservation Cost	\$21,669	Table 5-2, Line 3
2	Total Use (HCF)	168,495	
3	Conservation Rate (\$ / HCF)	\$0.13	
4	Conservation Rate (\$ / CF)	\$0.0013	

4.3.5. Final Rate Derivation

Table 4-10 through Table 4-12 derive the unit rates for each cost component - supply, delivery and conservation. Table 4-13 shows the total volumetric rate derivation, which is the summation of all rate components. The total volumetric rate shown is designed to collect the total volumetric costs shown in line 4 of Table 4-2.

Table 4-13: Derivation of Volumetric Rate

Volumetric Rate	Supply	Base Delivery	Con-servation	Total Volumetric Rate (\$ / CF)	Current Rate (\$ / CF)
All Customers	\$0.0363	\$0.0108	\$0.0013	\$0.0483	\$0.0469

4.3.6. Five-Year Volumetric Rates

Table 4-14 shows the proposed volumetric rates for the next five fiscal years by escalating the volumetric rate derived in Table 4-13 by the proposed revenue adjustments shown in Table 2-9. Customer bill impacts are discussed in Section 5.

Table 4-14: Five-Year Volumetric Rates (\$/CF)

	Current Rate	July 2019 Rate	July 2020 Rate	July 2021 Rate	July 2022 Rate	July 2023 Rate
Revenue Adjustment			3%	3%	3%	3%
Volumetric Rate (\$ / CF)	\$0.0469	\$0.0483	\$0.0498	\$0.0513	\$0.0528	\$0.0544

5. Bill Impacts

5.1. Monthly Single Family Residential Bill Impacts

Table 5-1 shows the monthly Single Family Residential customer bill impacts for various usage levels, assuming a 5/8 x 3/4-inch meter, which is the most common meter size for Single Family Residential customers. Column F shows the percentage of bills that fall below specific usage levels, shown in column A, during the year. For example, 65% of the annual bills are for customers who use 400 cubic feet (CF) or less. The average monthly Single Family Residential water usage is approximately 445 CF. Note that a 5/8 inch x 3/4-inch meter is a meter with 3/4-inch connections but with a 5/8 inch chamber, which means the flow is that of a 5/8 inch meter.

Table 5-1: Single Family Residential Monthly Bill Impacts (5/8" x 3/4" Meter)

Use (CF) (A)	Current Monthly Bill (B)	Proposed		Percent Difference (E)	% of Customers (F)
		Monthly Bill (C)	Dollar Difference (D)		
200	\$42.68	\$43.86	\$1.18	2.8%	48%
400	\$52.06	\$53.53	\$1.47	2.8%	65%
600	\$61.44	\$63.20	\$1.76	2.9%	78%
800	\$70.82	\$72.87	\$2.05	2.9%	86%
1000	\$80.20	\$82.54	\$2.34	2.9%	91%
1200	\$89.58	\$92.21	\$2.63	2.9%	94%

5.2. Commercial and Other Customers

Table 5-2 shows commercial and other customer class bill impacts for various usage levels, assuming a 5/8-inch meter, which is also the most common meter size for commercial customers. The approximate average monthly water usage for commercial customers is 1,580 CF.

Table 5-2: Commercial Monthly Bill Impacts (5/8" Meter)

Use (CF) (A)	Current Monthly Bill (B)	Proposed		Percent Difference (E)
		Monthly Bill (C)	Dollar Difference (D)	
500	\$56.75	\$58.37	\$1.62	2.8%
1000	\$80.20	\$82.54	\$2.34	2.9%
1500	\$103.65	\$106.71	\$3.06	3.0%
2000	\$127.10	\$130.89	\$3.79	3.0%
2500	\$150.55	\$155.06	\$4.51	3.0%

6. Wastewater Enterprise

The District’s sewer system consists of one interceptor system and 3.2 miles of trunk lines. The collection system has pipelines ranging from 6 inches to 15 inches spanning 58.3 miles. The District has one wastewater treatment plant with a maximum treatment capacity of 1 million gallons per day (MGD) or more depending on the size of the cassettes installed in the Membrane Bioreactor System.

6.1. Current Wastewater Rates

Table 6-1 shows current wastewater rates effective January 1, 2017. All users are billed a monthly fixed sewer service charge, an IR&R charge and a volumetric charge. The volumetric charge is a percent of the customer’s water bill by customer class, as shown in Table 6-1. For example, if a Single Family Residential customers water bill is \$5, then the sewer volumetric charge is $0.15 \times \$5 = \0.75 . Raftelis proposes to eliminate the sewer IR&R charge and recover sewer infrastructure and replacement costs from the proposed sewer fixed charge and to bill customers based on estimated sewer discharge instead of using a percent of the water bill as shown in Table 6-1.

Table 6-1: Current Sewer Service Charges

Wastewater Current Rates	FY 2019
Fixed Service Charge	\$44.49
Infrastructure R&R	\$5.25
Total Fixed Charge per Equivalent Dwelling Unit	\$49.74
Plus a volumetric charge:	
SFR & Outside District	15% of the water bill
Commercial/Schools	33.3% of the water bill

Table 6-2 shows the number of wastewater equivalent dwelling units (EDUs)⁶ and the billed yearly water usage that is used to calculate *current* customer wastewater bills in cubic feet (CF) for each customer class. The EDU count increased in FY 2020 due to the annexation of Pali Mountain Camp.

⁶ EDU or Equivalent Dwelling Units is the sewer flow associated with one Single Family dwelling. Customers in the commercial class are assigned EDUs in proportion to their flow compared to a Single Family dwelling. An account with an EDU of 2, discharges twice the sewer flow compared to typical single family home.

Table 6-2: Number of Accounts and Billed Water Use (CF) by Customer Class

Number of Equivalent Dwelling Unit	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Residential	2,874	2,876	2,878	2,880	2,882
Commercial	136	136	136	136	136
Outside District	4	4	4	4	4
Schools	16	16	16	16	16
Subtotal	3,030	3,032	3,034	3,036	3,038
Billed Water Use (CF)					
Residential	15,496,210	15,507,057	15,517,912	15,528,775	15,539,645
Commercial	1,120,633	1,120,633	1,120,633	1,120,633	1,120,633
Outside District	30,950	30,950	30,950	30,950	30,950
Schools	18,175	18,175	18,175	18,175	18,175
Subtotal (CF)	16,665,968	16,676,815	16,687,670	16,698,533	16,709,403

Raftelis estimated current sewer utility revenue by multiplying the current sewer service charge by the number of accounts and billed water usage as described in Table 6-2 for each fiscal year. This revenue is shown at the top of Table 6-5, lines 1 through 3.

6.2. Wastewater Expenses

6.2.1. O&M Expenses

Raftelis projected wastewater O&M expenses by applying the inflationary factors shown in Table 2-4 (the same inflationary factors were applied to water, sewer and fire and ambulance) to the FY 2019 O&M budget. The projected expenses are shown in lines 18 through 21 in Table 6-5.

6.2.2. Capital Improvement Program

The District's wastewater capital improvement program through the end of the Study period is shown in Table 6-3. The proposed capital improvement program will be funded entirely through rate revenue and is a main driver for the proposed revenue adjustments. Note that the table shows the District's share of treatment capital expenses.

Table 6-3: Wastewater Capital Improvement Projects

Wastewater Capital Expenses	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Collection	\$58,000	\$171,000	\$58,000	\$58,000	\$58,000	\$58,000
Pump Stations	\$68,500		\$35,000	\$0	\$0	\$25,000
Pipeline Rehab & Replacement	\$0		\$20,000	\$0	\$150,000	\$0
Other Wastewater System Improvements	\$48,000		\$89,000	\$92,000	\$56,975	\$2,000
Treatment (Running Springs Share = 60%)	\$122,532	\$196,798	\$260,108	\$200,442	\$273,330	\$200,442
Total Wastewater CIP	\$297,032	\$367,798	\$462,108	\$350,442	\$538,305	\$285,442

Table shows Running Springs share of treatment CIP which is 60.7%

6.3. Proposed Financial Plan

To ensure that the Wastewater Enterprise has adequate revenue to fund operating and capital expenditures as well as sufficient reserves, the Board selected revenue adjustments at a meeting in January 2019, as shown in Table 6-4. The first revenue adjustment is assumed to take effect in July 2019.

Table 6-4: Proposed Wastewater Revenue Adjustments

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Revenue Adjustment	3.0%	3.0%	3.0%	3.0%	3.0%

Table 6-5 shows the cash flow projections, also known as the financial plan, with the proposed revenue adjustments from Table 6-4. The proposed financial plan meets the District’s long-term reserve goals. Lines 1 and 2 show the District’s current revenue, line 3 shows the total revenue from the revenue adjustments shown in Table 6-4. Lines 6 through 14 show non-rate revenue sources. Lines 18 through 21 show the District’s projected expenses. Line 30 shows the resulting yearly cash flow which is used to fund prudent reserves.

Table 6-5: Sewer Enterprise Proposed Financial Plan (Cash Flow Projection)

Line No.	Wastewater Revenue	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	WW Fixed Charge (Include IR&R)	\$1,778,708	\$1,808,379	\$1,809,580	\$1,810,781	\$1,811,984	\$1,813,187
2	Volumetric Revenue	\$126,984	\$127,060	\$127,136	\$127,213	\$127,289	\$127,366
3	Total Revenue Adjustments	\$0	\$58,063	\$117,946	\$179,704	\$243,396	\$309,080
4	Total Revenue from Rates	\$1,905,692	\$1,993,502	\$2,054,662	\$2,117,699	\$2,182,669	\$2,249,633
5	Other and Non-Operating Revenue						
6	Delinquent Charges & Service Fees	\$10,000	\$12,607	\$12,638	\$12,670	\$12,701	\$12,733
7	Outside Service Agrmnt Charges	\$38,789	\$0	\$0	\$0	\$0	\$0
8	Other Service Fees	\$0	\$0	\$0	\$0	\$0	\$0
9	Arrowbear O&M Reimbursement	\$158,568	\$156,673	\$161,373	\$166,214	\$171,201	\$176,337
10	CSA 79 O&M Reimbursement	\$195,054	\$195,335	\$201,195	\$207,231	\$213,448	\$219,851
11	Property Taxes	\$0	\$0	\$0	\$0	\$0	\$0
12	Sewer Service Availability Charges	\$14,000	\$14,020	\$14,040	\$14,061	\$14,081	\$14,101
13	Sewer Hot Taps and Septic Dumping	\$1,500	\$1,504	\$1,508	\$1,511	\$1,515	\$1,519
14	Interest	\$9,000	\$18,226	\$22,348	\$27,145	\$31,755	\$37,528
15	Total Revenue	\$2,332,603	\$2,391,867	\$2,467,764	\$2,546,531	\$2,627,370	\$2,711,702
16							
17	Expenses						
18	Personnel Expense - Collection	\$587,597	\$387,834	\$400,830	\$414,271	\$428,172	\$442,548
19	Services and Supplies - Collection	\$228,303	\$285,442	\$294,005	\$302,825	\$311,910	\$321,267
20	Personnel Expense - Treatment	\$512,136	\$447,555	\$460,982	\$474,811	\$489,055	\$503,727
21	Services and Supplies - Treatment	\$425,444	\$478,818	\$493,183	\$507,978	\$523,217	\$538,914
22	Subtotal Expenses	\$1,753,480	\$1,599,649	\$1,649,000	\$1,699,886	\$1,752,354	\$1,806,456
23							
24	Net Revenue	\$579,123	\$792,218	\$818,764	\$846,645	\$875,015	\$905,245
25							
26	Total Debt Service	\$171,537	\$171,537	\$171,537	\$171,537	\$171,537	\$171,537
27							
28	Total Capital Improvement Projects*	\$297,032	\$367,798	\$462,108	\$350,442	\$538,305	\$285,442
29							
30	Net Cash Flow	\$110,554	\$252,883	\$185,119	\$324,666	\$165,173	\$448,266
31	* CIP Shown includes Running Springs' Share of Treatment Projects						

6.3.1. Graphical Financial Plan

Figures Figure 6-1 through Figure 6-3 show the financial plan in graphical format. The blue bars in Figure 6-1 signify the proposed revenue adjustments and the green line shows the calculated debt coverage ratio. As shown, the calculated debt coverage ratio exceeds the minimum required debt coverage ratio of 1.15 or 115%.

Figure 6-1: Wastewater Revenue Adjustments and Debt Coverage

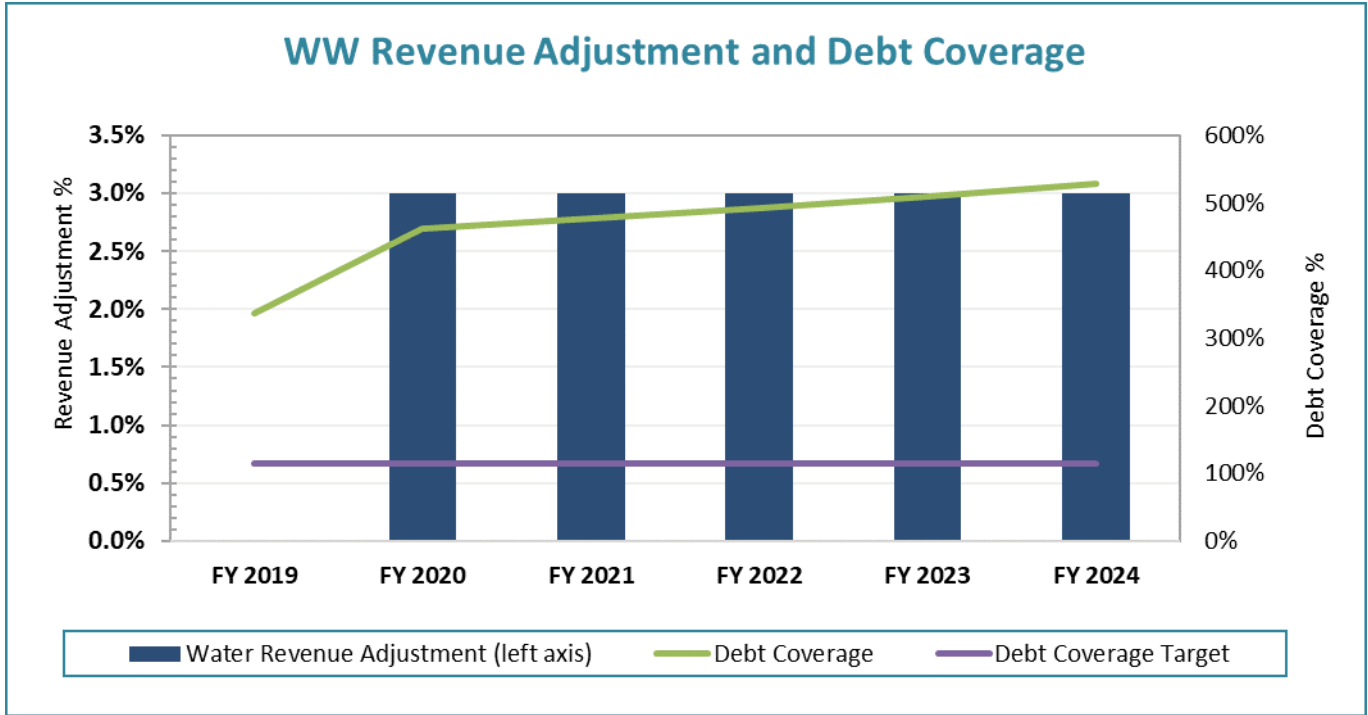


Figure 6-2 shows the financial plan in a graphical format. The stacked bars convey the expenses, and the light blue and orange lines show the current and proposed revenue, respectively.

Figure 6-2: Proposed Wastewater Operating Financial Plan

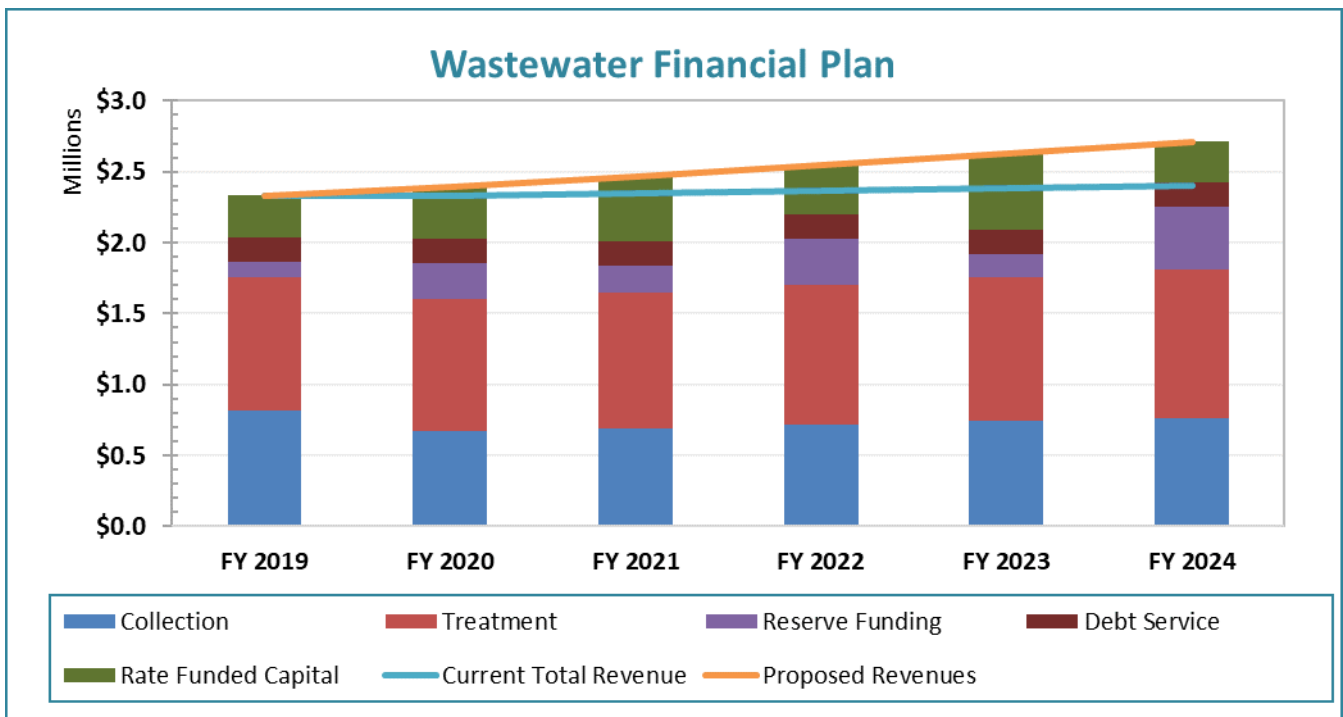
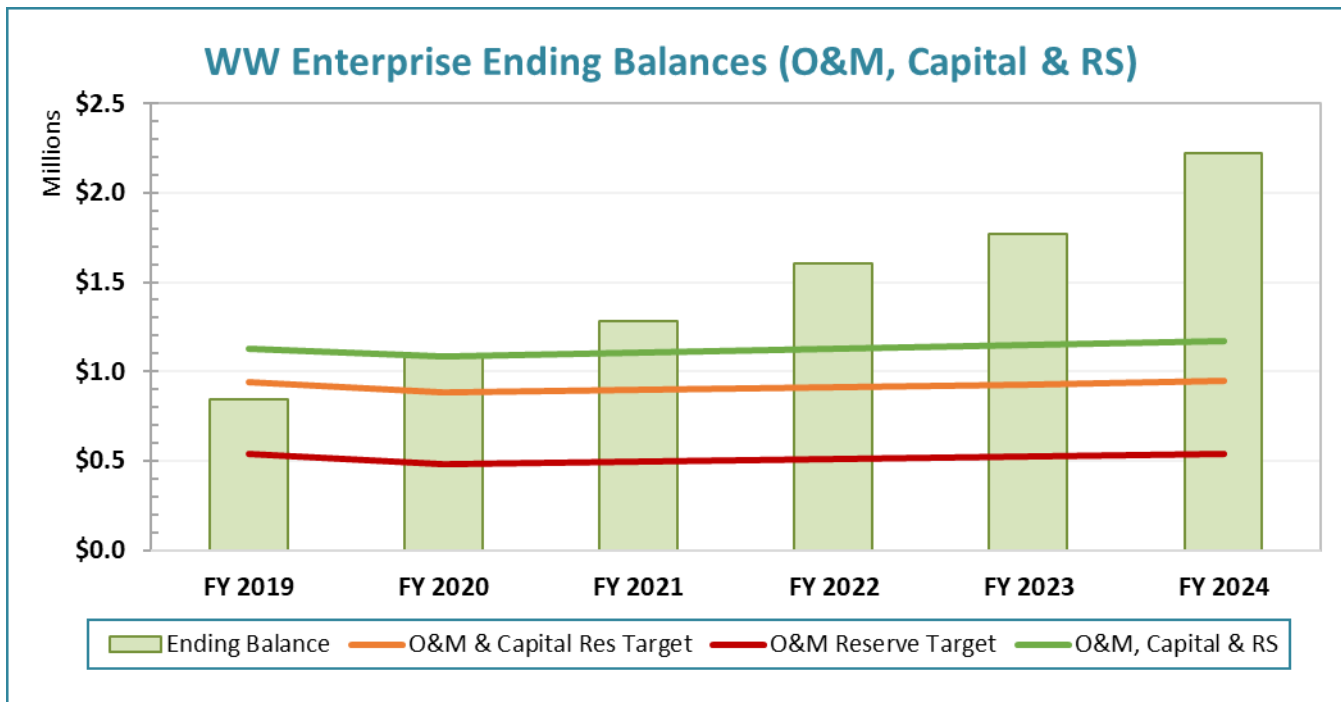


Figure 6-3 shows the District’s projected ending reserve balances as a result of the revenue adjustments in Table 6-4. The horizontal lines are the reserve targets. The O&M reserve target is equal to four months of operating expenses. The orange line adds the capital reserve target to the O&M reserve target, which is equal to an average year’s capital expense. The green reserve target includes the O&M and capital reserve targets and adds the rate stabilization reserve target, equal to 10% of wastewater rate revenue. Note that as the Board monitors yearly cash reserve, it can choose to implement lower revenue adjustments than those shown without a public hearing. However, higher revenue adjustments than those shown require a public hearing. Appendix B shows the projected reserve balances with two options for additional CalPERS pension obligation payments.

Figure 6-3: Wastewater Enterprise Ending Balances



7. Wastewater Cost of Service and Rate Derivation

The District collects and treats wastewater. The District prepares separate budgets for wastewater collection and treatment. The proposed rate structure maintains the current level of fixed revenue collected from monthly sewer service charges – which is approximately 90%. To maintain this fixed revenue level, a major portion of collection and treatment costs are collected through the fixed service charge as discussed below.

7.1. Cost Allocation to Wastewater Functions

Table 7-1 shows the District’s operating expense allocation to collection and treatment. The total allocation in line 14 is used to allocate the District’s revenue requirement in Table 7-5.

Table 7-1: Operating Expense Allocation to Cost Components

Line No.	Budget Item	Collection	Treatment	Total
1	Personnel Expense - Collection	100%	0.0%	100%
2	Services and Supplies - Collection	100%	0.0%	100%
3	Personnel Expense - Treatment	0%	100.0%	100%
4	Services and Supplies - Treatment	0%	100.0%	100%
5				
6				
7	Budget Item	Collection	Treatment	Total
8	Personnel Expense - Collection	\$387,834	\$0	\$387,834
9	Services and Supplies - Collection	\$285,442	\$0	\$285,442
10	Personnel Expense - Treatment	\$0	\$447,555	\$447,555
11	Services and Supplies - Treatment	\$0	\$478,818	\$478,818
12				
13	Total O&M Expenses	\$673,276	\$926,373	\$1,599,649
14	Percent Allocation	42%	58%	100%

Table 7-2 shows the District’s asset allocation to each wastewater function. Raftelis reviewed the District’s assets and assigned functions based on asset type. The asset items displayed in Table 7-2 are summed in line 15, showing the approximate percentage of the District’s assets that are related to collection and treatment. This allocation is used to distribute the capital wastewater revenue requirement to each function.

Table 7-2: Allocation of the District's Wastewater Assets to Cost Components

Line					
No.	Asset Item	Collection	Treatment	General	Total
1	Land	25%	75%		100%
2	Collection	100%			100%
3	Treatment		100%		100%
4	Disposal		100%		100%
5	General & Admin			100%	100%
6	Vehicles (Gen & Admin)			100%	100%
7	Asset Item	Collection	Treatment	General	Total
8	Land	\$205,268	\$615,805	\$0	\$821,073
9	Collection	\$17,886,218	\$0	\$0	\$17,886,218
10	Treatment	\$0	\$5,728,961	\$0	\$5,728,961
11	Disposal	\$0	\$982,016	\$0	\$982,016
12	General & Admin	\$0	\$0	\$113,045	\$113,045
13	Vehicles (Gen & Admin)	\$0	\$0	\$0	\$0
14	Total Assets	\$18,091,487	\$7,326,782	\$113,045	\$25,531,314
15	Allocation with reallocated General	71%	29%		100%

7.2. Revenue Requirement Derivation

The revenue required from rates is the amount of revenue required to cover all wastewater expenses in FY 2020, also known as the test year. Table 7-3 shows the derivation of the revenue requirement for FY 2020. Line 19, column C, shows the District yearly revenue required from rates.

Table 7-3: Revenue Requirement Derivation

Line No.	Revenue Requirement	FY 2020		Total (C)
		Operating (A)	Capital (B)	
1	O&M Expenses	\$1,599,649		\$1,599,649
2	Debt Service		\$171,537	\$171,537
3	Rate Funded CIP		\$367,798	\$367,798
4	Subtotal	\$1,599,649	\$539,335	\$2,138,984
5				
6	Less Other Revenue			
7	Delinquent Charges & Service Fees	\$12,607		\$12,607
8	Arrowbear O&M Reimbursement	\$156,673		\$156,673
9	CSA 79 O&M Reimbursement	\$195,335		\$195,335
10	Sewer Service Availability Charges		\$14,020	\$14,020
11	Sewer Hot Taps and Septic Dumping		\$1,504	\$1,504
12	Interest		\$18,226	\$18,226
13	Subtotal	\$364,615	\$33,750	\$398,364
14				
15	Less Adjustments			
16	Adjustments for Annual Cash Balance		(\$252,883)	(\$252,883)
17	Subtotal	\$0	(\$252,883)	(\$252,883)
18				
19	Revenue to be Recovered from Rates	\$1,235,034	\$758,468	\$1,993,502

The total wastewater revenue requirement includes O&M, debt service and capital expenses shown in lines 1 through 3. Revenue from other sources is subtracted and shown in line 13. In line 16, another adjustment is made for the yearly ending cash balance. This negative value is subtracted, adding the cash balance (subtracting a negative number is the same as adding a positive number) shown in line 16 to the revenue requirement. Line 19 shows that the total revenue required from rates in FY 2020 is almost \$2 million.

7.3. Allocating the Revenue Requirement to Collection and Treatment

The total revenue requirement in Table 7-3 is allocated to collection and treatment. The operating revenue required from rates is shown in line 1, of Table 7-4 for FY 2020. It is derived by applying the percentages shown at the bottom of Table 7-1 to the total operating revenue requirement in column A of Table 7-3. The capital revenue required from rates is shown in line 2, of Table 7-4 for FY 2020. It is derived by applying the percentages shown at the bottom of Table 7-2 to the capital revenue requirement in column B of Table 7-3. The total revenue required from rates is shown in column D, Table 7-4 is the same as column C, Table 7-3.

Table 7-4: FY 2020 Revenue Requirement Allocation to Cost Components and Rate Calculation

Line No.	Revenue Requirement (A)	Collection (B)	Treatment (C)	Total (D)
1	Operating Expenses	\$519,813	\$715,221	\$1,235,034
2	Capital Expenses	\$539,840	\$218,627	\$758,468
3	Subtotal	\$1,059,654	\$933,848	\$1,993,502

To calculate rates based on sewer discharges (flow), Raftelis estimated the sewer flows for each customer class. Raftelis estimated annual sewer flow for all customers by applying a **return to sewer factor** to customer’s monthly water usage as shown in Table 7-5. Raftelis estimated the return to sewer factors, shown in columns B and C by comparing the difference between winter and summer water use. For example, using schools, Raftelis annualized winter water usage (December through April) and compared annualized winter water usage to actual yearly usage. If a school used water throughout the year like it does in the winter, it would generate monthly wastewater flows of about 46% of its actual water use. Therefore, it is reasonable to conclude that approximately 54% of water usage is for outdoor irrigation and 46% of water usage is returned to the sewer system. We used the same approach for all other customer classes to determine return to sewer factors. Ninety percent is an industry-accepted standard for a single family (90% was confirmed for SFR by looking at winter water usage versus year-round usage) and a commercial return to sewer factor. Table 7-5 shows how the District will estimate each of the customer classes’ sewer flows in column C.

Table 7-5: Sewer Flow Estimation Methodology

Customer Class (A)	Sewer Flow Calculation (B)	District Monthly Sewer Bill Calculation (C)
Residential	90% x Annual Water Use	Monthly Water Use x 90%
Commercial	90% x Annual Water Use	Monthly Water Use x 90%
Outside District	64% x Annual Water Use	Monthly Water Use x 64%
Schools	46% x Annual Water Use	Monthly Water Use x 46%

7.4. Rate Derivation

As with the water rates, we propose to eliminate the IR&R charge and recover infrastructure repairs and replacement costs from the fixed sewer service charge. Table 7-6 shows this rate calculation. Line 1 restates the collection and treatment revenue requirement from Table 7-4. Column B shows that 100% of collection-related costs are collected from the fixed sewer service charge. The sewer service charge rates are derived by dividing line 1, column B by the number of equivalent dwelling units⁷ shown in line 7 to yield the fixed sewer service charge rates in line 10. This portion of the fixed sewer service charge covers collection-related costs. Column C shows the percentage of treatment costs that are also collected from the fixed charge; the treatment charge shown in line 10 is equal to line 4 divided by line 7. The two fixed charges in line 10 are added to yield the total fixed charge.

⁷ Equivalent Dwelling Units or EDUs. The District can reassess EDUs based on the observed or estimated flow from each customers. For customers such as the Pali Mountain Camp, when actual sewer flow is measured, the District will adjust the EDU value accordingly based on actual gallons per day per EDU.

A portion of treatment charges, as shown in column E, are collected from the volumetric rate derived in column E, line 12. The volumetric rate, in dollars per cubic feet of estimated sewer flow, is equal to line 5 divided by line 8 yielding line 12. Line 8 shows the estimated sewer flow for all District customers.

Table 7-6: Wastewater Rate Calculation

Line No.	(A)	Collection		Treatment	
		(B)	(C)	(E)	(F)
1	Total Cost of Service	\$1,059,654	\$933,848		\$1,993,502
2		Fixed Charge %	Fixed Charge %	Volumetric Rate %	
3		100%	85%	15%	
4	Collected through Fixed Service Charge	\$1,059,654	\$793,771		\$1,853,425
5	Collected through Volumetric Rate			\$140,077	\$140,077
6					
7	Units of Service (EDUs)	3,030	3,030		
8	Sewer Use (CF)			14,107,051	
9					
10	Proposed Fixed Charge per EDU (\$/ EDU)	\$29.15	\$21.83		
11					
12	Proposed Volumetric Rate (\$/CF) - Line 5 / Line 8			\$0.0099	

7.5. Five-Year Proposed Rates

Table 7-7 shows the proposed five-year sewer rates for all customer classes. The volumetric charge will be calculated by multiplying the proposed sewer rate by a customer’s water use and the return to sewer factor for the customer’s class shown in Table 7-4. The out-year rates are derived by escalating the rates derived in Table 7-6 by the revenue adjustments from Table 6-4.

Table 7-7: Proposed Five-Year Fixed and Variable Sewer Rates

Rate Component	Current Rates	July 2019 FY 2020	July 2020 FY 2021	July 2021 FY 2022	July 2022 FY 2023	July 2023 FY 2024
Revenue Adjustment			3%	3%	3%	3%
Sewer Fixed Charge (Includes IR&R Charge)	\$49.74	\$50.98	\$52.51	\$54.08	\$55.71	\$57.38
	15% of water bill					
Sewer Volumetric Rate (\$/CF)	33% of water bill	\$0.0099	\$0.0102	\$0.0105	\$0.0109	\$0.0112

7.6. Customer Bill Impacts

Raftelis estimated Single Family Residential monthly bill impacts as shown in Table 7-8. Based on the return to sewer factor for Single Family Residential (90%) shown in Table 7-4, we estimate the average Single Family Residential sewer discharge to be 377 CF per month. A Single Family customer’s volumetric portion of his/her bill would be equal to his/her water use multiplied by 90% (return to sewer factor) which yields an estimate of their sewer flow, multiplied by the volumetric rate shown in Table 7-6.

Table 7-8: Single Family Residential Wastewater Monthly Bill Impact

Single Family Residential	Water Use (CF)	Sewer Use		Current Monthly SFR Bill	Proposed Bill	Dollar Difference (\$)	Percent Difference (%)
		= Water Use x 0.90 (CF)					
Low	356	321		\$52.25	\$54.16	\$1.92	3.7%
Avg	419	377		\$52.69	\$54.73	\$2.04	3.9%
High	482	434		\$53.13	\$55.29	\$2.16	4.1%
Very High	545	491		\$53.57	\$55.85	\$2.28	4.2%

Table 7-9 shows anticipated commercial monthly bill impacts for several commercial customers with water usage levels near the median usage for this class. As shown, commercial bills will decrease slightly due to the difference in how the volumetric rate is calculated. The current commercial volumetric rate is based on 33.3% of a commercial customer’s monthly water usage, however will now be calculated using the volumetric rate shown in Table 7-7. A commercial customer’s volumetric portion of his/her bill would be equal to his/her monthly water usage multiplied by 90% (return to sewer factor), yielding an estimate of his/her monthly sewer flow, multiplied by the rate shown in Table 7-6.

Table 7-9: Commercial Wastewater Bill Impacts

Sewer Use (CF)	Equivalent Dwelling Units	Current Monthly Bill	Proposed Yearly Bill	Dollar Change (\$)	Percent Change (%)
3,640	1	\$55.01	\$53.99	-\$1.02	-1.9%
4,357	1	\$56.05	\$54.58	-\$1.46	-2.6%
4,611	1	\$56.41	\$54.79	-\$1.62	-2.9%
4,858	1	\$56.77	\$55.00	-\$1.77	-3.1%
4,985	2	\$106.70	\$106.08	-\$0.61	-0.6%
5,320	1	\$57.44	\$55.38	-\$2.06	-3.6%
10,805	1	\$65.38	\$59.92	-\$5.46	-8.4%
11,325	1	\$66.13	\$60.35	-\$5.78	-8.7%

8. Fire and Ambulance

Raftelis developed a 10-year financial plan for the Fire and Ambulance Departments (combined) in the same manner as modeled for Water and Wastewater. This section presents the results of the financial plan.

8.1. Fire and Ambulance Background

While the fundamental purpose of the District's Fire Department is the protection of life and property, several operational functions are provided by the Fire Department as well. These functions include a variety of public assistance services, field emergency medical care services, ambulance transportation services, and community education and awareness programs. Of the services provided, the greatest public emphasis and need has been on field emergency medical care. Over the years, medical aid responses have grown to the point where they significantly outnumber fire-related responses. To provide improved service and better meet the needs of the community, in September 1978 the District's Fire Department implemented advanced life support (paramedics) into its medical care services. With the implementation of advanced life support procedures, the District's Fire Department became the first fire agency in the San Bernardino Mountains to provide a 24-hour continuous paramedic program.

To enhance its emergency medical care system, the District's Board of Directors authorized the Fire Department to provide ambulance transportation services. Prior to this decision, ambulance service had been provided by the Lake Arrowhead Fire Protection District. Improved patient care, public need and economics were the primary reasons for the Directors' authorization of this additional service. The ambulance service boundary includes Running Springs, Smiley Park, Arrowbear, Green Valley Lake, Snow Valley and along State Highway 18 to Lake View Point. The ambulance coverage also includes State Highway 330 to City Creek Ranger Station. The District's Fire Department is designated EOA 19 as the Exclusive Operating Area for the Ambulance service provided. The Fire Department currently operates from two fire stations located within the District's boundaries.

8.2. Financial Plan Assumptions

8.2.1. Revenue Forecast Assumptions

Table 8-1 shows the assumptions used in predicting future revenues for the next 10 years. As shown, we assumed that all revenue sources except property tax would remain unchanged. Property tax revenue fluctuates with property values; however, 1% growth is a conservative assumption based on a review of historical property tax growth over the last decade. As noted at the bottom of the table, we assumed a 1.9% interest rate on cash reserves.

Table 8-1: Account Growth and Water Use Assumptions

Revenue Escalation Factors	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Fire										
Property Tax	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Fire Availability Charge (Special Tax Assessment)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazard Abatement Program	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Revenue (Plan check, grants, community contributor)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Outside District Assignments Reimbursement Income	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ambulance										
Property Tax	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ambulance Service Fees	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ground Emergency Medical Transport (GEMT) Reimbursement	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Intergovernmental Transfer (IGT) Reimbursement	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ambulance Late Fees	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ambulance Contractual Allowance (expense)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Population Growth	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on Cash Reserves	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%

8.2.2. Expense Forecast Assumptions

Raftelis, in consultation with District staff, made informed assumptions about inflationary factors utilized in the model. Table 8-2 shows the inflationary factors used to escalate the District’s FY 2019 O&M expenses budget. They are the same inflationary factors used for the Water and Sewer Enterprises. The inflationary factors shown in Table 8-2 reflect long-term averages for general inflation and energy prices. The District provided the salary and benefit inflationary factors which reflect employee salaries and benefit obligations.

Table 8-2: O&M and Water Purchase Inflationary Assumptions

O&M Escalation Factors	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
General	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	0.0%
Salary	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	0.0%
Benefits	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	0.0%
Electricity	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	0.0%

8.3. Fire and Ambulance Expenses

The District’s Fire and Ambulance expenses include O&M expenses, capital expenses, and debt service payments, each of which is described below.

8.3.1. O&M Expenses

The District’s Fire and Ambulance projected O&M expenses are shown in lines 19 through 25 in Table 8-4. The projected O&M expenses incorporate the respective inflationary factors as displayed in Table 8-2.

8.3.2. Capital Improvement Plan (CIP)

Table 8-3 shows the Fire and Ambulance CIP. The District is funding capital investment through operating revenue. To estimate CIP expenditures beyond FY 2023, Raftelis averaged the CIP expense for the prior five years as shown in FY 2024 through FY 2028.

Table 8-3: Detailed Capital Improvement Plan

Fire CIP	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Flooring replaced Station 50	\$ 22,000									
Furniture (Recliners)/ Kithcen Table		\$ 3,200								
Computer with monitor Station 51/BC	\$ 1,700									
Command Tablets		\$ 2,500								
New Windows downstairs Station 50 (double pane)			\$ 2,000							
Kitchen Remodel				\$ 6,000						
Exterior Paint Station 50			\$ 4,000							
Breathing Apparatus Purcahse- 3 SCBAs		\$ 15,000								
Breathing Appartus Support Service Equipment	\$ 13,000									
Replace Staff Vehicle (2003 Dodge)	\$ 55,000									
Replace 1999 Type 1 KME Engine (E-51)					\$ 450,000					
Replace Concrete Aprons at Station 50 and Station 51			\$ 50,000							
Replace (2005 Chevrolet Utility)				\$ 55,000						
Replace 2003 Type 1 KME Engine (E-50)										
Radios 800mhz x 6	\$ 48,000									
Radios VHF Digital x 6		\$ 15,000								
15 Voice Amps for SCBA Masks		\$ 4,641								
Total Fire CIP	\$ 139,700	\$ 40,341	\$ 56,000	\$ 61,000	\$ 450,000	\$ 149,408	\$ 149,408	\$ 149,408	\$ 149,408	\$ 149,408
Ambulance CIP										
Ambulance CIP		\$ 235,000								
Replace MA 50A (2007 Chevrolet)	\$ 190,000									
Replace MA 51 (2007 Chevrolet)	\$ -									
Replace Zoll M Series Monitors	\$ 25,000	\$ -		\$ 25,000						
Subtotal	\$ 215,000	\$ 235,000	\$ -	\$ 25,000	\$ -	\$ 95,000	\$ 95,000	\$ 95,000	\$ 95,000	\$ 95,000
Fire & Amb Share of Admin CIP	\$ 5,250	\$ -	\$ 5,250	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Fire & Ambulance CIP	\$ 359,950	\$ 275,341	\$ 61,250	\$ 86,000	\$ 450,000	\$ 244,408	\$ 244,408	\$ 244,408	\$ 244,408	\$ 244,408

8.3.3. Cash Flow Analysis (i.e. Financial Plan)

Table 8-4 shows the 10-year Fire and Ambulance cash flow projections. Lines 16 and 24 show total revenue and expenses, respectively. Line 28 shows the yearly cash flows, which turn negative in FY 2023 and thereafter due to the large expense of a fire truck. The CIP for FY 2024 and beyond is an estimate based on the average of the prior 5 years.

Table 8-4: Ten-Year Fire and Ambulance Operating Cash Flow

Line No.	Fire and Ambulance Cash Flow	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	Fire										
2	Property Tax	\$1,635,300	\$1,651,653	\$1,668,170	\$1,684,851	\$1,701,700	\$1,718,717	\$1,735,904	\$1,753,263	\$1,770,796	\$1,635,300
3	Fire Availability Charges (Special Tax Assessment)	\$205,000	\$205,000	\$205,000	\$205,000	\$205,000	\$205,000	\$205,000	\$205,000	\$205,000	\$205,000
4	Hazard Abatement Program Revenue	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
5	Ambulance										
6	Ambulance Service Fees	\$1,125,000	\$1,125,000	\$1,125,000	\$1,125,000	\$1,125,000	\$1,125,000	\$1,125,000	\$1,125,000	\$1,125,000	\$1,125,000
7	Ground Emergency Medical Transportation (GEMT) Reimb	\$170,000	\$170,000	\$170,000	\$170,000	\$170,000	\$170,000	\$170,000	\$170,000	\$170,000	\$170,000
8	Intergovernmental Transfer (IGT) Reimb	\$77,614	\$77,614	\$77,614	\$77,614	\$77,614	\$77,614	\$77,614	\$77,614	\$77,614	\$77,614
9	Other Revenue										
10	Total Revenue from Rates	\$3,222,914	\$3,239,267	\$3,255,784	\$3,272,465	\$3,289,314	\$3,306,331	\$3,323,518	\$3,340,877	\$3,358,410	\$3,222,914
11	Other Revenue (Plan Check Fees, Grants, Comm Contrib)	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
12	Interest Income	\$31,945	\$34,138	\$36,867	\$34,599	\$29,376	\$24,544	\$18,104	\$9,965	\$36	\$31,945
13	Fire Outside District Assignments Reimb Income	\$175,000	\$175,000	\$175,000	\$175,000	\$175,000	\$175,000	\$175,000	\$175,000	\$175,000	\$175,000
14	Ambulance Late Fees	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000
15	Ambulance Contractual Allowance	-\$550,000	-\$550,000	-\$550,000	-\$550,000	-\$550,000	-\$550,000	-\$550,000	-\$550,000	-\$550,000	-\$550,000
16	Total Revenue	\$2,888,859	\$2,907,405	\$2,926,650	\$2,941,064	\$2,952,689	\$2,964,875	\$2,975,622	\$2,984,842	\$2,992,446	\$2,888,859
17											
18	Fire Expenses										
19	Personnel	\$1,507,960	\$1,559,776	\$1,613,409	\$1,668,924	\$1,726,390	\$1,785,876	\$1,847,454	\$1,911,199	\$1,977,189	\$1,507,960
20	Other Expenses	\$413,084	\$425,477	\$438,241	\$451,388	\$464,930	\$478,878	\$493,244	\$508,041	\$523,282	\$413,084
21	Ambulance Expenses										
22	Personnel	\$454,614	\$468,252	\$482,300	\$496,769	\$511,672	\$527,022	\$542,833	\$559,118	\$575,891	\$454,614
23	Other Expenses	\$195,799	\$201,673	\$207,723	\$213,955	\$220,373	\$226,985	\$233,794	\$240,808	\$248,032	\$195,799
24	Subtotal Expenses	\$2,571,457	\$2,655,177	\$2,741,673	\$2,831,036	\$2,923,365	\$3,018,760	\$3,117,325	\$3,219,166	\$3,324,396	\$2,571,457
25											
26	CIP Expenditures	\$275,341	\$61,250	\$86,000	\$450,000	\$244,408	\$244,408	\$244,408	\$244,408	\$244,408	\$275,341
27											
28	Net Cash Flows	\$42,061	\$190,978	\$98,978	-\$339,972	-\$215,084	-\$298,293	-\$386,111	-\$478,732	-\$576,358	\$42,061

8.3.4. Graphical Financial Plan

Figures Figure 8-1 through Figure 8-2 display the Financial Plan from Table 8-4 in graphical format. The stacked bars show the expense categories and the black line is the yearly Fire and Ambulance revenue. Red bars below the axis show that expenses are greater than the revenue for that year, also known as an operating deficit.

Figure 8-1: Revenue and Expenses

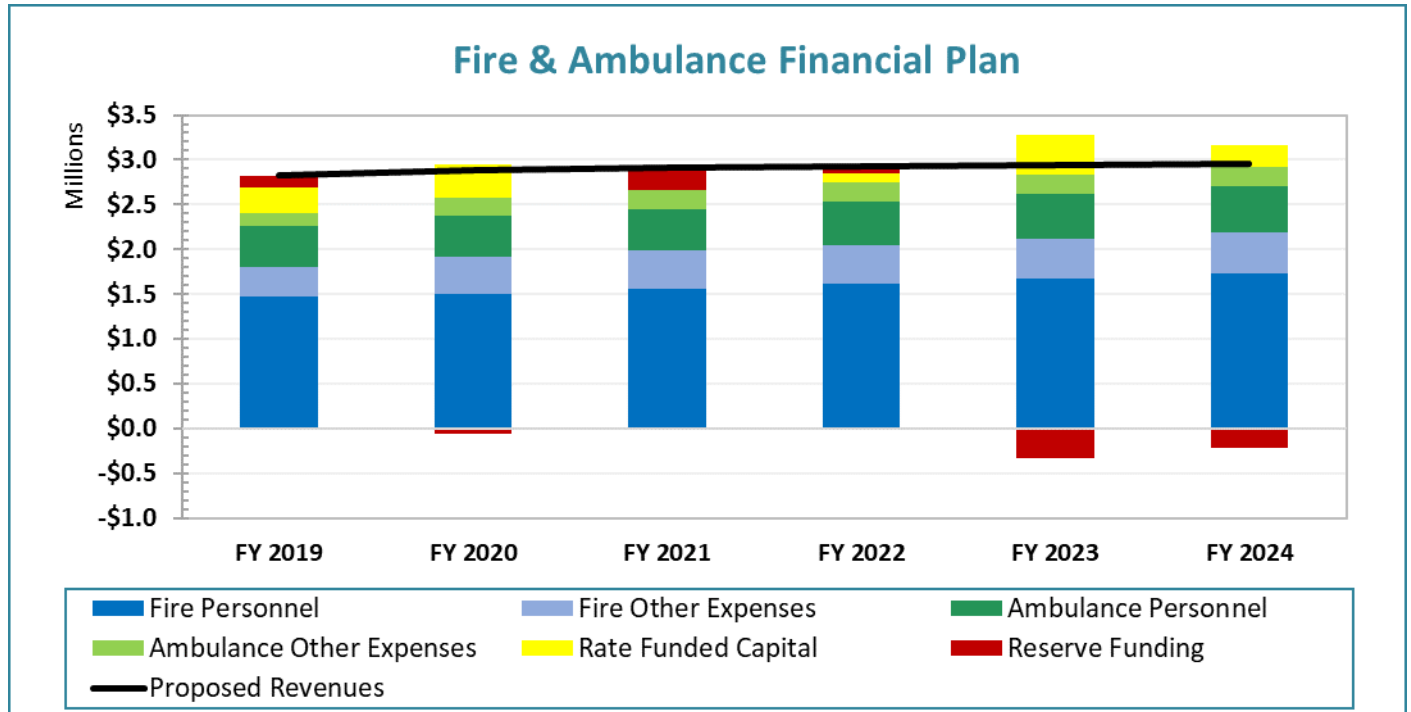
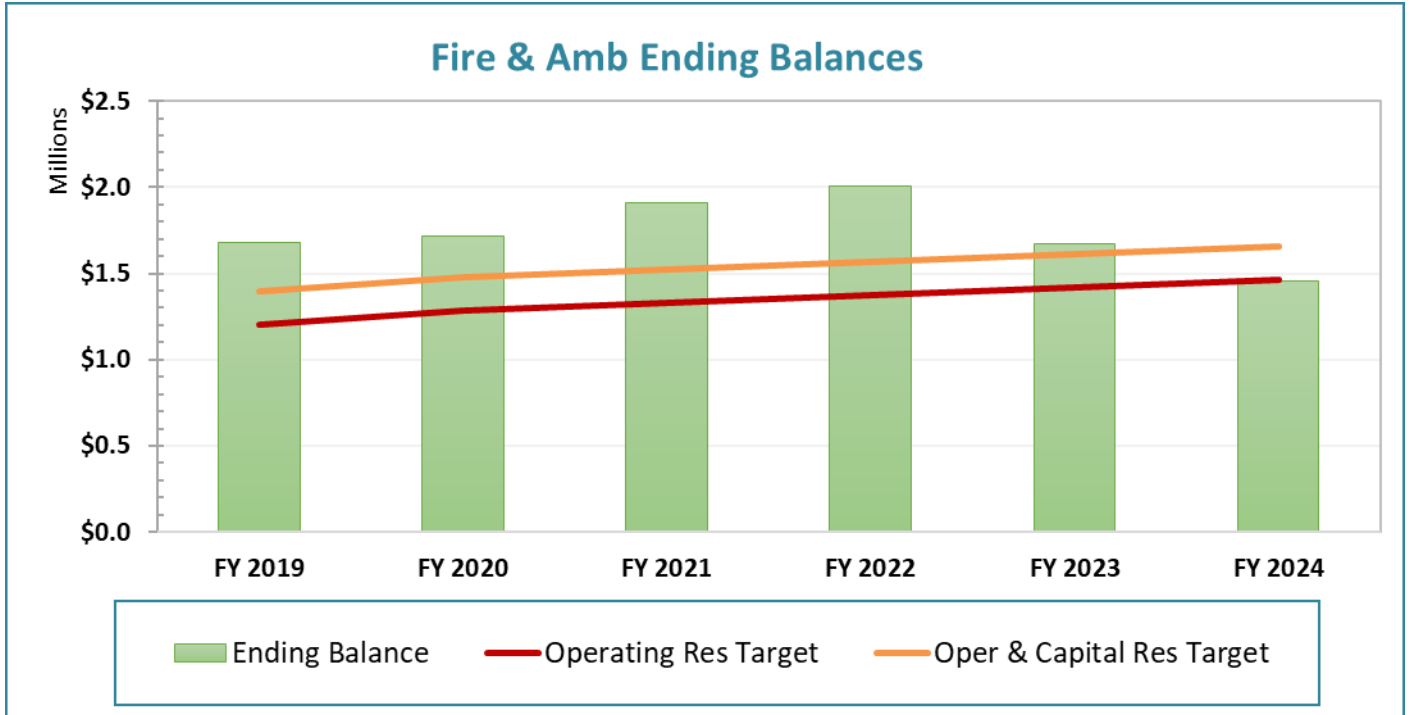


Figure 8-2 shows the Fire and Ambulance fiscal year ending reserve balances. The red line is the Operating and Maintenance Reserve (25% of O&M expenses), while the orange line is the sum of the O&M and capital reserve target (equal to average yearly capital expense). As shown, the District builds reserves until FY 2022. In FY 2023, the District plans to use reserves to replace a fire engine. Appendix B shows the projected reserve balances with two options for additional CalPERS pension obligation payments.

Figure 8-2: Fiscal Year Ending Reserve Balances



8.3.5. Results

Our results assume no revenue growth aside from a 1% growth in property tax revenue, and growth in expenses as described in Section 8.3.2. As shown in the above graphs, the District should be able to fund operations for the next five years.

APPENDIX A:

Capital Improvement Programs

Water Capital Improvement Program

Water CIP	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Source: CIP Summary in Budget file sent 2-16-2018						
Installation of 2,900 (AMR) Meters	\$ 400,000					
Relocate Back Lot Meters (80 Total)			\$ 32,000	\$ 32,000	\$ 32,000	
Replace Nob Hill SCADA Communication Building	\$ 241,000					
Nob Hill & CLAWA Tank Interconnection Improvements	\$ 50,000					
Groundwater Pumping Equipment Replacements	\$ 20,000					
Heath Aqua-Scope Leak Detector	\$ 3,000					
Water Department Inventory	\$ 7,500					
Replace Computer Workstations	\$ 2,000					
Paint Main Office Interior	\$ 5,000					
Replace Rowco Booster's and Building (used to be 200k in 2020)			\$ 200,000			
Replace Rowco 0.1 MG Tanks with one 0.5 MG Tank						\$ 650,000
Nob Hill 1 MG Tank Rehabilitation						\$ 167,000
Replace Water & Fire Complex 50Kw Generator			\$ 35,000			
Purchase new backhoe tractor shared cost 50%				\$ 60,000		
Vehicle & Equipment Storage Building at Harris Property				\$ 30,000		
Nob Hill 0.133 MG Tank Rehabilitation			\$ 80,000			
Rowco 0.3 MG Tank Rehabilitation					\$ 90,000	
Replace 4X4 Vehicle Unit # 60 with 1 Ton Service Truck	\$ 60,000					
Replace 4X4 Vehicle Unit # 68			\$ 35,000			
Replace 4X4 Vehicle Unit # 58 Flatbed Snowplow				\$ 60,000		
Replace 4X4 Vehicle Unit # 76					\$ 50,000	
Replace 1965 Thiokol Snow Cat with Truck Mounted Tracks						\$ 50,000
Replace Portable 50Kw Generator						\$ 40,000
Replace Portable Compressor and Jackhammer						\$ 25,000
Water Dept Inventory		\$ 7,500				
Water Facility CIP		\$ 623,500				
Uninflated Subtotal	\$788,500	\$631,000	\$382,000	\$182,000	\$172,000	\$932,000
<hr/>						
Water CIP	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Debt Funded (Current Debt) CIP	\$400,000	\$0	\$0	\$0	\$0	\$0
Admin CIP	\$9,750	\$0	\$9,750	\$0	\$0	\$0
Full Water & Admin CIP	\$ 798,250	\$ 631,000	\$ 391,750	\$ 182,000	\$ 172,000	\$ 932,000

Wastewater Capital Improvement Program

Wastewater CIP	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Collection						
Collection System Improvements - I&I Reduction						
Annual line cleaning and video inspection	\$ 30,000		\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
Seal coat sewer manholes 5 per year at \$1,500 each	\$ 7,500		\$ 7,500	\$ 7,500	\$ 7,500	\$ 7,500
Point repairs utilizing pipe liner 5 per year at \$1,500 each	\$ 7,500		\$ 7,500	\$ 7,500	\$ 7,500	\$ 7,500
Point repairs (in house) 10 per year at \$500 each O&M	\$ 5,000		\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000
Purchase new sewer manhole lids 20 per year at \$400 each	\$ 8,000		\$ 8,000	\$ 8,000	\$ 8,000	\$ 8,000
Collection Division CIP		\$ 169,000				
Collection Division Inventory		\$ 2,000				
Collection System - I&I Improvements Subtotal	\$ 58,000	\$ 171,000	\$ 58,000	\$ 58,000	\$ 58,000	\$ 58,000
Pump Stations						
Seal coat wet well at Sewer Lift Stations No. 8	\$ 8,500					
Upgrade SCADA system shared cost 50% with water. Total \$50,000 (internet based comms)						\$ 25,000
Install flow meter and vault at Sewer Lift Station 7			\$ 35,000			
Upgrade control panels and SCADA at Sewer Lift Stations Nos. 7, 8 & 9						
Replace Generator at Sewer Lift Station No. 7	\$ 60,000					
Pump Stations Subtotal	\$ 68,500	\$ -	\$ 35,000	\$ -	\$ -	\$ 25,000
Pipeline Rehab & Replacement						
Wagon Wheel Easement E-W between MH's 108 and 109 52-51					\$ 150,000	
			\$ 20,000			
Pipeline Rehab & Replacement Subtotal	\$ -	\$ -	\$ 20,000	\$ -	\$ 150,000	\$ -
Other Wastewater System Improvements						
Repave Road to Sewer Lift Stations No. 5	\$ 12,000		\$ 12,000			
Annual updates to sewer maps						
Purchase new bypass pump equipment						
Replace Unit 70 light utility service truck					\$ 30,000	
Replace dump truck shared cost 1/3 each division. Water, WWC, WWT \$75,000					\$ 24,975	
Replace Unit 77 light utility service truck						
Replace Unit 75 medium utility / snow plow / jetter tow / service truck						
Replace Unit 84 light utility service truck						
Replace portable air compressor and jackhammer	\$ 25,000					
Replace Sewer jetter						
Replace Collection Building generator						
Replace Unit 69 with full size pump service truck with crane			\$ 70,000			
Vehicle and equipment storage building at Harris Property				\$ 30,000		
Purchase new backhoe tractor shared cost 50%				\$ 60,000		
Wastewater Collections Department Inventory	\$ 2,000		\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000
Purchase Trailer to Mount Old Sewer Lift Station No. 3						
Generator to Make it Portable	\$ 4,000					
Other Wastewater System Improvements Subtotal	\$ 43,000	\$ -	\$ 84,000	\$ 92,000	\$ 56,975	\$ 2,000
Admin CIP	\$ 5,000	\$ -	\$ 5,000	\$ -	\$ -	\$ -
Collections Division Improvements Subtotal (Includes Admin CIP)	\$ 174,500	\$ 171,000	\$ 202,000	\$ 150,000	\$ 264,975	\$ 85,000
Treatment (Total CIP)						
Upgrade, R&R Treatment SCADA, Pumps, Mixers, Etc.	\$ 40,000					
Replacement Fine Bubble Aeration System MBR 2	\$ 7,500					
Replacement Motor and Impeller for MBR Blower	\$ 18,000					
Replacement Actuators and Flow Control Valves For MBR 1	\$ 12,000					
Mixer & Submersible Pump Rebuilds	\$ 20,000		\$ 20,000	\$ 30,000	\$ 30,000	\$ 30,000
Purchase new solids handling bins & improve loading area	\$ 30,000					
Repair Plant Wash Water System	\$ 65,000					
Plant Road Paving (54,000 SF)	\$ 1,000					
Screenings Conditioning Equipment			\$ 250,000			
Replacement of Disposal Ponds Piping & Valve Structures			\$ 150,000			
Grit Removal Equipment				\$ 300,000		
Replace UV System					\$ 350,000	
Unit 67 Replacement					\$ 35,000	
Unit 80 Replacement					\$ 35,000	
Wheel Loader Replacement						\$ 150,000
Generator & ATS Replacement						\$ 150,000
Treatment Facilities CIP (Allocation to Run Springs is below)		\$ 324,000				
Subtotal	\$ 193,500	\$ 324,000	\$ 420,000	\$ 330,000	\$ 450,000	\$ 330,000
Admin CIP	\$ 5,000	\$ -	\$ 5,000	\$ -	\$ -	\$ -
Allocation to Running Springs (60.7%)	\$ 122,532	\$ 196,798	\$ 260,108	\$ 200,442	\$ 273,330	\$ 200,442
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Full WW & Admin CIP	\$297,032	\$367,798	\$462,108	\$350,442	\$538,305	\$285,442

Fire and Ambulance Capital Improvement Program

Fire CIP	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Source: CIP Summary in Budget file sent 2-16-2018						
Flooring replaced Station 50	\$ 22,000					
Furniture (Recliners)/ Kithcen Table		\$ 3,200				
Computer with monitor Station 51/BC	\$ 1,700					
Command Tablets		\$ 2,500				
New Windows downstairs Station 50 (double pane)			\$ 2,000			
Kitchen Remodel				\$ 6,000		
Exterior Paint Station 50			\$ 4,000			
Breathing Apparatus Purcahse- 3 SCBAs		\$ 15,000				
Breathing Appartus Support Service Equipment	\$ 13,000					
Replace Staff Vehicle (2003 Dodge)	\$ 55,000					
Replace 1999 Type 1 KME Engine (E-51)					\$ 450,000	
Replace Concrete Aprons at Station 50 and Station 51			\$ 50,000			
Replace (2005 Chevrolet Utility)				\$ 55,000		
Replace 2003 Type 1 KME Engine (E-50)						
Radios 800mhz x 6	\$ 48,000					
Radios VHF Digital x 6		\$ 15,000				
15 Voice Amps for SCBA Masks		\$ 4,641				
Uninflated Subtotal	\$139,700	\$40,341	\$56,000	\$61,000	\$450,000	\$149,408
Ambulance CIP	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Replace MA 50A (2007 Chevrolet)	\$ 190,000					
Replace MA 51 (2007 Chevrolet)						
Replace Zoll M Series Monitors	\$ 25,000	\$ -		\$ 25,000		
Ambulance CIP		\$ 235,000				
Spaceholder						
Uninflated Subtotal	\$215,000	\$235,000	\$0	\$25,000	\$0	\$95,000
						average
Admin CIP	\$5,250	\$0	\$5,250	\$0	\$0	\$0
Total Fire and Ambulance	\$359,950	\$275,341	\$61,250	\$86,000	\$450,000	\$244,408

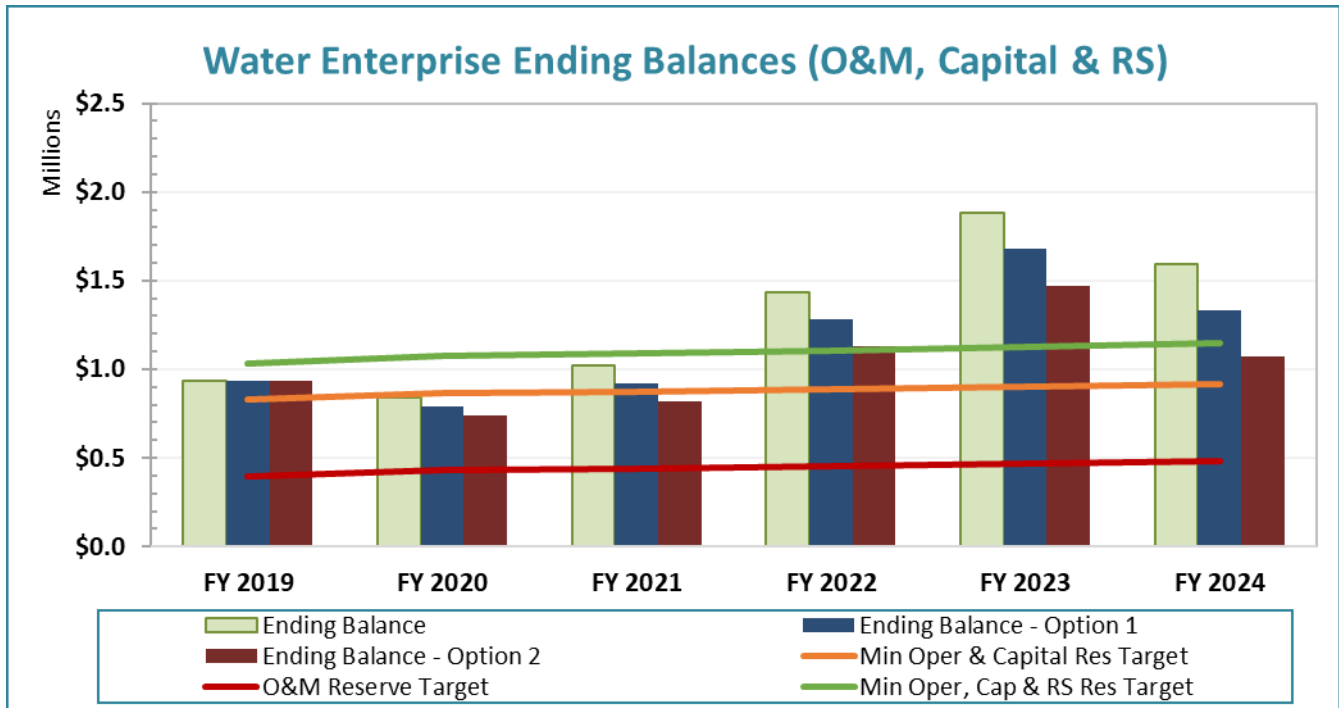
APPENDIX B:

Resulting Reserve Balances with Additional CalPERS Payments to Pay Down Pension Costs (Water, Wastewater, Fire and Ambulance)

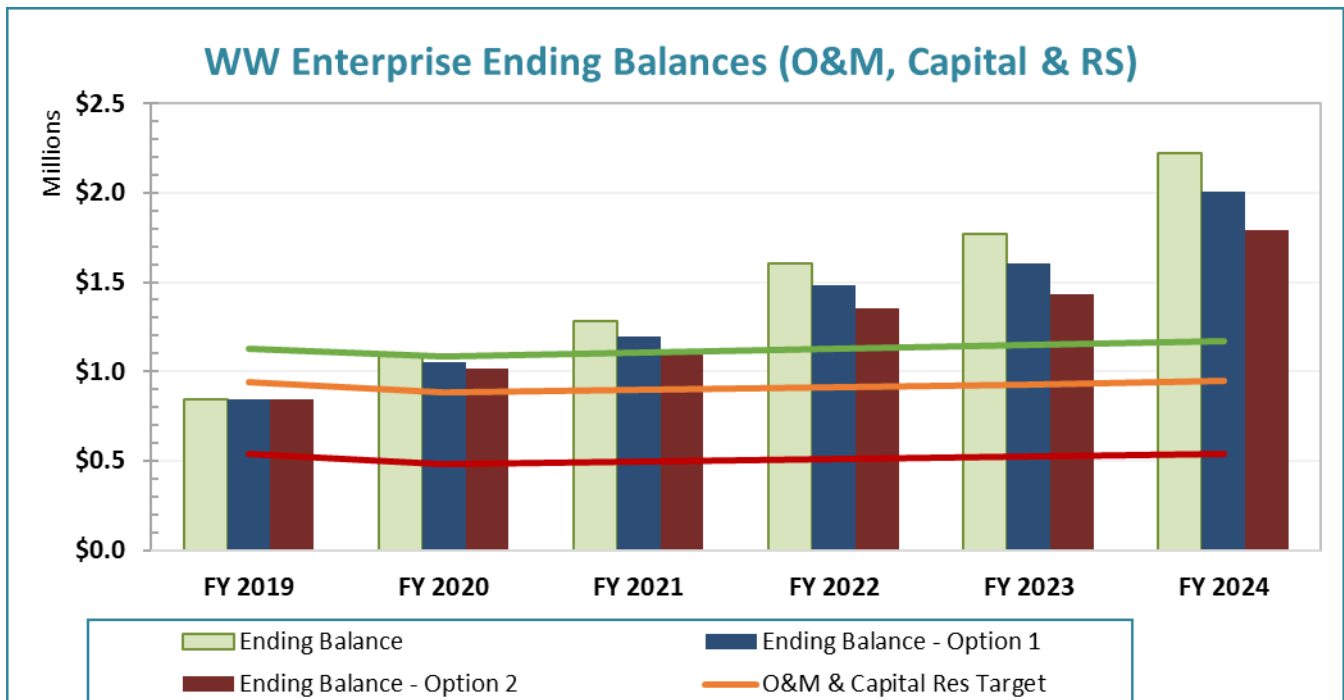
**Total Interest Savings Shown in the CalPERS Table at the end of
Appendix B**

Utility	Option 1 - Payment Each Year for 5 Years	Option 2 - Payment Each Year for 5 Years
Water	\$50,000	\$100,000
Wastewater	\$25,000	\$50,000
Fire and Ambulance	\$100,000	\$200,000

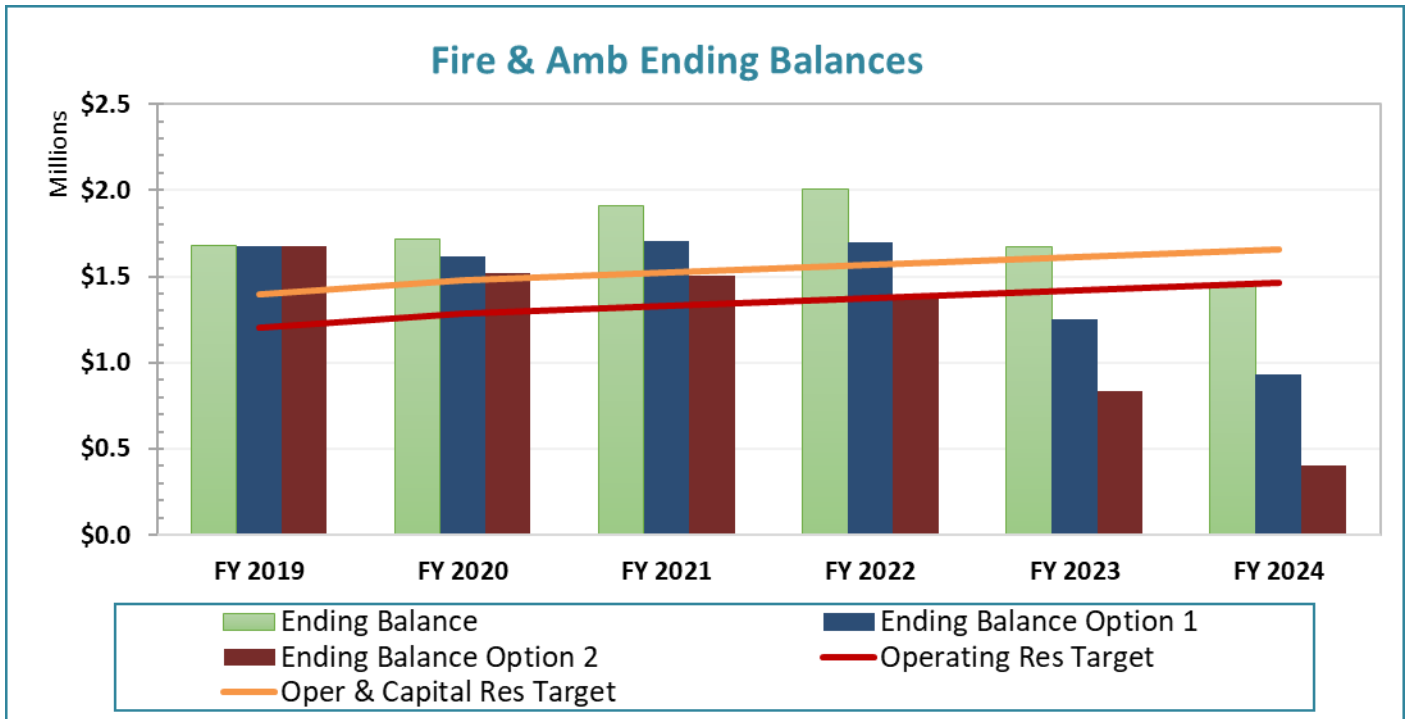
Water



Wastewater



Fire and Ambulance



Year	Original		Extra \$50,000 per year for five years		Extra \$100,000 per year for five years	
	Beginning of Year Balance	Payment During Fiscal Year	Beginning of Year Balance	Payment During Fiscal Year	Beginning of Year Balance	Payment During Fiscal Year
2018-19	\$ 3,238	\$ 242	\$ 3,188	\$ 241	\$ 3,188	\$ 241
2019-20	\$ 3,214	\$ 281	\$ 3,111	\$ 278	\$ 3,009	\$ 276
2020-21	\$ 3,149	\$ 303	\$ 2,991	\$ 297	\$ 2,834	\$ 291
2021-22	\$ 3,055	\$ 235	\$ 2,895	\$ 226	\$ 2,735	\$ 218
2022-23	\$ 3,026	\$ 253	\$ 2,814	\$ 239	\$ 2,601	\$ 225
2023-24	\$ 2,976	\$ 260	\$ 2,763	\$ 245	\$ 2,550	\$ 231
2024-25	\$ 2,916	\$ 267	\$ 2,703	\$ 252	\$ 2,490	\$ 237
2025-26	\$ 2,844	\$ 274	\$ 2,631	\$ 259	\$ 2,418	\$ 244
2026-27	\$ 2,759	\$ 282	\$ 2,547	\$ 266	\$ 2,335	\$ 251
2027-28	\$ 2,660	\$ 290	\$ 2,450	\$ 274	\$ 2,240	\$ 258
2028-29	\$ 2,547	\$ 298	\$ 2,339	\$ 281	\$ 2,130	\$ 265
2029-30	\$ 2,417	\$ 306	\$ 2,211	\$ 289	\$ 2,006	\$ 272
2030-31	\$ 2,270	\$ 314	\$ 2,067	\$ 297	\$ 1,865	\$ 279
2031-32	\$ 2,104	\$ 323	\$ 1,905	\$ 305	\$ 1,706	\$ 287
2032-33	\$ 1,917	\$ 317	\$ 1,723	\$ 298	\$ 1,529	\$ 280
2033-34	\$ 1,724	\$ 310	\$ 1,535	\$ 291	\$ 1,346	\$ 272
2034-35	\$ 1,523	\$ 297	\$ 1,341	\$ 278	\$ 1,159	\$ 258
2035-36	\$ 1,323	\$ 283	\$ 1,148	\$ 263	\$ 973	\$ 243
2036-37	\$ 1,122	\$ 268	\$ 956	\$ 248	\$ 790	\$ 227
2037-38	\$ 923	\$ 155	\$ 767	\$ 134	\$ 610	\$ 113
After 2037-38		\$ 1,047		\$ 856		\$ 664
Total Scheduled Payments		\$ 6,605		\$ 6,117		\$ 5,632
Total Extra Payments		\$ -		\$ 250		\$ 500
Total Payments		\$ 6,605		\$ 6,367		\$ 6,132
Interest Savings				\$ (238)		\$ (473)

All numbers are in thousands.

This is based on the Amortization Bases from the June 30, 2016 Annual Valuation.

The discount rate and payroll growth are based on a 7% discount rate, and a 2.75% payroll growth rate.

These estimates are the assumptions that will be in place for the June 30, 2018 Annual Valuation.

Due to bases dropping off and payments changing payments after 2037-38 are grouped