EL TORO WATER DISTRICT

2022-23 Water, Recycled Water, and Wastewater Rate Study

Final Report / June 20, 2022

EL TORO WATER DISTRICT
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June 20, 2022

Dennis P. Cafferty, P.E.
General Manager
El Toro Water District
24251 Los Alisos Blvd.
Lake Forest, CA 92630

Subject: 2022-23 Water, Recycled Water, and Wastewater Rate Study Report

Dear Mr. Cafferty:

El Toro Water District (ETWD or District) engaged Raftelis Consultants, Inc. (Raftelis) to conduct a cost of service study for the development of its water, wastewater, and recycled water rates that comply with Proposition 218 and other legal requirements. As part of the Study, we reviewed the latest operating budget (including purchased water costs), referenced previously conducted cost of service analyses, and calculated the water, wastewater. and recycled water rates for the District in fiscal year (FY) 2022-23. The updated rates, scheduled to take effect on August 1, 2022, reflect projected changes in net revenue requirements for each enterprise and projected water sales for FY 2022-23.

This Water, Recycled Water, and Wastewater Rate Update Study Report summarizes the key findings and recommendations related to the development of the respective rates.

It has been a pleasure working with the District. We would like to thank you for your assistance during the Study.

Sincerely,

Sudhir Pardiwala
Executive Vice President – Project Manager

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Senior Consultant – Lead Analyst

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1. Executive Summary

1.1. Background of the Study

The District engaged Raftelis Consultants, Inc. (Raftelis) to conduct the Water, Recycled Water (RW), and Wastewater Rate Update Study (Study) to develop rates for all three enterprises that are equitable and in compliance with Proposition 218. This Fiscal Year (FY) 2022-23 Water, Recycled Water, and Wastewater Rate Update Study Executive Summary ("Summary") summarizes the key findings and recommendations related to developing the respective rates.

The District's current water and wastewater rate structure consists of the following components:

Water

- Monthly Service Charges by meter size to recover a portion of operating costs
- Variable Rates: Tiered Residential Rates and Uniform Commercial Rates, comprised of the following rate components:
  - Water Supply Rate to pay for purchased water supply costs
  - Delivery Rate to recover the remaining operating costs
  - Revenue Offset to provide a rate incentive and affordability for essential water use in Tier 1
  - Conservation and Recycled Water Program costs applied to inefficient and excessive water use to fund the District's conservation and supplemental water supply programs (e.g., Recycled Water expansion)
- Capital Facility Charges by meter size to pay for capital replacement and refurbishment of the existing water system

Wastewater (WW)

- Operations and Maintenance ("O&M") Rates (by dwelling units for residential customers and by usage for non-residential customers) by customer class
- Capital Facility Charges by meter size to pay for capital replacement and refurbishment of the existing wastewater system

1.2. Proposed Water Rates

1.2.1. MONTHLY SERVICE CHARGES

Table 1-1 shows the proposed monthly service charges for FY 2023, effective August 1, 2022.

Table 1-1: FY 2023 Proposed Monthly Water Service Charges

Meter Size	Proposed FY 2023	Current FY 2022	$ Change	% Change
5/8"	**$17.46**	$16.56	$0.90	5.4%
3/4"	**$23.62**	$22.24	$1.38	6.2%
1"	**$35.93**	$33.60	$2.33	6.9%
1 1/2"	**$66.70**	$62.00	$4.70	7.6%
2"	**$128.25**	$118.80	$9.45	8.0%

1.2.2. CAPITAL FACILITY CHARGES

The District proposes a uniform 9% increase on its current Capital Facility Charges for potable water services.

Table 1-2: FY 2023 Proposed Monthly Water Capital Facility charges

Meter Size	Proposed FY 2023	Current FY 2022	$ Change	% Change
5/8"	**$5.09**	$4.66	$0.43	9.2%
3/4"	**$5.09**	$4.66	$0.43	9.2%
1"	**$8.50**	$7.78	$0.72	9.3%
1 1/2"	**$20.65**	$18.91	$1.74	9.2%
2"	**$51.84**	$47.47	$4.37	9.2%

1.2.3. COMMODITY RATES

The proposed water commodity rates for FY 2023, shown in Table 1-3, will be effective August 1, 2022. The proposed rate reflects the projected increases in purchased water supply costs from the Metropolitan Water District of California through the Municipal Water District of Orange County (MWDOC) and the resulting redistribution of costs among tiers from the updated cost of service analysis detailed in this report.

Table 1-3: FY 2023 Proposed Water Commodity Rates

Water Usage Rates	Proposed FY 2023	Current FY 2022	$ Impact	% Impact
Tier 1 - Essential Use	**$2.82**	$2.72	$0.10	3.7%
Tier 2 - Efficient Use	**$3.18**	$3.11	$0.08	2.3%
Tier 3 - Inefficient Use	**$6.50**	$6.78	-$0.28	-4.1%
Tier 4 - Excessive Use	**$8.35**	$8.52	-$0.17	-2.0%
Uniform - Commercial Use	**$3.31**	$3.14	$0.17	5.4%

1.2.4. PRIVATE FIRE RATES

The District updated the private fire rates to account for the extra capacity demand to fight an average fire in the District. The proposed Private Fire Rates shown in Table 1-4 reflect the changes to the fixed charges for private fire connections resulting from the updated methodology. The methodology is detailed in Section 5 of this Report.

Table 1-4: FY 2023 Proposed Monthly Private Fire Service Rates

Meter Size	Account #	Proposed FY 2023	Current Rates	$ Change	% Change
4"	27	**$16.15**	$22.86	-$6.71	-29.4%
6"	90	**$23.45**	$44.76	-$21.31	-47.6%
8"	53	**$36.04**	$82.53	-$46.49	-56.3%
10"	4	**$54.97**	$139.34	-$84.37	-60.5%

1.3. Proposed Wastewater Rates

1.3.1. WASTEWATER SERVICE CHARGES

In this Rate Study, the District proposes to simplify the non-residential wastewater customer classifications into four groups based on the estimated strength[1] of the wastewater discharged into the District's system. Table 1-5 shows the respective customer classes and their assumed strengths. Table 1-6 shows the non-residential classification changes from existing to new classifications.

Table 1-5: Proposed Wastewater Customer Classes and Strengths

Customer Classes	BOD (mg/L)	TSS (mg/L)	Total Strengths	Notes
Residential Unrestricted	282	272	554 mg / L	LACSD data[2]
Multi-Family Restricted	282	272	554 mg / L	LACSD data
Multi-Family Unrestricted	282	272	554 mg / L	LACSD data
Low Strength Commercial	0-150	0-150	≤ 300 mg / L	
Medium Strength Commercial	150-300	150-300	301- 600 mg / L	
High Strength Commercial	> 300	> 300	> 600 mg / L	
Restaurants	282	272	554 mg / L	Same as Residential[3]

Table 1-6: Non-Residential Wastewater Customer Classification Changes

Existing Non-Residential Classes	New Classes
Animal Kennel	Medium Strength
Car Wash	Medium Strength
Dept. - Retail Store	Medium Strength
Dry Cleaner	Medium Strength
Parks Golf Courses	Medium Strength
Health Spa	Medium Strength
Hospital	Medium Strength
Hotel	Medium Strength
Market	High Strength
Mortuaries	High Strength
Nursery	Medium Strength
Prof/Financial Office	Medium Strength
Public Institution	Medium Strength
Auto Service Station(repair)	Medium Strength
Restaurants	Restaurants

[1] Total strength = Total Suspended Solids (TSS) + Biochemical oxygen demand (BOD) (in mg/L)
[2] LACSD Revenue Program Report Table 3
[3] Restaurant strengths are assumed to be the same as residential given the strict regulations of Fats, Oils, Grease ("FOG") for restaurants within the District service areas

Schools	Medium Strength
Theater	Medium Strength
Warehouse/Storage	Low Strength
Basic Commercial	Medium Strength

To calculate the FY 2022 Revised Cost of Service (COS) Rates, Raftelis conducted a thorough cost of service analysis using the District's FY 2021-22 budget, billed wastewater usage (flows and strengths) for each customer class, and the proposed changes in customer classes shown in Table 1-5. Table 1-7 shows the current and revised COS rates for FY 2022, and the proposed wastewater service rates for each customer class, to become effective August 1, 2022 (FY 2023). The FY 2023 rates demonstrate an overall 6% increase from the FY 2022 Revised COS Rates. Please refer to Section 6 for details of the analysis.

Table 1-7: FY 2023 Proposed Monthly Wastewater Service Charges

Wastewater Service Charges		FY 2022		FY 2023	Impact from Current Rates	
		Current	Revised COS	Proposed	$ Increase	% Increase
		A	B	C = B x 1.06	D = C - A	E = D / A
Residential ($/EDU)						
Residential Unrestricted		$25.76	$32.71	**$34.67**	$8.91	34.6%
Multi-Family Restricted		$20.44	$15.54	**$16.47**	-$3.97	-19.4%
Multi-Family Unrestricted		$24.30	$23.91	**$25.34**	$1.04	4.3%
Commercial Use ($/ccf)						
Animal Kennel	Medium St.	$4.23	$4.78	**$5.07**	$0.84	19.9%
Car Wash	Medium St.	$4.21	$4.78	**$5.07**	$0.86	20.4%
Dept. - Retail Store	Medium St.	$4.23	$4.78	**$5.07**	$0.84	19.9%
Dry Cleaner	Medium St.	$3.71	$4.78	**$5.07**	$1.36	36.7%
Parks Golf Courses	Medium St.	$3.70	$4.78	**$5.07**	$1.37	37.0%
Health Spa	Medium St.	$4.22	$4.78	**$5.07**	$0.85	20.1%
Hospital	Medium St.	$3.71	$4.78	**$5.07**	$1.36	36.7%
Hotel	Medium St.	$6.41	$4.78	**$5.07**	-$1.34	-20.9%
Market	High St.	$8.40	$8.95	**$9.49**	$1.09	13.0%
Mortuaries	High St.	$8.37	$8.95	**$9.49**	$1.12	13.4%
Nursery	Medium St.	$3.76	$4.78	**$5.07**	$1.31	34.8%
Prof/Financial Office	Medium St.	$4.23	$4.78	**$5.07**	$0.84	19.9%
Public Institution	Medium St.	$4.17	$4.78	**$5.07**	$0.90	21.6%
Auto Service Station	Medium St.	$4.22	$4.78	**$5.07**	$0.85	20.1%
Restaurants	Restaurants	$4.00	$4.86	**$5.15**	$1.15	28.8%
Schools	Medium St.	$4.38	$4.78	**$5.07**	$0.69	15.8%
Theater	Medium St.	$4.23	$4.78	**$5.07**	$0.84	19.9%
Warehouse/Storage	Low St.	$3.35	$3.87	**$4.10**	$0.75	22.4%
Basic Commercial	Medium St.	$3.71	$4.78	**$5.07**	$1.36	36.7%

1.3.2. CAPITAL FACILITY CHARGES

The current Wastewater Capital Facility Charges were established in June 2005. Raftelis proposes that non-residential wastewater classes be assessed based on their billed sewage flows, similar to wastewater service charges. Raftelis conducted a thorough cost of service analysis using the FY 2021-22 budget, billed wastewater usage (flows and strengths) for each customer class, and the proposed changes in customer classes shown in Table 1-5 to

calculate the FY 2022 Revised COS Capital Facility Charges. Table 1-8 shows the current FY 2022, revised COS for FY 2022, and proposed Wastewater Capital Facility charges for each customer class, effective August 1, 2022 (FY 2023). The FY 2023 charges show a uniform 8.5% increase from the FY 2022 Revised COS Rates. Please refer to Section 6 for details of the analysis.

Table 1-8: FY 2022 Proposed Monthly Wastewater Capital Facility Charges

Sewer Capital Facility Charges	FY 2022		FY 2023
	Current	Revised COS	Proposed
Residential ($/EDU)			
Residential Unrestricted	$4.93	$6.56	**$7.09**
Multi-Family Restricted	$3.91	$3.12	**$3.37**
Multi-Family Unrestricted	$4.65	$4.79	**$5.18**
Commercial			
5/8"	$4.34	N/A	N/A
3/4"	$7.34	N/A	N/A
1"	$13.55	N/A	N/A
1 1/2"	$24.07	N/A	N/A
2"	$70.96	N/A	N/A
Public Authority			
1"	$4.93	N/A	N/A
1 1/2"	$24.65	N/A	N/A
2"	$39.71	N/A	N/A
Non-Residential			
Low St. Commercial		$0.78	**$0.84**
Medium St. Commercial		$0.96	**$1.04**
High St. Commercial		$1.79	**$1.93**
Restaurants		$0.97	**$1.05**

1.4. Proposed Recycled Water Rates

The proposed Recycled Water ("RW") rate for FY 2023 is **$2.87/ccf**, which is 90 percent of the Tier 2 potable water rate. All RW customers connected to the recycled water distribution system will be assessed Monthly Service Charges (Table 1-9) and Capital Facility Charges (

Table 1-10) which are the same as potable meters, to recover the customer service, meter service, a portion of capacity and other RW related fixed costs and pay for the capital replacement and refurbishment of the expanded RW system.

Table 1-9: FY 2022 Proposed Recycled Water Monthly Service Charges

Meter Size	FY 2023 Proposed	FY 2022 Current	$ Change	% Change
5/8"	**$17.46**	$16.56	$0.90	5.4%
3/4"	**$23.62**	$22.24	$1.38	6.2%
1"	**$35.93**	$33.60	$2.33	6.9%
1 1/2"	**$66.70**	$62.00	$4.70	7.6%
2"	**$128.25**	$118.80	$9.45	8.0%

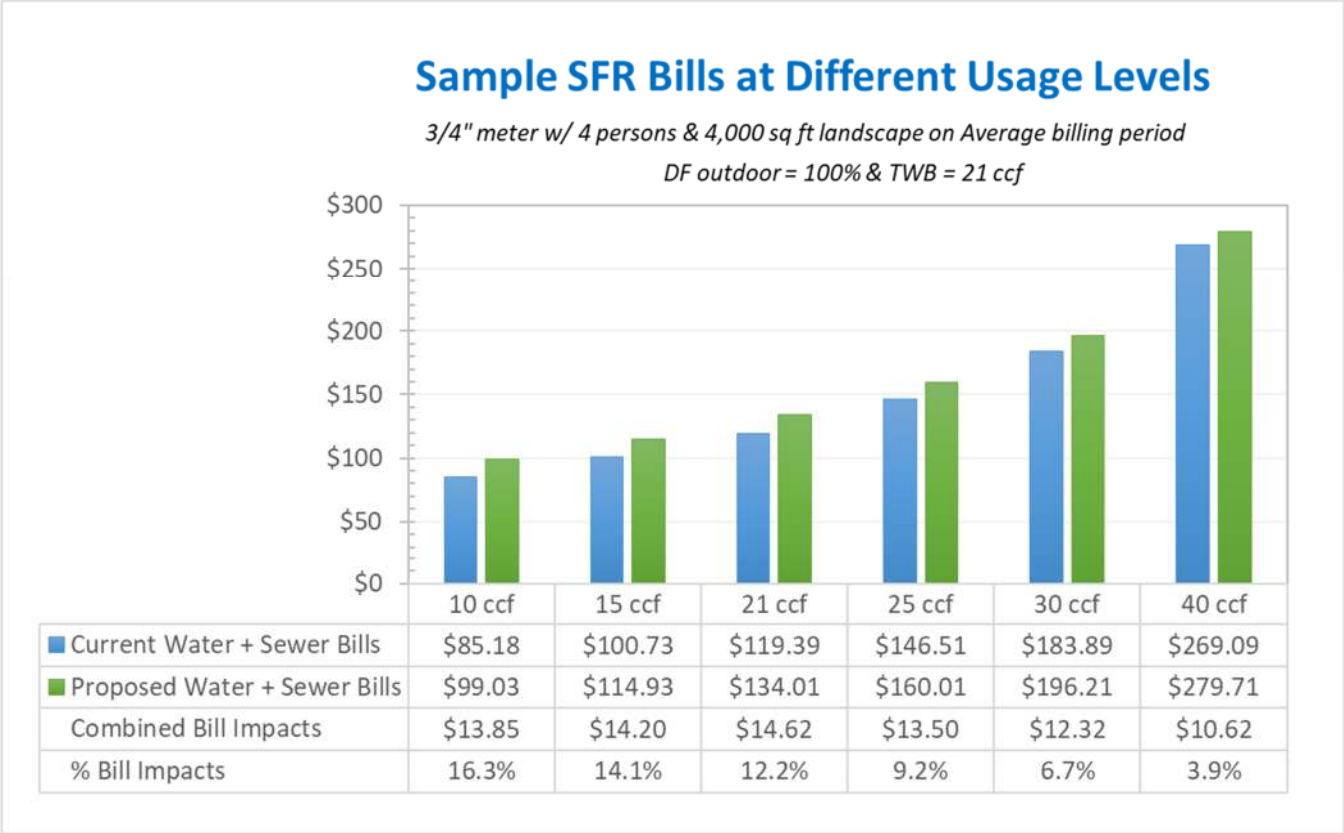
Table 1-10: FY 2022 Proposed Recycled Water Capital FACILITY Charges

Meter Size	Proposed FY 2023	Current FY 2022	$ Change	% Change
5/8"	**$5.09**	$4.66	$0.43	9.2%
3/4"	**$5.09**	$4.66	$0.43	9.2%
1"	**$8.50**	$7.78	$0.72	9.3%
1 1/2"	**$20.65**	$18.91	$1.74	9.2%
2"	**$51.84**	$47.47	$4.37	9.2%

1.5. Customer Impact Analysis

Figure 1-1 shows a breakdown of water and wastewater bills at various water usage levels for a single-family residential user with four occupants and a 4,000 sq. ft. landscape area serviced by a ¾-in meter at current water and wastewater rates compared to proposed FY 2023 rates. The combined water and wastewater bill increase would range from $10.62 to $14.62 per month, depending on the monthly billed water usage. The bill impacts shown result from the combination of changes to water and wastewater service and capital charges, cost of service rates, and increased revenue requirements for FY 2023. Recycled water rate impacts are not shown, as residential users do not purchase recycled water.

Figure 1-1: SFR Total Monthly Bills at Different Usage Levels at Current and Proposed Rates



	10 ccf	15 ccf	21 ccf	25 ccf	30 ccf	40 ccf
Current Water + Sewer Bills	$85.18	$100.73	$119.39	$146.51	$183.89	$269.09
Proposed Water + Sewer Bills	$99.03	$114.93	$134.01	$160.01	$196.21	$279.71
Combined Bill Impacts	$13.85	$14.20	$14.62	$13.50	$12.32	$10.62
% Bill Impacts	16.3%	14.1%	12.2%	9.2%	6.7%	3.9%

2. Introduction

2.1. District Background

The El Toro Water District (District), located in the southern portion of Orange County, was formed in 1960 under provisions of California Water District Law, Division 13 of the Water Code of the State of California, commencing with Section 34,000, to provide water and wastewater services to the service area. A publicly elected Board of Directors governs the District. The District is nearly built-out and encompasses the City of Laguna Woods and portions of four other cities: Lake Forest, Aliso Viejo, Laguna Hills, and Mission Viejo.

The District provides water, wastewater, and recycled water services to a population of approximately 48,500 in a service area of approximately 8.5 square miles. The District's water system contains six reservoirs with a combined capacity of 287 million gallons, in which the District owns 136 million gallons (the remaining capacity is leased to other local water districts), over 170 miles of water lines, and eight booster pump stations with 12 pressure zones to deliver water to approximately 10,000 metered water accounts. The District also participated in a five-agency collaboration to fund and construct a local water treatment plant (the Baker Water Treatment Plant) located in the City of Lake Forest to improve water treatment and water supply reliability for ETWD's customers and South Orange County. The Baker Water Treatment Plant (Baker WTP) allows the participating agencies to purchase untreated water from MWDOC at a lower cost than the treated water, reducing the financial burden on the District's customers.

The District's wastewater system is comprised of 142 miles of collection system pipeline, 3,400 manholes, and 11 pump stations which pump wastewater to the District's treatment plant which has a rated capacity of 6 million gallons per day. Much of the District's effluent is reused through recycled water sales. The District completed its Water

Recycling Plant (WRP) upgrades to produce higher quality tertiary recycled water in FY 2015. The District also increased its recycled water distribution capacity by adding 19 miles of recycled water distribution pipeline to make recycled water available to more customers. In FY 2019, the District completed further expansion of the recycled distribution system that increased the total amount of recycled water distribution pipelines to nearly 25 miles. In FY 2022, the District recycled water budget was based on a total 275 accounts and an increase in recycled water sales from 1,400 AF in FY 2021 to 1,485 AF.

2.2. Study Background and Objectives

The District engaged Raftelis to conduct a Cost of Service Study (Study) and develop rates for the Water, Recycled Water, and Wastewater enterprises of the District that are equitable and in compliance with all California legal requirements, including Proposition 218 requirements.

The major objectives of the Study include the following:

- Determine revenue requirements from water, wastewater, and recycled water rates for FY 2023.
- Update water rates to meet the District's goals and objectives, including defensibility, affordability for essential use, and promoting efficiency and conservation.
- Update private fire service charges.
- Update recycled water rates.
- Redesign wastewater rates to simplify non-residential customer classifications.
- Conduct cost of service analysis for wastewater services.
- Calculate new wastewater service and capital charges.
- Conduct customer impact analyses for the proposed water and wastewater rates.

This *Water, Recycled Water, and Wastewater Rate Study Report* (Report) summarizes the key findings and recommendations related to the development of the respective rates.

2.3. Legal Framework and Rate Setting Methodology

This section of the report describes the legal framework that was considered in the development of the rates to ensure that the calculated cost of service rates provide a fair and equitable allocation of costs to the different customer classes.

2.3.1. CONSTITUTIONAL MANDATES AND STATUTORY AUTHORITY

Article XIII D, Section 6 (Proposition 218), and Article X, Section 2 of the California Constitution govern the principles applicable to this Rate Study. This Rate Study equitably implements and harmonizes these constitutional mandates in concert with the authority and principles outlined in Water Code Section 370 et seq., which govern Allocation-Based Conservation Water Pricing (commonly referred to as "Water Budget Rate Structure"). This Rate Study provides for a water budget four-tier rate structure designed to implement, in a reasonable manner, the constitutional mandates, statutory authority, and principles referenced above.

2.3.2. CALIFORNIA CONSTITUTION – ARTICLE X, SECTION 2

Article X, Section 2 of the California Constitution (established in 1976) provides as follows:

> *It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare.*

As such, public agencies are constitutionally mandated to maximize the beneficial use of water, prevent waste, and encourage conservation, which this Rate Study achieves.

2.3.3. CALIFORNIA CONSTITUTION – ARTICLE XIII D, SECTION 6 (PROPOSITION 218)

Proposition 218, reflected in the California Constitution as Article XIII D, was enacted in 1996 to ensure that rates and fees were reasonable and proportional to the cost of providing service. The principal requirements for fairness of the fees, as they relate to public water and wastewater service, are as follows:

1. Water and wastewater rates shall not exceed the funds required to provide the service.
2. Revenues derived by the charge shall not be used for any other purpose other than that for which the charge was imposed.
3. The amount of the charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel.
4. No charge may be imposed for a service unless that service is actually used or immediately available to the owner of the property.

The rates developed in this Rate Study use a methodology to establish an equitable system of fixed and variable charges that recovers the cost of providing service and fairly apportions costs to each customer as required by Proposition 218.

2.3.4. STATUTORY AUTHORITY – GOVERNMENT CODE SECTION 370 ET SEQ. (ALLOCATION-BASED CONSERVATION WATER PRICING)

In 2000, the California Legislature (AB 2882), consistent with the above-referenced constitutional provisions, adopted a body of law entitled "Allocation-Based Conservation Water Pricing" (Water Code Section 370 et seq.)

Water Code Section 370 provides in part as follows:

> *The Legislature hereby finds and declares all of the following:*
>
> *(a) The use of allocation-based conservation water pricing by public entities that sell and distribute water is one effective means by which waste or unreasonable use of water can be prevented and water can be saved in the interest of the people and for the public welfare, within the contemplation of Section 2 of Article X of the California Constitution.*
>
> *(b) It is in the best interest of the people of California to encourage public entities to voluntarily use allocation-based conservation water pricing, tailored to local needs and conditions, as a means of increasing efficient uses of water, and further discouraging wasteful or unreasonable use of water under both normal and dry-year hydrologic conditions.*

Water Code Section 372 provides as follows:

> *(a) A public entity may employ allocation-based conservation water pricing that meets all of the following criteria.*
>
> *(1) Billing is based on metered water use.*
>
> *(2) A basic use allocation is established for each customer account that provides a reasonable amount of water for the customer's needs and property characteristics. Factors used to determine the basic use allocation may include, but are not limited to the number of occupants, the type or classification of use, the size of lot or irrigated area, and the local climate data for the billing period. Nothing in this chapter prohibits a customer of the public entity from challenging whether the basic use allocation established for that customer's account is reasonable under*

the circumstances. Nothing in this chapter is intended to permit public entities to limit the use of property through the establishment of a basic use allocation.

(3) A basic charge is imposed for all water used within the customer's basic use allocation, except that at the option of the public entity, a lower rate may be applied to any portion of the basic use allocation that the public entity has determined to represent superior or more than reasonable conservation efforts

(4) A conservation charge shall be imposed on all increments of water use in excess of the basic use allocation. The increments may be fixed or may be determined on a percentage or any other basis, without limitation on the number of increments, or any requirement that the increments or conservation charges be sized, or ascend uniformly, or in a specified relationship. The volumetric prices for the lowest through the highest priced increments shall be established in an ascending relationship that is economically structured to encourage conservation and reduce the inefficient use of water, consistent with Section 2 of Article X of the California Constitution.

(b) ---

(1) Except as specified in subdivision (a), the design of an allocation-based conservation pricing rate structure shall be determined in the discretion of the public entity.

(2) The public entity may impose meter charges or other fixed charges to recover fixed costs of water service in addition to the allocation-based conservation pricing rate structure.

(c) A public entity may use one or more allocation-based conservation water pricing structures for any class of municipal or other service that the public entity provides.

As noted in the referenced statutes, "Allocation-Based Conservation Water Pricing Rate Structure" is a form of increasing block rates in which the amount of water within the first block or blocks is based on the estimated efficient water needs of the individual customer. Water-budget rates differ from other metered water rate designs in two key ways. First, the blocks are established based on water budgets that represent varying levels of each customer's efficient water use. Second, water-budget rates require the public agency to set specific standards for what is, and what is not, considered efficient water use for an individual customer.

This Rate Study, in conjunction with ETWD's landscape data for individual customers, establishes a standard for efficient usage and then establishes a budget for each individual customer. This determines how much water is considered efficient for each customer. Customers with usage above this efficient usage budget pay a higher rate for their "inefficient" or "wasteful" usage (in accordance with Section 372 of the Water Code).

This Rate Study conforms to the principles set forth in the enabling statutes for Water Budget Rate Structures.

2.3.5. TIERED RATES

"Inclining" Block-Rate Structures (which are synonymous with "Increasing Block-Rate Structures"), when properly designed and differentiated by customer class (as this Rate Study does), allow a water agency to send consistent price incentives for conservation to customers. For this reason, the heightened interest in water conservation, "Increasing Block-Rates," has been increasingly favored, especially in relatively water-scarce regions such as Southern California.

2.3.6. PROPORTIONALITY – PROPOSITION 218'S REQUIREMENT THAT FEES BE PROPORTIONATE TO THE COST OF SERVICE FOR EACH PARCEL

There is a fair amount of ambiguity in how Proposition 218 was drafted – none more so than the issue of "proportionality." It has taken a succession of court rulings over several years to clarify the substantive requirements of Proposition 218.

In *Griffith v. Pajaro Valley Water Management Agency* (2013) 220 Cal.App.4th 586, the Sixth Appellate District has provided guidance on several important Proposition 218 issues, including the issue of proportionality. The *Pajaro* Court held::

1. *That Pajaro's costs of using supplemental water along the coast to prevent saltwater intrusion benefited all of Pajaro's customers, including inland customers, using the groundwater basins.*
2. *That proportionality is not measured on an individual parcel basis but instead is measured collectively, considering all customer classes. As such, the Appellate Court in Pajaro confirmed the common practice of grouping customers into classes with comparable service costs and setting rates by class rather than parcel by parcel met the Prop 218 requirement that fees be proportionate to the cost of providing service to each parcel.*

Under Item 1 noted above, water utilities can reasonably justify that the addition of recycled water to the water resource mix frees up water for potable uses and therefore, all customers should share in the costs of recycled water so that recycled water can be put to beneficial use as required by Article X, Section 2. This clarification by the appellate court allows agencies to harmonize the mandates of Proposition 218 and Article X, Section 2.

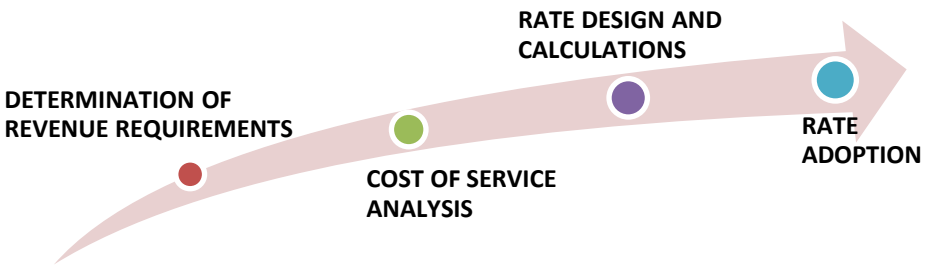
Under Item 2 noted above, utilities can develop rates by customer class and meet the requirements of Proposition 218, as opposed to the strict interpretation, which would require cost proportionality for each parcel receiving service. This was another significant clarification of Proposition 218 since cost proportionality for individual parcels is almost impossible to achieve in the strict sense.

The Pajaro case rulings provided for the harmonizing of the proportionality requirements of Proposition 218 with the efficient use and conservation requirements of Article X, Section 2 by accepting that the supplemental costs of water used by one group of customers should be shared by all users, based on the concept that all users receive benefit from an increase in the overall water resources. In the District's case, recycled water adds a water resource that provides benefit to all users by freeing up potable water and therefore, the costs of recycled water can be shared by all inefficient potable water users. Due to non-essential usage's demand on the system, the District allocates the cost of funding the recycled water system development to Tiers 3 and 4 residential/irrigation usage as well as to commercial use at a lower rate based on the assumption that 10 percent of Commercial and Public Authority (CII) water use is non-essential.

2.4. Cost-Based Rate Setting Methodology

As stated in the Manual M1, the methodology put forth by the AWWA Rates and Charges Subcommittee is consistent with the Proposition 218 requirement that "the costs of water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers." There are four major steps to develop utility rates that comply with Proposition 218 and industry standards while meeting other emerging goals and objectives of the utility:

Figure 2-1: Cost-Based Rate Setting Methodology



1. **Determination of Revenue Requirement:** The rate-making process starts with the determination of future revenue requirements to sufficiently fund the utility's operation and maintenance (O&M), capital replacement and refurbishment (R&R), capital improvement and perpetuation of the system, and to ensure the preservation of the utility's financial integrity. The basic revenue requirements of a utility include O&M expenses, debt service payments, contributions to specified reserves, and the cost of capital expenditures that are not debt-financed.
2. **Cost of Service Analysis:** The annual costs of providing services (cost of service), determined in the financial plan development, should be allocated among the customers commensurate with their service requirements. In this step, costs are identified and allocated to cost causation components and distributed to the respective customer classes consistent with industry standards provided in the Manual M1 (published by AWWA).
3. **Rate Design and Calculations:** Rates do more than simply recover costs. Within the legal framework and industry standards, properly designed rates should support and optimize a blend of various utility objectives, such as conservation, affordability for essential needs, revenue stability, etc. They should work as a public information tool in communicating these objectives to customers.
4. **Rate Adoption:** In the last step of the rate-making process, to comply with the Proposition 218 requirements, the results of the analyses are documented in a Study Report that identifies the nexus between costs and rates to help educate the public about the proposed changes, the rationale, and justifications behind the changes and their anticipated financial impacts in layman's terms. At least 45 days after sending out the public notices, the agency shall consider all written protests against the proposed rates at a public hearing. If there is no majority protest, the Board can approve and adopt the new rates.

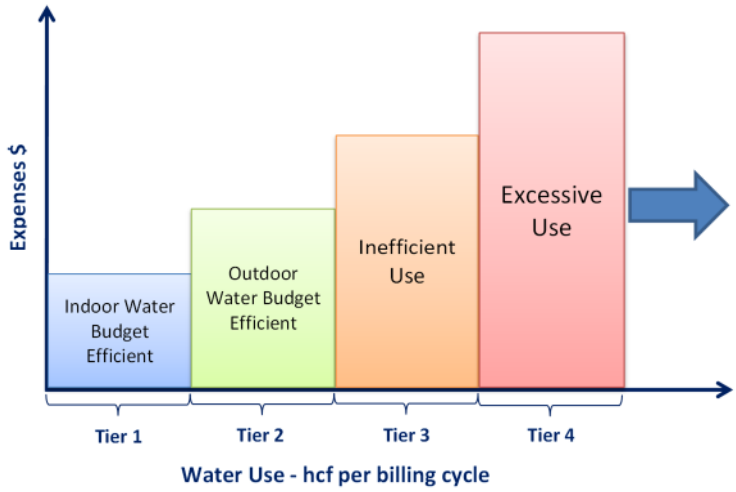
3. Water Budget and Tier Definitions

Since July 1, 2010, the District has implemented a tiered water budget rate structure to incentivize conservation and efficient water use. The description of the allocations to individual customers and the development of water budgets are described here for this report's completeness.

3.1. Water Budget Definitions

The American Water Works Association Journal defines water budget as "the quantity of water required for an efficient level of water use by that customer" *(Source: American Water Works Association Journal, May 2008, Volume 100, Number 5).* Therefore, each customer has their own allocation or water budget, as shown in the following figures. Figure 3-1 illustrates how the tier breaks are set for water budget customers. Tier 1 is defined by the allotment for indoor use, and Tier 2 is defined by the allotment for outdoor use. Tier 3 is set to a percentage of the total water budget (or Tiers 1 and 2) combined. Any use beyond Tier 3 is considered excessive and falls into Tier 4.

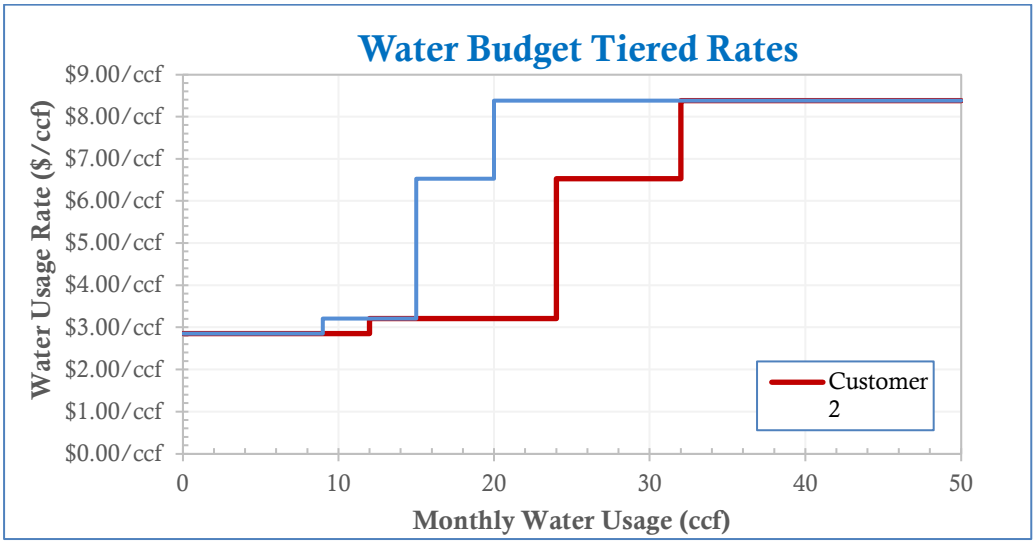
Figure 3-1: Water Budget Tiers



It is worth noting that water budget rate structures are customized for each customer, which results in different tier breaks for different customers. For example, as illustrated by Figure 3-2,[4] which examines the use of two customers of a *hypothetical* water utility. The first 9 units consumed by Customer 1 are charged at Tier 1 rate, whereas Customer 2 has 12 units at Tier 1 rate ($2.85/ccf) for indoor use. The following 6 units (10 – 15 units) consumed by Customer 1 are reserved for outdoor use, which is charged at the Tier 2 rate ($3.21/ccf), and any usage exceeding 20 units[5] will be deemed excessive and charged at the Tier 4 Rate ($8.38/ccf). Similarly, for Customer 2, Tier 2 spans from 13-24 units, and use exceeding 32 units will be charged at the Tier 4 Rate ($8.38/ccf). Customer 2, with a larger indoor and outdoor water budget (or allotment), represents a residential customer with a larger family and a bigger irrigated landscape area than that of Customer 1.

[4] This is for illustrative purposes only and is not based on actual rates of the District.
[5] Tier 3 = 30% of Total Water Budget (TWB) whereas TWB = Indoor WB + Outdoor WB

Figure 3-2: Customized Water Budget Tiers [6]



Like the Water Budget Rate Study in 2010, the District's water budget allocations and tiered rate structure are designed for residential and irrigation accounts only; all other customer types will retain the current uniform rate structure.

3.2. Indoor Water Budget

The indoor water budget (IWB) is determined by a customer's household size and standard consumption per person. The proposed IWB formula is as follows:

$$IWB = \frac{GPCD * Household\ \ Size * Dwelling\ \ Units * Days\ \ of\ Service * DF_{indoor}}{748} + V_{indoor}$$

where

- GPCD = Gallons per capita per day.
  - SB x7-7,3F[7] Section 10608 of the Water Code established the provisional standard for indoor residential water use at 55 gallons per capita per day.
- Household Size = Number of residents per dwelling unit. The 2020 census lists the average household size at 3.01 persons, which includes single and multi-family housing. Typically, single-family household size is greater than three persons, and multi-family household size is less than 3.0 persons. The District policy is to provide adequate water for the health and sanitation needs and minimize customer complaints and requests for variances. The default values for household size are set based on customer characteristics as follows:
  - Single-Family: Household Size = 4 persons
  - Multi-Family:
    - Restricted: Household Size = 2 persons (senior citizen housing typically 1 to 2 residents per dwelling unit)
    - Unrestricted: Household Size = 3 persons
- Dwelling units – Number of dwelling units served by the meter/account
- Days of Service = The number of days of service varies with each billing cycle for each customer. The actual number of days of service will be applied to calculate each billing cycle's indoor water budget.

[6] For illustrative purposes only, not actual rates of the District.

[7] The language from SB x7-7 setting the 55 GPCD performance standard: (2) The per capita daily water use that is estimated using the sum of the following performance standards: (A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard.

- DF_{indoor} = Indoor drought factor. The percentage of indoor water budget allotted during drought conditions. The drought factor is subject to the approval of the District's Board of Directors. The indoor drought factor is currently set at 100 percent.
- V_{indoor} = Indoor variance. The additional water allotment to be granted for extenuating circumstances is subject to District's approval or the verification as outlined in the District's variance program. Variances can be requested by submitting a "Variance/Adjustment Request Form" found on the District's website.
- 748 is the conversion unit from gallons to the billing unit of hundred cubic feet (ccf).

3.3. Outdoor Water Budget

The outdoor water budget (OWB) is determined by three main variables: irrigable landscape area, weather data, and the evapotranspiration (ET) Adjustment Factor. The irrigable landscape area, measured as square footage of landscape surface on a customer's property, is in some cases established through on-site direct physical measurement and in others estimated using the Orange County Assessors' parcel data for lot size, building size, and number of floors where the actual irrigable landscape area data is not available. The weather data is based on the reference Evapotranspiration[8] (ET_0), which is the amount of water loss to the atmosphere over a given time period under local atmospheric conditions. ET_0 is the amount of water (in inches of water) needed for a hypothetical reference crop to maintain its health and appearance. The ET Adjustment Factor (ETAF) is a coefficient that adjusts ET_0 values based on plant factor and irrigation system efficiency. The updated California Department of Water Resources' Model Water Efficient Landscape Ordinance (Landscape Ordinance) provides the following ETAF for different landscapes:

- Existing landscape (Functional): $ETAF_{Existing}$ = 80%
- New development / redevelopment landscape (Functional): $ETAF_{New}$ = 70%
- Special landscape (Recreational): $ETAF_{Recreational}$ = 100%

The formula to calculate the outdoor water budget is as follows:

$$OWB = \left(\frac{Landscape\,Area * ET_0 * ETAF}{1200} + V_{outdoor} \right) * DF_{outdoor}$$

where

- ET_0 is measured in inches of water during the billing period based on daily data acquired from the California Irrigation Management Information System (CIMIS) Station 75, which is the closest station to the District's service area.
- ETAF (% of ET_0) is defined using the updated Landscape Ordinance as shown above.
- Landscape Area (or Irrigable Landscape Area) (in square feet) is the measured irrigable landscape area served by a customer's meter.
    - Where the measured irrigable landscape area is not available, the landscape area will be estimated by the following formula using the Orange County Assessors' parcel data.
        - $Landscape\,Area\,(sq\,ft) = 70\% * \left(Lot\,Size - \frac{Building\,Size}{Number\,of\,Floors} \right)$
    - For accounts dedicated for domestic use only, such as multi-family units, 25 square feet of irrigable landscape area is provided for each dwelling unit for patio plants.

[8] Reference evapotranspiration (ETo) is derived by measuring weather conditions and estimating the ET of a reference plant. In California this is a standardized planted surface of well-maintained cool season turf. ETo data is available online from over 100 weather stations throughout the state of California from the California Irrigation Management Information System (CIMIS). Minute-by-minute weather data is collected and used to calculate hourly, daily, weekly, or monthly ETo.

- $DF_{outdoor}$ = Outdoor drought factor. The percentage of outdoor water budget allotted during drought conditions. The drought factor is subject to the approval of the District's Board of Directors. The outdoor drought factor is currently set at 100 percent.
- $V_{outdoor}$ = Outdoor variance. The additional water allotment to be granted for extenuating circumstances is subject to District's approval or verification as outlined in the variance program. Outdoor variance is subject to the outdoor drought factor.
- 1,200 is the conversion unit from inch*ft^2 to billing unit of hundred cubic feet (ccf).

3.4. Water Budget Allocations by Customer Type

Table 3-1 summarizes the water budget allocation by customer type. Both Single Family and Multi-Family (restricted and unrestricted) customers will receive an indoor and outdoor water budget. Irrigation accounts will only receive an outdoor budget. Commercial and Public Authority (CII) customers will continue with the current uniform water rate structure.

Table 3-1: Water Budget Allocations by Customer Type

Customer Type	Water Budget Allocations	Default Values
Single Family	IWB + OWB	Household Size = 4 persons; GPCD = 55 $ETAF_{New}$ = 70%; $ETAF_{Existing}$ = 80%; $DF_{outdoor}$ = 100%
Multi-Family – Restricted	IWB + OWB	Household Size = 2 persons; GPCD = 55 $ETAF_{New}$ = 70%; $ETAF_{Existing}$ = 80%; $DF_{outdoor}$ = 100%
Multi- Family – Unrestricted	IWB + OWB	Household Size = 3 persons; GPCD = 55 $ETAF_{New}$ = 70%; $ETAF_{Existing}$ = 80%; $DF_{outdoor}$ = 100%
Irrigation – Non-Functional*	OWB	$ETAF_{New}$ = 70%; $ETAF_{Existing}$ = 80%; $DF_{outdoor}$ = 100%
Irrigation – Recreational**	OWB	$ETAF_{Recreational}$ = 100%; $DF_{outdoor}$ = 100%

**Irrigation – Non-Functional: landscape that is ornamental in nature*
***Irrigation – Recreational: landscape that is used mostly for recreational purposes (schools, parks, golf courses, etc…)*

3.5. Tier Definitions

Based on the information in Table 3-1, the tier definitions are developed as shown in Table 3-2. The main difference between Single-Family/Multi-Family and Irrigation accounts is that Irrigation accounts do not have a Tier 1 allotment that is reserved for indoor use. All three customer types have their Tier 3 allotment defined as 30 percent of their respective total water budget (TWB) and usage exceeding 130% TWB falls in Tier 4.

Table 3-2: Tier Definitions by Customer Types

Tiers	Single Family	Multi-Family	Irrigation
Tier 1 – Indoor Use	100% IWB	100% IWB	N/A
Tier 2 – Outdoor Use	100% OWB	100% OWB	100% OWB
Tier 3 – Inefficient Use	100% to 130% TWB	100% to 130% TWB	100% to 130% OWB
Tier 4 – Excessive Use	Above Tier 3	Above Tier 3	Above Tier 3
TWB = Total Water Budget = IWB + OWB			

The tier definitions are tailored to the unique consumption patterns of the District's customers and are subject to the District's policy decisions. The tier definitions are based on Raftelis' water use and impact analyses, as well as numerous policy discussions with the Board. The priority for water use is essential indoor water use for health, safety, and sanitary purposes. Based on the Board's direction, indoor water use is eligible for revenue offsets from site leases and property tax revenues. Maintaining a healthy landscape at efficient water use is non-essential, yet important; thus, efficient outdoor water use is required to pay the Tier 2 rate. The total water budget is the sum of the indoor and outdoor water budgets.

Tier 3 was designed to account for inefficient use and/or customers with non-climate appropriate landscapes. Tier 3 is set to thirty percent (30%) of the total water budget and was determined based on the 2009 analysis, which indicated that a customer with high water use plants would require 30% more water than an identical customer with climate-appropriate plants. Any use beyond Tier 3 is considered excessive and falls into Tier 4. Tiers 3 and 4 allow individuals to use additional water above their total water budget while providing a signal to each customer on their inefficient and excessive water usage. Tier 3 provides use up to 30 percent of the total water budget and use over 130% TWB is considered to be excessive.

Any usage above an efficient level is subject to higher charges to fund conservation programs and any other supplemental water supply program. The current water supply is reserved for efficient water use within the District for indoor, outdoor, and commercial use. The higher Tier 3 rate serves as a signal for conservation and efficient use, whereas excessive use in Tier 4 incurs the highest marginal costs of providing service.

The Commercial class will continue to be billed at a uniform rate; however, this rate will encompass domestic use and inefficient use. Based on SB x7-7 (i.e., Water Conservation Act of 2009), which requires commercial users to reduce their water use by 10 percent, indoor and efficient outdoor (or process) use is defined as 90 percent of total use remaining 10 percent use as inefficient. Additionally, indoor use is defined as 90 percent of the efficient use (90% x 90% = 81%) and the remainder is defined as efficient outdoor use (10% x 90% = 9%). The uniform rate charged to commercial customers will then be a blend of the use defined here.

4. Pass-through Water Supply Cost

The District purchases water from the Municipal Water District of Orange County (MWDOC), a member agency of the Metropolitan Water District of Southern California (MWD). MWD rates are scheduled to increase in January 2023. The MWD rate increases will be included in the blended rates charged to the District. Dividing the total costs in Table 4-1 (Line 8) by the projected water sales (Line 9) results in the unit rate shown in Line 10. See Appendix 1 for detailed breakdown of water supply costs. Table 4-2 and Table 4-3 show that projected water supply rates will be increased by $0.10 per ccf across all tiers.

Table 4-1: Water Supply Revenue Requirements

Line #	Water Supply Unit Rates Development	FY 2023	Notes
1	MWD Fixed Charges		
2	Capacity Reservation Charge	$151,719	Appendix 1
3	Readiness To Serve Charge	$515,258	Appendix 1
4	MWDOC Connection Charge ($)	$0	Appendix 1
5	Total Treated Full Service Annual Cost	$4,024,200	Appendix 1
6	Baker Raw Water Cost	$2,935,850	Appendix 1
7	Baker WTP O&M Annual Cost	$778,814	Appendix 1
8	**Total Water Supply Cost w/ Reserve Funding**	**$8,405,840**	
9	Projected Water Sales	2,918,520 ccf	
10	**Water Supply Unit Rate**	**$2.88 /ccf**	**[8] / [9]**

Table 4-2: Current and Projected Water Supply Unit Rate

Fiscal Year (FY)	Water Supply Unit Rate $ / hundred cubic feet (ccf)
FY 2021-22	$2.78
FY 2022-23	$2.88
Increase / Change	**$0.10 / ccf**

Table 4-3: Water Supply Cost Component of the Water Rates ($/ccf)

Tiers	Descriptions	Current FY 2022	Proposed FY 2023
Tier 1 - Essential Use	MWDOC + Baker Blended	$2.78	$2.88
Tier 2 - Efficient Use	MWDOC + Baker Blended	$2.78	$2.88
Tier 3 - Inefficient Use	MWDOC + Baker Blended	$2.78	$2.88
Tier 4 - Excessive Use	MWDOC + Baker Blended	$2.78	$2.88
Uniform – CII Use	MWDOC + Baker Blended	$2.78	$2.88

5. Water Revenue Requirements and Proposed Rates

5.1. Revenue Requirements

Table 5-1 shows the derivation of the revenue requirement of the water rates. Total expenses for the water enterprise are shown in Line 1. Next, other supplementary revenues are subtracted from the expenses, serving as an offset of these costs. For the District, this is encompassed in the Non-Operating Revenues totaled in Line 4. These revenues include cell-site leases, property taxes, investment revenues, and other revenues. The District will use reserves to offset some of the operating expenses and reduce the revenue required from rates for FY 2023 (Line 15). The total revenue required from water service rates, is shown in Line 16, excluding capital R&R requirements.

Details of the figures presented in Table 5-1 can be found in Appendix 3, in the Cash Flow Analysis for the Water Funds. The Cash Flow Analysis is part of the Financial Plan developed by District staff to determine the District's long-term financial needs. Raftelis based its determination of the revenue requirements and cost of service for FY 2023 on the Financial Plan developed and budget data provided by District Staff.

Table 5-1: Water Operating Revenue Requirements from Rates[9]

	Water Operating Revenue Requirements	FY 2023	Notes
1	**Water O&M Expenses**	**$14,259,600**	**Appendix 3**
2	Purchased Water	$8,405,840	Appendix 1
3	Other O&M Expenses	$5,853,760	[1] – [2]
4	**Less (-) Non-Operating Revenues**	**-$1,085,400**	
5	Funding from Restricted Reserve for Conservation	-$200,000	Appendix 3
6	Property Taxes - General Fund Revenue	-$272,522	Appendix 3
7	Property Taxes (Funds Tier 1 Offset)	-$175,478	Appendix 3
8	Miscellaneous Revenue	-$39,400	Appendix 3
9	Cellular Site Lease Revenue (Funds Tier 1 Offset)	-$235,000	Appendix 3
10	Other Income (R-6 Partners)	-$123,000	Appendix 3
11	Investment Income	-$40,000	Appendix 3
12	**Plus (+) Other Fundings**	**$729,298**	
13	Funding Conservation Program	$200,000	Appendix 3
14	Restricted Reserve Funding for RW program	$626,317	Appendix 3
15	Operating Reserve Funding	-$97,019	Appendix 3
16	**Water Operating Service Rev Requirements**	**$13,903,498**	Sum of lines 1, 4 & 12

The District separately charges customers for the cost of capital repair and replacement (R&R) for the water and recycled water systems via a fixed charge. Table 5-2 provides the calculation of the Capital Facility revenue

[9] May include some rounding errors

requirement from Capital Facility charges. The District will fund a portion of its capital revenue requirements using restricted reserves for Baker Debt Service (Line 5) and Capital Reserve (Line 6).

Table 5-2: Water Capital Revenue Requirements

Line #	Water Capital Facility Revenue Requirements	FY 2023	Notes
1	**Total Water Capital R&R Expenditures**	**$2,325,331**	**Sum of lines 2 - 4**
2	Capital Replacement & Refurbishment Program	$759,968	Appendix 3
3	Baker WTP Debt Service	$684,263	Appendix 3
4	2022 Revenue Bonds Debt Service	$881,100	Appendix 3
5	**Less (-) Restricted Reserve Funding of Debt Service**	**-$184,200**	Appendix 3
6	**Plus (-) Capital Construction Reserve Funding**	**-$665,245**	Appendix 3
7	**Water Capital Facility Rev Requirements**	**$1,375,886**	**Line 1 + 5 +6**
8	Current Capital Facility Revenues	$1,259,969	Appendix 3
9	**% Rate Increase**	**9.20%**	

5.2. Cost of Service

Water systems are designed to accommodate peak use of any class or type of customer. Different parts of a water system are designed to handle different peaks, and there are significant costs associated with meeting peak requirements. For example, the District's maximum day usage is estimated to be two times the average usage, and facilities such as reservoirs are designed twice as large to ensure that maximum day requirements are met (reservoirs also are designed to meet fire flows). To allocate costs appropriately amongst the different types of usage, an analysis of the peaking costs is provided in Section 5.2.1.

A portion of the costs of fire service are recovered from Private Fire Rates (charged to customers which have meters for separate fire line service as discussed in Tables 5-5 to 5-8 and section 5.3.4 of this report below), however, the costs to maintain public fire flows are included in the cost of service recovered from rates. This reflects that providing water in the volumes and at the pressures required to operate fire hydrants and fire sprinklers in structures is a statutory mandate of public water systems in California, and that such cost recovery is authorized by California Government Code sections 53069.9 and 53750.5. Moreover, charging water users for the portion of the cost of water service associated with fire flows appropriately assigns those costs to those who benefit from them. Sprinklers are within (and serve) structures served by water meters. The California Fire Code requires hydrants near structures, not elsewhere and hydrants serve parcels improved with structures. Thus, those who pay water fees which recover fire flow costs also own or occupy structures protected by fire sprinklers and fire hydrants and therefore benefit from that service. Finally, fire hydrants are used to flush water mains periodically and serve a water-system function in addition to the fire suppression function noted here.

5.2.1. PEAKING FACTOR ANALYSIS

In this Rate Study, Raftelis conducted peaking factor analysis for the District's water usage. The analysis utilizes the usage from July 2019 to June 2022 for 7,455 accounts (6,107 residential, 563 irrigation and 785 commercial) out of a total 9,528 accounts for the District, which represents approximately 78 percent of the District customers. A sample of this size approximates the characteristics of the District as a whole. The results are shown in Table 5-3.

Table 5-3: Peaking Factor Analysis for Different Usage Types

Usage	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	FY 2020
Tier 1 - Essential Use	49,411	52,209	52,391	47,651	55,054	40,616	45,240	44,606	39,187	43,246	50,786	50,647	**571,044**
Tier 2 - Efficient Use	81,609	111,923	105,845	72,360	76,117	23,325	17,109	29,387	30,975	17,208	57,674	84,267	**707,799**
Tier 3 - Inefficient Use	4,500	5,969	8,158	7,230	8,601	3,837	2,989	3,416	2,539	1,542	1,843	4,219	**54,843**
Tier 4 - Excessive Use	3,496	4,435	6,025	7,491	11,847	5,478	2,688	4,166	2,876	1,073	1,114	2,726	**53,415**
Uniform - Commercial Use	34,464	38,771	38,047	33,696	39,039	25,389	27,959	28,294	26,862	18,146	22,845	27,632	**361,144**
Total	**173,480**	**213,307**	**210,466**	**168,428**	**190,658**	**98,645**	**95,985**	**109,869**	**102,439**	**81,215**	**134,262**	**169,491**	**1,748,245**

Line	Water Uses	FY 2020 Usage	Max Month Usage	Average Month Usage	Peaking factors (Max/Avg)
		A	B	C	D = [B] / [C]
1	Indoor Use	571,044	55,054	47,587	1.16
2	Outdoor Use	707,799	111,923	58,983	1.90
3	Inefficient Use	54,843	8,601	4,570	1.90
4	Excessive Use	53,415	11,847	4,451	2.66
5	Commercial Use	361,144	39,039	30,095	1.30
6	**Total Usage**	**1,748,245**	**213,307**	**145,687**	**1.46**

The proposed peaking factors for each usage type are shown in Table 5-4.

Table 5-4: Peaking Factors by Usage Class

Tiers	Relative Peaking Factors
Indoor Use	1.16
Outdoor Use	1.90
Inefficient Use	1.90
Excessive Use	2.66
Commercial Use	1.30

The different peaking factors, increasing in the arrow's direction, may be conceptually represented on the scale shown below.

5.2.2. COST OF SERVICE ANALYSIS

Revenue requirements are allocated to the following cost causation categories[10] to allocate costs appropriately to the different usage classes and determine the cost-of-service rates. This methodology is consistent with the Base Extra

[10] See Appendix 6 for details about cost allocations.

Capacity methodology of the American Water Works Association (AWWA) *M1 Manual*, *Principles of Water Rates, Fees, and Charges* (M1 Manual):

1. Water supply costs: Imported water supply costs, allocated to all users in proportion to their usage.
2. Fixed costs: fixed costs associated with operating and maintaining water systems to deliver water to meet average demand, including customer service, meter service, administration, and other base fixed costs.
3. Peaking costs: fixed costs associated with operating and maintaining the water system to deliver water to meet peak demand.
4. Recycled Water Funding: The use of recycled water for non-potable needs releases potable supply for inefficient and excessive use. Recycled water is the least expensive supplemental source of water available to the District and creates supply for potable needs. The revenues collected under this category will be collected in restricted reserves to assist the RW fund to pay debt service costs that finance the RW expansion project completed in FY 2015 and expanded in FY 2019.
5. Conservation: Conservation program cost, allocated to inefficient and excessive use to help conserve water.
6. Revenue Offsets: Property taxes and cell tower lease revenues used partially to provide incentive for indoor/domestic use.

The cost causation categories described above are then assigned to each rate component:

Fixed Rate Components (i.e. Monthly Service Charges)

- To recover customer service, meter service, administration and other base fixed costs and a portion of the peaking costs.
- To recover the costs of providing water to fire service to the private fire customers.

Commodity Rate Components

- Water supply: to recover imported water supply costs.
- Delivery/Peaking: to recover remaining peaking costs associated with operating and maintaining water systems to deliver water to meet peak demand. These costs are allocated based on the peaking characteristics of each class of use.
- Recycled Water (RW): to generate supplemental funding sources to pay for RW expansion projects.
- Conservation: to recover the conservation program cost, allocated to inefficient and excessive users, to encourage water conservation.
- Revenue offsets: A portion of the property taxes and cell tower lease revenues to provide an incentive for indoor/domestic use.

Capital Facility Charges:

- Funds for the capital replacement and refurbishment of the existing water and RW system.

Fire Service Charges:

Fire demands are based on the water system design. Typical fire demands are based on the maximum demand needed for fire service which is 4,000 gpm for two hours. The maximum day and maximum hour demands are determined on this basis and when the potable demands are added to these to determine total maximum day and maximum hour demands. The proportion of the fire demand to total demand is used to prorate the costs that are allocated to be recovered from fire service charges as shown in Table 5-11.

A part of the peaking demand is designed for fire protection, both public and private fire protection. The District has approximately 1,899 public hydrants and 174 private fire services. The fire demand factor for each fire service size

is calculated using the line size. Based on the total Fire Demand Units (FDU, calculated by fire demand factor and respective number of services), about 10.7 percent of the District's fire protection is to service private fire protection. Table 5-5 shows the estimated fire demand between public and private fire services.

Table 5-5: Fire Demand Units

Fire Services	# of Services	Fire Demand Factor	Fire Demand Units (FDU)	FDU / yr	Percentage Demand
	A	B = MeterSize^2.63	C = A x B	D = C x 12 bills/yr	
Private Fire Services			**25,331**	**303,970**	**10.7%**
4"	27	38.32	1,035	12,415	
6"	90	111.31	10,018	120,216	
8"	53	237.21	12,572	150,863	
10"	4	426.58	1,706	20,476	
Public Hydrants			**211,379**	**2,536,553**	**89.3%**
6"	1,899	111.31	211,379	2,536,553	
8"		237.21	0	0	
10"		426.58	0	0	
12"		689.04	0	0	
Total	**2,073**		**236,710**	**2,840,524**	100%

Table 5-6 shows the fire demand imposed on peaking requirements.

Table 5-6: Water System and Fire Demand Peaking Requirements

Line	Description		Peak Demand	Extra Capacity
		A	B	C
1	Flow	4,000 GPM		
2	Duration	2 hrs		
3	Fire Max Day Demand	480 kgal	642 ccf	
4	Fire Max Hour Demand	5,280 kgal	7,059 ccf	
5	Annual System Demand	2,918,520 ccf		
6	Daily Demand	7,996 ccf / day		
7	Max Day	1.73x of Average Demand	13,833 ccf / day	5,837 ccf /day[11]
8	Max Hour	2.04 of Max Day	16,312 ccf / day	2,479 ccf /day[12]

Table 5-7 shows the peaking factors for the water system provided by the District's Water Master Plan and the allocation of Max Day and Max Hour costs using the Base Extra Capacity approach as outlined in the AWWA Manual M1.

[11] Extra Capacity demand for Max Day = Peak Max Day Demand – Daily Demand
[12] Extra Capacity demand for Max Hour = Peak Max Hour Demand – Peak Max Day Demand

Table 5-7: Peaking factor for water system

		Peaking Factors	Base Fixed	Max Day	Max Hour
1	Max Day	1.73	57.8%	42.2%	
2	Max Hour	2.04	49.0%	35.8%	15.2%

The Max Day factor of the District's system is 1.73, which means that Max Day demand is expected to be 173 percent of the average day capacity. Calculating the Max Day allocation of functional costs to the cost causation components results in the following:

$$Base\ Fixed\ Allocation\ for\ Max\ Day = \frac{Base\ Fixed}{Max\ Day} = \frac{1}{1.73} \approx 57.8\%$$

$$Max\ Day\ Allocation = 1 - \frac{Base}{Max\ Day} = 1 - 57.8\% \approx 42.2\%$$

Facilities designed for Max Hour peaks, such as distribution system facilities, are allocated similarly. The Max Hour factor is 2.04, so Max Hour facilities are designed to provide 204 percent of the average day capacity. The allocation of Max Hour facilities is shown below:

$$Base\ Fixed\ Alloction = \frac{Base}{Max\ Hour} = \frac{1}{2.04} \approx 49.0\%$$

$$Max\ Day\ Allocation = \frac{Max\ Day - Base}{Max\ Hour} = \frac{1.73 - 1.00}{2.04} \approx 35.8\%$$

$$Max\ Hour\ Allocation = 1 - 49.0\% - 35.8\% \approx 15.2\%$$

Table 5-8 shows the allocation factors for different water functions to the various cost categories. Source of supply costs will be allocated to water supply based on budgeted purchased water costs (Table 4-1) and the remaining costs will be allocated to base fixed costs. Operations and Administrative cost functions will be allocated between base fixed and billing & customer service (CS) based on staffing levels for field office and main office. Labor costs are allocated 10% to billing and customer service, as estimated by the District, including management, customer service, and billing field personnel. The remaining 90% of the labor costs are allocated proportionately based on the non-labor and non-supply costs. Transmission facilities are designed for max day requirements and distribution facilities are designed to meet max hour requirements. Transmission and Distribution (T&D) are estimated 50% to transmission and 50% to distribution and therefore allocated 50% to max day demand for transmission (row 1 of Table 5-7). and 50% to max hour demand for distribution (row 2 of Table 5-7). Pumping is designed to meet max hour demand, thus allocated using the max hour demand allocation factors (row 2 in Table 5-7).

$$T\&D\ Base\ Fixed = 50\%\ x\ 57.8\% + 50\%\ x\ 49\% \approx 53.4\%$$

$$T\&D\ Max\ Day = 50\%\ x\ 42.2\% + 50\%\ x\ 35.8\% \approx 39.0\%$$

$$T\&D\ Max\ Hour = 50\%\ x\ 0\% + 50\%\ x\ 15.2\% \approx 7.6\%$$

Table 5-8: Allocation Factors for Different Water Functions

Water Functions	Water Supply	Base Fixed	Max Day	Max Hour	Billing & CS	Notes
Source of Supply	Purchased water cost	remaining				
T&D		53.4%	39.0%	7.6%		50% MD, 50% MH
Pumping		49.0%	35.8%	15.2%		Max Hr
Operations		82.5%			17.5%	Staffing levels for field office
Administrative		77.5%			22.5%	Staffing levels for main office
Labor		68.6%	16.8%	4.6%	10%	Proportional based on non-labor costs

Table 5-9 shows the allocations of water O&M expenses using the allocation factors shown in Table 5-8 and O&M breakdown for FY 2023 provided by the District staff (Appendix 2A).

Table 5-9: Allocations of Water O&M Expenses by Cost Categories

Water O&M Allocation	FY 2023	Water Supply	Base Fixed	Max Day	Max Hour	Billing & CS
O&M Expenses						
Source of Supply	$8,751,900	$8,405,840	$346,060			
Pumping – Water	$323,300		$158,480	$115,691	$49,129	
T&D – Water	$594,800		$317,692	$231,915	$45,193	
Customer Accounts	$26,800		$20,770			$6,030
Operations Support	$80,600		$66,092			$14,508
Fleet	$122,100		$100,122			$21,978
Indirect Operating Costs	$34,000		$27,880			$6,120
Administration	$38,500		$29,838			$8,663
Information Technology	$196,600		$152,365			$44,235
Indirect Administration Costs	$637,400		$493,985			$143,415
Labor Costs	$3,453,600		$2,349,706	$596,638	$161,896	$345,360
Water O&M Expenses	**$14,259,600**	**$8,405,840**	**$4,063,943**	**$944,244**	**$256,218**	**$589,125**

Table 5-10 shows the allocation of revenue requirements to cost categories and Table 5-11 details the allocations of Max Day and Max Hour revenue requirements to Private Fire services.

Table 5-10: Water Revenue Requirements by Cost Categories

Other Rev Requirement Allocations	FY 2023	Water Supply	Base Fixed	Max Day	Max Hour	Billing & CS	RW	Conservation	Rev Offset	Private Fire
O&M Expenses(Excl. Dep & Int)	**$14,259,600**	**$8,405,840**	**$4,063,943**	**$944,425**	**$256,268**	**$589,125**				
Less (-) Non-Operating Revenues										
Funding from Restricted Reserve for Conservation Program	-$200,000		-$200,000							
Property Taxes - General Fund Revenue	-$272,522		-$272,522							
Property Taxes (Funds Tier 1 Offset)	-$175,478								-$175,478	
Miscellaneous Revenue	-$39,400								-$39,400	
Cellular Site Lease Revenue (Funds Tier 1 Offset)	-$235,000								-$235,000	
Other Income (R-6 Partners)	-$123,000		-$123,000							
Investment Income	-$40,000		-$40,000							
Plus (+) Other Fundings										
Plus Funding Conservation Program	$200,000							$200,000		
Plus Restricted Reserve Funding	$626,317						$626,317			
Plus Operating Reserve Funding	-$97,019		-$97,019							
Total Water Service Rev Requirements	**$13,903,498**	**$8,405,840**	**$3,331,402**	**$944,425**	**$256,268**	**$589,125**	**$626,317**	**$200,000**	**-$449,878**	**$0**
Reallocation of Private Fire Peaking				-$10,010	-$20,297					$30,307
Total Net Revenue Requirements	**$13,903,498**	**$8,405,840**	**$3,331,402**	**$934,414**	**$235,971**	**$589,125**	**$626,317**	**$200,000**	**-$449,878**	**$30,307**

Table 5-11: Allocations of Peaking Costs to Private Fire Services

Allocation of Peaking Costs to Fire Protection		Max Day	Max Hour	Total
Revenue Requirements (Table 5-10)		**$944,425**	**$256,268**	
Fire Demand (Table 5-6, rows 3-4)	ccf	642	7,059	
Extra Capacity Demand (Table 5-6, rows 7-8)	ccf	5,837	2,479	
Total Extra Capacity Demand plus Fire	**ccf**	**6,479**	**9,538**	
Unit Cost of Service	$ / ccf	**$145.77**	**$26.87**	
	$/ kgal	$194.88	$35.92	
Fire Demand	kgal	480	5,280	
Fire Protection Costs		**$93,544**	**$189,666**	**$283,209**
Private Fire	**10.7%**	**$10,010**	**$20,297**	**$30,307**
Public Fire	89.3%	$83,534	$169,369	$252,903

The AWWA M1 Manual describes a cost-of-service approach to setting water rates that results in the distribution of costs to each customer or customer class based on the costs that each incurs. A dual set of fees—fixed and variable—is an extension of this cost causation theory. For example, a utility incurs some of the costs with serving customers irrespective of the amount or rate of water they use, such as, billing and customer service costs. These costs are referred to as customer-related costs and are typical costs that would be recovered through a fixed monthly service charge. These costs are usually recovered on each meter. Regardless of the level of a customer's consumption, a customer will be charged this minimum amount on each bill.

Utilities invest in and continue to maintain facilities to provide capacity to meet all levels of desired consumption, including the peak demand plus fire protection. These costs must be recovered regardless of the amount of water used during a given period. Thus, capacity or peaking costs, along with base costs, are generally considered fixed water system costs. Ideally, an agency could recover 100% of the fixed costs in the fixed charges, therefore providing revenue stability; however, this approach foregoes affordability for essential use and heavily impacts small users. A portion of the base costs and peaking costs are recovered in the fixed charges, along with the customer-related costs and meter-related costs to balance between affordability and revenue stability. Revenue requirements for the District's

fixed monthly service charges include 100 percent of base fixed costs, inclusive of billing and customer service costs and other fixed costs to meet average demand, as well as a portion of the peaking costs. The remaining peaking costs are recovered in the delivery rate component of the commodity rates.

The rate structure remains unchanged and consists of the monthly fixed service and the volumetric commodity rates, which are determined as follows (Table 5-12):

- The monthly service charge includes customer service, fixed base costs, and a portion of the peaking costs.
- The volumetric water commodity rates include water supply (to recover total purchased water costs from MWDOC and Baker Water Treatment Plant water costs), delivery/peaking (to recover the District's remaining peaking costs), RW funding, conservation, and revenue offsets components.

Table 5-12: Cost Categories and Water Rate Structure

Cost Components	Service Charges	Tier 1 Essential Use	Tier 2 Efficient Use	Tier 3 Inefficient Use	Tier 4 Excessive Use	Commercial Use
Billing & Cust. Service	x					
Meters	x					
Fixed Base Costs	x					
Delivery Peaking Costs	x	x	xx	xxx	xxx	x
Water Supply		x	x	x	x	x
RW Program Funding				xx	xxx	x
Conservation				x	x	x
Rev Offset		x				x

Table 5-13 summarizes the water revenue requirements (Table 5-10) for FY 2023 by rate components.

Table 5-13: Water Revenue Requirements by Cost Categories

Water Service Revenue Requirements	FY 2023	Monthly Service Charges			Water Commodity Rates				
		Billing & CS	Meter Service & Capacity	Private Fire	Water Supply	Delivery	RW	Conservation	Revenue Offset
Water Supply	$8,405,840				$8,405,840				
Base Fixed	$3,331,402		$3,331,402						
Peaking (Max Day + Max Hour)	$1,170,385		$500,385			$670,000			
Billing & CS	$589,125	$589,125							
RW	$626,317						$626,317		
Conservation	$200,000							$200,000	
Rev Offset	-$449,878								-$449,878
Private Fire	$30,307			$30,307					
Total Water Service Charges	**$13,903,498**	**$589,125**	**$3,831,787**	**$30,307**	**$8,405,840**	**$670,000**	**$626,317**	**$200,000**	**-$449,878**

Monthly Service Charge Derivation

Extra capacity costs representing the demand placed on the system are related to the capacity of the meters. The capacity of the meters is determined by comparing the hydraulic capacity of the meters to the smallest meter in the system, which is assigned a capacity of one. Thus, a 1-inch meter that can continuously deliver 50 gallons per minute (gpm) is considered to have a capacity of 2.5 when compared to the 5/8-inch meter which can deliver 20 gpm. Because of the unique characteristics of the District's service area, the maximum of the hydraulic capacity or the

actual usage characteristics was used to determine the capacity of the meters. For example, a 2-inch meter, on average, uses 10 times the water of the 5/8-inch meter. The meter capacity ratios representing the maximum of the hydraulic ratio or the actual usage are used to calculate the equivalent meter units to recover the meter service & capacity costs (based on ETWD Cost of Service Study Report for Water, Wastewater and Recycled Water prepared in April 2009).

Monthly service charge calculations are shown in Table 5-14, 5-15, and 5-16 below.

Table 5-14: Units of Service for Monthly Service Charges

Potable Water Meters	Meter Counts	Meter Ratio	Bills / yr	EMUs / yr
	A	B	C = A x 12	D = C x B
5/8"	2,380	1.00	28,560	28,560
3/4"	4,854	1.50	58,248	87,372
1"	452	2.50	5,424	13,560
1 1/2"	702	5.00	8,424	42,120
2"	1,148	10.00	13,776	137,760
Private Fire[13]	174	1.00	2,088	2,088
Total	**9,536**		**114,432**	**311,460**

Table 5-15: Calculated Cost of Service Monthly Service Charges

	Billing & Customer Service	Meter Service & Capacity
Revenue Requirements (Table 5-13)	**$589,125**	**$3,831,787**
Units of Service (Table 5-14)	114,432	311,460
Unit Cost of Service	**$5.15**	**$12.31**

Table 5-16: Proposed Monthly Service Charges Calculations

Meter Size	Billing & Customer Service	Meter Service & Capacity[14]	Proposed Rates	Current Rates	$ Impact	% Impact
	A (Table 5-15)	B	C = A+ B	D	E = C - D	F = E / D
5/8"	$5.15	$12.31	**$17.46**	$16.56	$0.90	5.4%
3/4"	$5.15	$18.47	**$23.62**	$22.24	$1.38	6.2%
1"	$5.15	$30.78	**$35.93**	$33.60	$2.33	6.9%
1 1/2"	$5.15	$61.55	**$66.70**	$62.00	$4.70	7.6%
2"	$5.15	$123.10	**$128.25**	$118.80	$9.45	8.0%

[13] Private Fire bills are combined with the account customer bill for potable services
[14] Service and Capacity component can be calculated by using the unit cost (Table 5-15) multiplied by the appropriate meter ratio (Table 5-14)

Capital Facility Charges Derivation

Table 5-2 shows the required revenue increases for FY 2023 at 9.2%. Table 5-19 shows the unit calculation of Capital Facility charges for water service from Table 5-17 (units of service) and Table 5-18 (unit cost of service).

Table 5-17: Units of Service for Capital Facility charges

Potable Water Meters	Meter Counts	Meter Ratio[15]	EMUs / yr
5/8"	2,380	1.00	28,560
3/4"	4,854	1.00	58,248
1"	452	1.67	9,056
1 1/2"	702	4.06	34,184
2"	1,148	10.19	140,332
Total	**9,536**		**270,380**

Table 5-18: Calculated Unit Cost of Service for Capital Facility charges

	Capital Facility Charges
Revenue Requirements (Table 5-2)	**$1,375,886**
Units of Service (Table 5-17)	270,380
Unit Cost of Service	**$5.09**

Table 5-19: FY 2023 Proposed Monthly Capital Facility Charges

Meter Size	Meter Ratio	Proposed FY 2023	Current FY 2022	$ Change	% Change
	A (Table 5-17)	**B = 5.09 x A**	C	D = B - C	E = D/C
5/8"	1.00	**$5.09**	$4.66	$0.43	9.2%
3/4"	1.00	**$5.09**	$4.66	$0.43	9.2%
1"	1.67	**$8.50**	$7.78	$0.72	9.3%
1 1/2"	4.06	**$20.65**	$18.91	$1.74	9.2%
2"	10.19	**$51.84**	$47.47	$4.37	9.2%

Commodity Rate Derivation

Peak Delivery rates (Table 5-20) are applied to all rates based on peaking characteristics for each usage class (shown in Table 5-4). Indoor or domestic use has the lowest peaking factor; consequently, all indoor use (residential and commercial) is assigned a lower peak delivery cost. Outdoor irrigation is associated with higher peaking factors, so outdoor use comprising of residential irrigation and the current dedicated irrigation classes (both functional and recreational) will have higher peak delivery costs. Inefficient and excessive use has even higher peaking factors and is assigned the highest peak delivery costs.

[15] Current capital facility charge ratios

Table 5-20: Peak Delivery Rate Calculations

Line	Water Usage	Budgeted Water Sales	Equivalent Factor	Equivalent Usage	Unit Rate ($/ccf)
		A	B (Table 5-4)	C = A x B	D = [A9] x B
1	Tier 1 - Essential Use	1,459,129	1.16	1,688,085	$0.19
2	Tier 2 - Efficient Use	913,013	1.90	1,732,478	$0.30
3	Tier 3 - Inefficient Use	90,201	1.90	171,160	$0.30
4	Tier 4 - Excessive Use	72,696	2.66	193,480	$0.43
5	Uniform - Commercial Use	383,481	1.30	497,443	$0.21
6	**Total**	**2,918,520**		**4,282,646**	
7	Revenue Requirement (Table 5-13)	$670,000			
8	Units of Service (Equivalent Usage Total)	4,282,646			
9	Unit Peak Delivery Rate ([7] / [8], rounded up)	$0.16 / ccf			

The RW program is associated with offsetting the demands of inefficient and excessive use and RW program costs are therefore allocated to inefficient and excessive use only (usage in Tiers 3 and 4 and 10 percent of commercial use, which is considered inefficient and is allocated at the same rate as average of residential inefficient and excessive usage). The RW program provides recycled water and offsets potable water use which is then available for Tiers 3 and 4. To determine the recycled water costs to be assigned to Tiers 3 and 4, Raftelis obtained the recycled water system's costs from the District based on Updated RW Expansion Capital Cost provided in March 2022. Phase 1 cost is $1,150/AF and Phase 2 RW expansion cost is $2000/AF in today's dollars, which gives a ratio of 1:1.74. Phase 2 was developed to offset the excessive use in Tier 4 therefore this ratio is utilized for the RW Program funding ratio between Tier 3 and Tier 4 to reflect that Tier 4, excessive usage, should carry the burden of the higher costs to fund the more extensive RW program and should pay more to fund this alternative source of water required to offset Tier 4 demands. Revenues from this cost component are collected in a restricted reserve used to meet the debt service requirements associated with the recycled water system, which provides supplemental water and frees up valuable potable water resources to offset the demand imposed by inefficient and excessive use. The rates for the recycled water program to Tiers 3 and 4 are shown in Table 5-21.

Table 5-21: RW Program Funding Rate Calculations

Water Usage	Budgeted Water Sales	Equivalent Factor	Equivalent Usage	Unit Rate ($/ccf)[16]
Tier 1 - Essential Use	1,459,129	0.00	0	$0.00
Tier 2 - Efficient Use	913,013	0.00	0	$0.00
Tier 3 - Inefficient Use	90,201	1.00	90,201	$2.33
Tier 4 - Excessive Use	72,696	1.74	126,428	$4.05
Uniform - Commercial Use	383,481	0.14[17]	52,520	$0.32
Total	**2,918,520**	**$0**	**269,149**	
Revenue Requirement[18]	$626,317			
Units of Service (Equivalent Usage Total)	269,149			
Unit RW Program Rate[19]	$2.33 / ccf			

Conservation programs are targeted to meet the demands of inefficient and excessive use and therefore conservation costs are applied only to inefficient and excessive use, as shown in Table 5-22. There is no good rationale to differentiate the costs and therefore the unit conservation cost per unit of water in Tiers 3 and 4 is the same.

Table 5-22: Conservation Program Funding (aka Conservation) Rate Calculations

Water Usage	Budgeted Water Sales	Equivalent Factor	Equivalent Usage	Unit Rate ($/ccf)[20]
Tier 1 - Essential Use	1,459,129	0.00	0	$0.00
Tier 2 - Efficient Use	913,013	0.00	0	$0.00
Tier 3 - Inefficient Use	90,201	1.00	90,201	$0.99
Tier 4 - Excessive Use	72,696	1.00	72,696	$0.99
Uniform - Commercial Use	383,481	0.10	38,348	$0.10
Total	**2,918,520**	**$0**	**201,245**	
Revenue Requirement[21]	$200,000			
Units of Service (Equivalent Usage Total)	201,245			
Unit Conservation Rate[22]	$0.99 / ccf			

Finally, Table 5-23 shows the offset applied per the District's current policy objective to provide rate incentives for essential and efficient indoor use, revenues from cell tower leases, miscellaneous revenues, and a portion of the property taxes received by the District are used to offset the essential and efficient usage rate. The offset applies to indoor/domestic use in Tier 1 and commercial indoor use.

[16] Rounded to the nearest cent.
[17] Equivalent factor for commercial use = 10% x (1.00+1.74)/2 = 0.14
[18] Revenue Requirement derivation is detailed in Appendix 6.
[19] Rounded to the nearest cent.
[20] Rounded to the nearest cent.
[21] Revenue Requirement derivation is detailed in Appendix 6.
[22] Rounded to the nearest cent.

- To minimize customer impacts and provide incentives for essential and efficient use, revenues from cell tower lease revenues, miscellaneous revenues, and a portion of property tax revenues are used to provide a revenue offset for efficient indoor and efficient commercial indoor use.
- Note that it is assumed that efficient usage for commercial is 90 percent of total use, and of that 90 percent, the indoor usage is 90 percent. Therefore, the indoor usage is 81 percent (90 percent x 90 percent) of the total commercial use. The revenue offset is applied to 81 percent of total commercial use to determine the revenue offset for the commercial class.
- Note that $0.25 /ccf is applied to the efficient indoor use; and, since commercial rates are uniform, the incentive becomes $0.20 /ccf when applied to the full commercial use. The remaining property tax revenue is used to offset revenue requirements for fixed service charges. Note that all user classes benefit from this offset. Most irrigation customers have associated domestic usage which also benefits from the revenue offset.

Table 5-23: Revenue Offset Rate Calculations

Water Usage	Budgeted Water Sales	Equivalent Factor	Equivalent Usage	Unit Rate ($/ccf)[23]
Tier 1 - Essential Use	1,459,129	1.00	1,459,129	-$0.25
Tier 2 - Efficient Use	913,013	0.00	0	$0.00
Tier 3 - Inefficient Use	90,201	0.00	0	$0.00
Tier 4 - Excessive Use	72,696	0.00	0	$0.00
Uniform - Commercial Use	383,481	0.81	310,620	-$0.20
Total	**2,918,520**	**$0**	**1,769,749**	
Revenue Requirement[24]	-$449,878			
Units of Service (Equivalent Usage Total)	1,769,749			
Unit Rev Offset Rate[25]	-$0.25 / ccf			

In summary, the cost allocation methodology developed herein allocates the costs to customers, meters, and usage. Customer costs are the same for each account and other base fixed costs and a portion of peaking costs are allocated proportionally to the capacity of each meter. The remaining costs are allocated to each usage class in accordance with the demand they place on the system. The usage of each customer class is defined and the costs associated with the usage of each customer type provides the revenue to be recovered from that customer class. The rationale for allocating conservation costs and supplemental water costs allows the development of inclining tiered rates to provide incentives for conservation in the inefficient and excessive water usage tiers identified within each customer class. This methodology meets the requirements of Proposition 218 and Article X of the California Constitution.

Table 5-24 shows the total rates derived from the individual rate components shown in Table 4-3, Table 5-20 to Table 5-23.

[23] Rounded to the nearest cent.
[24] Revenue Requirement is detailed is Appendix 6.
[25] Rounded to the nearest cent.

Table 5-24: Proposed Commodity Rate Calculation

Water Usage Rates	Water Supply	Peak Delivery	RW	Conservation	Rev Offset	Proposed Rates
Tier 1 - Essential Use	$2.88	$0.19	$0.00	$0.00	-$0.25	**$2.82**
Tier 2 - Efficient Use	$2.88	$0.30	$0.00	$0.00	$0.00	**$3.18**
Tier 3 - Inefficient Use	$2.88	$0.30	$2.33	$0.99	$0.00	**$6.50**
Tier 4 - Excessive Use	$2.88	$0.43	$4.05	$0.99	$0.00	**$8.35**
Uniform - Commercial Use	$2.88	$0.21	$0.32	$0.10	-$0.20	**$3.31**

5.3. Proposed Rates

5.3.1. MONTHLY SERVICE CHARGES

Based on the revenue requirements shown in Table 5-3 and the Monthly Service Charge calculations in Tables 5-14 to 5-16, the proposed Monthly Service Charges for FY 2022 are shown in Table 5-25 below.

Table 5-25: Monthly Water Service Charges

Meter Size	Proposed FY 2023	Current FY 2022	$ Change	% Change
5/8"	**$17.46**	$16.56	$0.90	5.4%
3/4"	**$23.62**	$22.24	$1.38	6.2%
1"	**$35.93**	$33.60	$2.33	6.9%
1 1/2"	**$66.70**	$62.00	$4.70	7.6%
2"	**$128.25**	$118.80	$9.45	8.0%

5.3.2. CAPITAL FACILITY CHARGES

Table 5-26 shows the proposed Capital Facility Charges as derived in Table 5-19.

Table 5-26: Monthly Water Capital Facility Charges

Meter Size	Proposed FY 2023	Current FY 2022	$ Change	% Change
5/8"	**$5.09**	$4.66	$0.43	9.2%
3/4"	**$5.09**	$4.66	$0.43	9.2%
1"	**$8.50**	$7.78	$0.72	9.3%
1 1/2"	**$20.65**	$18.91	$1.74	9.2%
2"	**$51.84**	$47.47	$4.37	9.2%

5.3.3. COMMODITY RATES

Based on the revenue requirements shown in Table 5-1 and the calculated commodity rate components summarized in Table 5-24, a comparison of the current and proposed commodity rates for FY 2023 are shown in Table 5-27 below.

Table 5-27: FY 2023 Proposed Water Commodity Rates

Water Usage Rates	Proposed FY 2023	Current FY 2022	$ Impact	% Impact
Tier 1 - Essential Use	**$2.82**	$2.72	$0.10	3.7%
Tier 2 - Efficient Use	**$3.18**	$3.11	$0.08	2.3%
Tier 3 - Inefficient Use	**$6.50**	$6.78	-$0.28	-4.1%
Tier 4 - Excessive Use	**$8.35**	$8.52	-$0.17	-2.0%
Uniform - Commercial Use	**$3.31**	$3.14	$0.17	5.4%

5.3.4. PRIVATE FIRE RATES

The District updated the Private Fire Rates to account for the extra capacity demand to fight an average fire in the District. The proposed Private Fire Rates are shown in Table 5-29 and reflect the changes to the fixed charges for the fire demand component resulting from the updated methodology to calculate the effective fire line capacity at each fire line size. Table 5-28 shows the private fire demand revenue requirement from Table 5-11. In addition, all private fire services have a 5/8-in meter attached to each that also requires maintenance and replacement services. In addition to the fire demand component, private fire services also share the service and capacity component equivalent for the 5/8-in meter (Table 5-15) as shown in Table 5-29.

Table 5-28: Fire Demand Rate Calculation

Private Fire Service	FY 2023
Revenue Requirements for Peaking (Table 5-11)	$30,301
Units of Service (Table 5-5)	303,970 FDUs
Unit Cost of Service	**$0.10 / FDU**

Meter Size	Account #	Fire Demand Factor	Fire Demand Rate[26]
	A	B (Table 5-5)	C = $0.10 x B
4"	27	38.32	$3.84
6"	90	111.31	$11.14
8"	53	237.21	$23.73
10"	4	426.58	$42.66

Table 5-29: FY 2023 Proposed Private Fire Service Rates

Meter Size	Account #	Fire Demand	Service & Capacity	Proposed Rates	Current Rates	$ Change	% Change
	A	B (Table 5-28)	B (Table 5-15)	C = A + B	D	E = C - D	F = E / D
4"	27	$3.84	$12.31	**$16.15**	$22.86	-$6.71	-29.4%
6"	90	$11.14	$12.31	**$23.45**	$44.76	-$21.31	-47.6%
8"	53	$23.73	$12.31	**$36.04**	$82.53	-$46.49	-56.3%
10"	4	$42.66	$12.31	**$54.97**	$139.34	-$84.37	-60.5%
Total	**174**	**$30,415**	**$25,703**	**$56,119**	**$114,925**	**-$58,806**	**-51.2%**

[26] Rounded to the nearest cent

6. Wastewater Revenue Requirements and Proposed Rates

6.1. Wastewater (WW) Revenue Requirements

The total revenue requirement (net of miscellaneous revenue credits) is, by definition, the net cost of providing service. This cost of service is then used as the basis to develop unit rates for the wastewater parameters and to allocate costs to the various user classes. The concept of proportionate allocation to user classes implies that allocations should take into consideration the quantity of wastewater a user contributes as well as the strength (i.e., treatment requirements) of the wastewater.

The cost of service analysis and rate calculations consist of the following steps:

- Determination of the total costs to be recovered from rates (cost of service);
- Determination of the wastewater loadings for each customer class, to ensure costs are allocated to each class proportionately;
- Allocation of the cost of service to the loading parameters – Flow, Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS);
- Calculation of unit costs for the three parameters, and the costs to serve the various user classes based on their loadings;
- Calculation of rates for each user class.

This section of the report discusses the allocation of operating and capital costs to the Flow, Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) parameters, the determination of unit rates, and the calculation of user class cost responsibility.

In this study, wastewater rates were calculated first for FY 2022 with an updated cost of service analysis. For the proposed FY 2023 rates, FY 2023 revenue requirements are used to determine the overall increase based on the Revised FY 2022 COS Rates. Table 6-1 shows the Operating and Capital Wastewater Revenue Requirements which will be the basis to calculate the Revised COS rates for FY 2022. Table 6-2 and Table 6-3 show the required revenue increases for Wastewater Service Charges and Wastewater Capital Facility Charges in FY 2023. Please refer to Appendix 2B and Appendix 5A (For FY 2023) and 5B (for FY 2023) for details of the figures shown.

Table 6-1: FY 2022 Wastewater Revenue Requirements

Wastewater Revenue Requirements	FY 2022	Operating	Capital
O&M Expenses (excl. Interest & Depreciation)			
Pumping – Sewer	$324,800	$324,800	
Treatment Plant	$959,500	$959,500	
Outside Treatment	$992,000	$992,000	
T&D – Sewer	$179,100	$179,100	
Operations Support	$126,464	$126,464	
Fleet	$133,328	$133,328	
Indirect Operating Costs	$22,724	$22,724	
Administration	$108,264	$108,264	
Information Technology	$161,200	$161,200	
Indirect Administration Costs	$842,400	$842,400	
Labor Costs	$4,714,320	$4,714,320	
Subtotal O&M Expenses (excl. Interest & Depreciation)	**$8,564,100**	**$8,564,100**	
Other Revenue Requirements			
Debt Service	$258,146	$258,146	
Capital Improvement Program	$1,614,593		$1,614,593
Subtotal Other Revenue Requirements	**$1,872,739**	***$258,146***	***$1,614,593***
***Less* Other Revenues**			
Property Taxes – General Fund Revenue	($545,000)	($545,000)	
Investment Income	($50,000)	($50,000)	
Subtotal Other Revenues	**($595,000)**	**($595,000)**	
***Plus* Operating Reserve Funding**	($178,146)	($178,146)	
***Plus* Capital Reserve Funding**	$0		$0
NET REV REQUIREMENTS FROM FY 2022 RATES	**$9,663,693**	**$8,049,100**	**$1,614,593**

Table 6-2: FY 2023 WW Operating Revenue Requirements

WW Operating Rev Req	FY 2023	Notes
WW O&M Expenses	$9,328,100	Appendix 5B
Less (-) Non-Operating Revenues	-$665,600	Appendix 5B
Less (-) Rate Stab Utilization	-$127,868	Appendix 5B
Total WW Operating Revenue Requirements	**$8,535,932**	
Current WW Revenues	$8,052,766	Appendix 5B
Revenue Increase	**6.0%**	

Table 6-3: FY 2023 WW Capital Revenue Requirements

WW Capital Revenue Requirements	FY 2023	Notes
Capital Improvement Program	$1,614,000	Appendix 5B
Plus (+) Debt Service	$512,800	Appendix 5B
Plus (+) Capital Reserve Funding	-$380,802	Appendix 5B
Total WW Capital Revenue Requirements	**$1,745,998**	
Current WW Revenues	$1,615,169	Appendix 5B
Revenue Increase	**8.1%**	

6.2. Wastewater Cost of Services

6.2.1. CUSTOMER CLASSIFICATION

The District proposes to simplify the non-residential customer classifications into 4 groupings: low strength, medium strength, high strength, and Restaurants. The strength data for each current customer class is based primarily on Los Angeles County Sanitation District (LACSD) data reported in its Revenue Program (with a few exceptions based on the District's understandings of its customer characteristics). For example, restaurants are assumed to have the same strength as residential given the strict regulations of Fats, Oils and Grease (FOG) program for restaurants within the District's service area. Table 6-4 summarizes the proposed customer classification groupings. There are 3 groups of residential customers: single family residential, multi-family unrestricted and multi-family restricted. Laguna Woods accounts have restricted and unrestricted units. Restricted units refer to households that have size restriction of a maximum of two occupants per unit.

Table 6-4: Proposed Customer Classifications

Customer Classes	BOD (mg/L)	TSS (mg/L)	Total Strength	Notes
Single Family Residential	282	272	554 mg / L	LACSD data[27]
Multi-Family Restricted	282	272	554 mg / L	LACSD data
Multi-Family Unrestricted	282	272	554 mg / L	LACSD data
Low Strength Commercial	0-150	0-150	≤ 300 mg / L	
Medium Strength Commercial	150-300	150-300	301- 600 mg / L	
High Strength Commercial	> 300	> 300	> 600 mg / L	
Restaurants	282	272	554 mg / L	Same as Residential[28]

Raftelis also reviewed the residential household density within the District's service area using Census data. Refer to Appendix 6 for details. Table 6-5 shows the estimated residential household size to be used to estimate wastewater flows for residential customers.

[27] LACSD Revenue Program Report Table 3

[28] Restaurant strengths are assumed to be the same as residential, given the strict regulations of FOG program for restaurants within the District service area.

Table 6-5: District's Residential Household Density

	Dwelling Units	Average Household Size	Notes
Single Family Residential	7,059 DU	3.01 PPH	See Appendix 6 (ETWD)
Multi-Family Restricted	12,736 DU	1.43 PPH	See Appendix 6 (Laguna Woods)
Multi-Family Unrestricted	5,152 DU	2.20 PPH	See Appendix 6 (ETWD)

6.2.2. WASTEWATER LOADINGS

Residential Wastewater Flows

Combining the strengths and household density in Table 6-4 and Table 6-5, Table 6-6 summarizes the residential wastewater flow characteristics. Using the conversion formulas (shown below), Table 6-7 summarizes the estimated residential wastewater flows. The water use inside the dwelling unit is estimated at 55 gal per day per capita (gpcd) based on the State standard.

Table 6-6: Residential Wastewater Flow Characteristics

	Dwelling Units	Average Household Size	BOD (mg/L)	TSS (mg/L)
	A	B	C	D
Residential Unrestricted	7,059 DU	3.01 PPH	282 mg/L	272 mg/L
Multi-Family Restricted	12,736 DU	1.43 PPH	282 mg/L	272 mg/L
Multi-Family Unrestricted	5,152 DU	2.20 PPH	282 mg/L	272 mg/L

$$Est.WW\ Flow = \frac{Dwelling\ Units\ x\ Household\ Size\ x\ 55\ GPCD\ x\ 365\ days}{748\ gallons/ccf}$$

$$BOD(lbs/day) = \frac{Flows\ (ccf) x\ BOD(mg/L) x\ 8.345404374\ (lbs/gallon) x 748\ gallons/ccf}{365\ days\ x\ 10^6(mg/L)}$$

$$TSS(lbs/day) = \frac{Flows\ (ccf) x\ TSS(mg/L) x\ 8.345404374\ (lbs/gallon) x 748\ gallons/ccf}{365\ days\ x\ 10\text{^}6\ (mg/L)}$$

Table 6-7: Estimated Residential Wastewater (WW) Flows

	Est. WW Flow (ccf)	BOD (lbs/day)	TSS (lbs/day)
	A	B	C
Residential Unrestricted	570,248 ccf	2,750	2,653
Multi-Family Restricted	488,791 ccf	2,357	2,274
Multi-Family Unrestricted	304,195 ccf	1,467	1,415
Total	**1,363,234 ccf**	**6,575**	**6,342**

Non-Residential Strengths & Flows

Table 6-8 summarizes the current customer classes with estimated wastewater strength characteristics and its corresponding new class groupings.

Table 6-8: Non-Residential Wastewater Flow Characteristics

Non-Residential Classes	New Classes	BOD (mg/L)	TSS (mg/L)	Combined Strengths	Notes
Animal Kennel	Medium Strength	258 mg/L	280 mg/L	538 mg/L	LACSD data
Car Wash	Medium Strength	257 mg/L	271 mg/L	528 mg/L	LACSD data
Dept. - Retail Store	Medium Strength	258 mg/L	280 mg/L	538 mg/L	LACSD data
Dry Cleaner	Low Strength	257 mg/L	270 mg/L	527 mg/L	LACSD data
Parks Golf Courses	Medium Strength	258 mg/L	258 mg/L	516 mg/L	LACSD data
Health Spa	Medium Strength	260 mg/L	270 mg/L	530 mg/L	LACSD data
Hospital	Medium Strength	258 mg/L	272 mg/L	530 mg/L	LACSD data
Hotel	Medium Strength	259 mg/L	269 mg/L	528 mg/L	LACSD data
Market	High Strength	800 mg/L	800 mg/L	1,600 mg/L	LACSD data
Mortuaries	High Strength	800 mg/L	800 mg/L	1,600 mg/L	LACSD data
Nursery	Medium Strength	260 mg/L	290 mg/L	550 mg/L	LACSD data
Prof/Financial Office	Medium Strength	258 mg/L	276 mg/L	534 mg/L	LACSD data
Public Institution	Medium Strength	250 mg/L	260 mg/L	510 mg/L	LACSD data
Auto Service Station(repair)	Medium Strength	258 mg/L	276 mg/L	534 mg/L	LACSD data
Restaurants	Restaurants	282 mg/L	272 mg/L	554 mg/L	Same as residential[29]
Schools	Medium Strength	258 mg/L	270 mg/L	528 mg/L	LACSD data
Theater	Medium Strength	260 mg/L	270 mg/L	530 mg/L	LACSD data
Warehouse/Storage[30]	Low Strength	150 mg/L	150 mg/L	300 mg/L	LA City
Basic Commercial	Medium Strength	258 mg/L	270 mg/L	528 mg/L	LACSD data

Similar to residential, non-residential WW flows and strengths (aka loadings) are calculated and summarized in Table 6-9.

[29] Restaurants strengths are assumed to be the same as residential, given the strict regulations of FOG program for restaurants within the District service area.
[30] Adopted LA City Characteristic Loadings for Residential and Commercial Customers

Table 6-9: Estimated Non-Residential WW Flows and Loadings

Non-Residential WW	Rate Code	New Classes	# of Accts	EDU	Flow (ccf)	BOD (lbs/day)	TSS (lbs/day)
Animal Kennel	114	Medium St.	1	1	902 ccf	4	4
Animal Kennel	118	Medium St.	1	1	1,036 ccf	5	5
Car Wash	120	Medium St.	1	1	1,877 ccf	8	9
Dept. - Retail Store	130	Medium St.	182	206	46,500 ccf	205	223
Dept. Store	134	Medium St.	6	6	1,412 ccf	6	7
Dept. -Retail Store	136	Medium St.	1	1	27 ccf	0	0
Dry Cleaner	140	Medium St.	5	5	4,738 ccf	21	22
Parks Golf Courses	150	Medium St.	7	7	1,239 ccf	5	5
Health Spa	160	Medium St.	7	7	351 ccf	2	2
Hospital	170	Medium St.	13	13	48,430 ccf	214	225
Hotel	180	Medium St.	5	5	13,172 ccf	58	61
Market	190	High St.	6	6	7,241 ccf	99	99
Mortuaries	201	High St.	1	1	940 ccf	13	13
Nursery	211	Medium St.	1	1	0 ccf	0	0
Prof/Financial Office	220	Medium St.	211	254	46,541 ccf	205	220
Prof/Financial Office	221	Medium St.	27	46	16,164 ccf	71	76
Prof/Financial Office	223	Medium St.	1	8	3,099 ccf	14	15
Prof/Financial Office	228	Medium St.	1	1	352 ccf	2	2
Public Institution	230	Medium St.	6	6	1,970 ccf	8	9
Public Institution	231	Medium St.	4	4	986 ccf	4	4
Public Institution	234	Medium St.	22	22	9,012 ccf	39	40
Auto Service Station	240	Medium St.	8	8	1,672 ccf	7	8
Restaurants	260	Restaurants	58	58	21,240 ccf	102	99
Restaurants	269	Restaurants	4	4	1,827 ccf	9	8
Schools	270	Medium St.	2	2	231 ccf	1	1
Schools	275	Medium St.	12	12	8,567 ccf	38	40
Theater	280	Medium St.	1	1	4 ccf	0	0
Theater	282	Medium St.	1	1	522 ccf	2	2
Warehouse/Storage	290	Low St.	14	14	3,065 ccf	8	8
Warehouse	293	Low St.	3	3	1,179 ccf	3	3
Basic Commercial	300	Medium St.	27	27	3,554 ccf	16	16
Basic Commercial	301	Medium St.	32	37	11,041 ccf	49	51
Basic Commercial	319	Medium St.	1	1	463 ccf	2	2
Basic Commercial	337	Medium St.	1	1	551 ccf	2	3
Basic Commercial	338	Medium St.	1	1	284 ccf	1	1
Basic Commercial	339	Medium St.	0	0	0 ccf	0	0
Basic Commercial	340	Medium St.	3	3	2,917 ccf	13	13
Basic Commercial	350	Medium St.	1	1	1,130 ccf	5	5
Basic Commercial	357	Medium St.	1	1	924 ccf	4	4
Basic Commercial	373	Medium St.	1	1	1,649 ccf	7	8
Basic Commercial	378	Medium St.	1	1	1,922 ccf	8	9
Basic Commercial	390	Medium St.	1	1	433 ccf	2	2
Basic Commercial	391	Medium St.	0	0	0 ccf	0	0
Hospital	17Q	Medium St.	3	3	7,759 ccf	34	36
Auto Service Station	24A	Medium St.	1	1	43 ccf	0	0
Auto Service Station	24P	Medium St.	5	5	3,345 ccf	15	16
Restaurants	26D	Restaurants	26	26	11,680 ccf	56	54
Total WW			**717**	**815**	**291,991 ccf**	**1,369**	**1,430**

Table 6-10 summarizes the estimated wastewater flows and loadings contributed by both residential and non-residential customer classes.

Table 6-10: Estimated Wastewater System Flows and Loadings

Customer Classes	Flows (ccf)	BOD (lbs/day)	TSS (lbs/day)	Dwelling Units	# of Accts
Residential					
Residential Unrestricted	570,248 ccf	2,750	2,653	7,059 DU	6,681
Multi-Family Restricted	488,791 ccf	2,357	2,274	12,736 DU	1,020
Multi-Family Unrestricted	304,195 ccf	1,467	1,415	5,152 DU	562
Total Residential	1,363,234 ccf	6,575	6,342	24,947 DU	8,263
Non-Residential					
Low St. Commercial	4,244 ccf	11	11	17 DU	17
Medium St. Commercial	244,819 ccf	1,079	1,146	703 DU	605
High St. Commercial	8,181 ccf	112	112	7 DU	7
Restaurants	34,747 ccf	168	162	88 DU	88
Total Non-Residential	291,991 ccf	1,369	1,430	815 DU	717
TOTAL WW SERVICES	**1,655,225 ccf**	**7,944**	**7,772**	**25,762 DU**	**8,980**

6.2.3. ALLOCATIONS OF COST OF SERVICE

The three main cost allocation parameters are Flow, BOD, and TSS. BOD and TSS constitute the strength components of the wastewater discharge. Costs are assigned based on the parameters that dictate the design of each process. The allocation of costs to the three parameters involves:

- Detailed breakdown of O&M costs
- Itemization of the capital costs by functions such as collection, treatment, outfall, etc.
- Allocation of the functional costs to the wastewater parameters

Based on a detailed breakdown of fixed assets by process, the treatment plant costs are allocated to flow, BOD, and TSS at 40 percent, 30 percent, and 30 percent, respectively. This allocation is representative of other secondary treatment plants. Pipelines, outfall, and pumping stations costs are all allocated to flow. Labor costs are allocated proportionally to flow, BOD, and TSS based on the combined non-labor operating cost, at 36 percent, 16 percent, 16 percent, and 33 percent to Flow, BOD, TSS, and General, respectively. Costs that could not be specifically identified were classified as general costs. General costs are ultimately reallocated based on the proportions of other costs—in this study, general costs are allocated to flow, BOD, and TSS at 55 percent, 22 percent, and 22 percent, respectively (see Table 6-13 below). The allocation of operating costs is shown in Table 6-11.

The cost of service allocations in this study are based on Raftelis' experience with secondary treatment plants and are consistent with the revenue program guidelines of the State Water Resources Control Board (SWRCB) and the Water Environment Federation (WEF).

Table 6-11: Allocation of WW O&M Expenses

O&M Expenses	FY 2022	Flows	BOD	TSS	General
Pumping - Sewer	$324,800	100%			
Treatment Plant	$959,500	40%	30%	30%	
Outside Treatment	$992,000	40%	30%	30%	
T&D - Sewer	$179,100	100%			
Operations Support	$126,464	70%	15%	15%	
Fleet	$133,328	0%			100%
Indirect Operating Costs	$22,724	0%			100%
Administration	$108,264	0%			100%
Information Technology	$161,200				100%
Indirect Administration Costs	$842,400				100%
Labor Costs	$4,714,320	36%	16%	16%	33%
Total O&M	**$8,564,100**	**$3,054,388**	**$1,344,573**	**$1,344,573**	**$2,820,566**

Table 6-12 summarizes the allocations of Wastewater revenue requirements to cost components, such as flows, BOD, TSS, General, and Capital using the allocation of O&M expenses in Table 6-11. In FY 2022, current debt service was for a lift station project, thus it is allocated 100% to flows. The revenue requirements are offset by property tax (which is allocated using the same as non-labor O&M allocations). A portion of the revenue requirements will be offset by an operating reserve.

Table 6-12: Allocations of FY 2022 WW Revenue Requirements

Revenue Requirements	FY 2022	Flows	BOD	TSS	General	Capital
WW O&M Expenses	$8,564,100	$3,054,388	$1,344,573	$1,344,573	$2,820,566	$0
Other Rev Requirements						
Debt Service	$258,146	100%	0%	0%		
Capital R&R Program	$1,614,593	0%				100%
Subtotal Other Rev Reqmts	**$1,872,739**	**$258,146**	**$0**	**$0**	**$0**	**$1,614,593**
Less Other Revenues						
Property Taxes	($545,000)	36%	16%	16%	33%	0%
Investment Income	($50,000)				100%	0%
Subtotal Other Revenues	**($595,000)**	**-$194,374**	**-$85,566**	**-$85,566**	**-$229,494**	**$0**
+ Operating Reserve Funding	($178,146)	36%	16%	16%	33%	0%
+ Capital Reserve Funding	$0	0%				100%
REV REQ FROM RATES	**$9,663,693**	**$3,054,624**	**$1,231,038**	**$1,231,038**	**$2,532,400**	**$1,614,593**

Table 6-13: Reallocation of General Costs

Cost Categories	FY 2022	Reallocation of General	Reallocated General Costs	FY 2022
Flows	$3,054,624	55%	$1,402,202	$4,456,826
BOD	$1,231,038	22%	$565,099	$1,796,137
TSS	$1,231,038	22%	$565,099	$1,796,137
General	$2,532,400	-100%	-$2,532,400	$0
Capital	$1,614,593			$1,614,593
REV REQ FROM RATES	**$9,663,693**			**$9,663,693**

6.2.4. DEVELOPMENT OF UNIT COST

Combining the resulting cost allocations in Table 6-13 and the units of service from Table 6-10, the unit cost of service Flows, BOD, and TSS are calculated in Table 6-14.

Table 6-14: Development of FY 2022 Operating WW Unit Cost of Service

Operating Rev Req	FY 2022	Units of service		Unit Cost of Service
	A (Table 6-13)	B (Table 6-10)		C = A / B
Flows	$4,456,826	1,655,225	ccf / yr	$2.69
BOD	$1,796,137	7,944	lbs / day	$226.10
TSS	$1,796,137	7,772	lbs / day	$231.11
Total	**$8,049,100**			

6.2.5. ALLOCATION OF COSTS TO CUSTOMER CLASSES

$$Flows\ Cost = \$2.69/ccf\ x\ Flows\ (ccf)$$
$$BOD\ Cost = \$226.10/lbs\ x\ BOD\ (lbs)$$
$$TSS\ Cost = \$231.11/lbs\ x\ TSS\ (lbs)$$

Using the flows and strengths in Table 6-10 with the unit cost of service calculated in Table 6-14, Table 6-15 shows the allocated cost of service responsibility of each customer class.

Table 6-15: Allocation of FY 2022 Cost of Service to Customer Classes

Customer Classes	Flows (CCF)	BOD (lbs/day)	TSS (lbs/day)	Dwelling Units	Flows $2.69 $ / CCF	BOD $226.10 $ / lbs	TSS $231.11 $ / lbs	Total COS
Residential								
Residential Unrestricted	570,248 ccf	2,750	2,653	7,059 DU	$1,535,439	$621,839	$613,069	**$2,770,347**
Multi-Family Restricted	488,791 ccf	2,357	2,274	12,736 DU	$1,316,109	$533,013	$525,495	**$2,374,617**
Multi-Family Unrestricted	304,195 ccf	1,467	1,415	5,152 DU	$819,070	$331,716	$327,038	**$1,477,823**
Total Residential	**1,363,234 ccf**	**6,575**	**6,342**	**24,947 DU**	**$3,670,618**	**$1,486,568**	**$1,465,602**	**$6,622,788**
Non-Residential								
Low St. Commercial	4,244 ccf	11	11	17 DU	$11,427	$2,462	$2,516	**$16,405**
Medium St. Commercial	244,819 ccf	1,079	1,146	703 DU	$659,195	$243,909	$264,796	**$1,167,900**
High St. Commercial	8,181 ccf	112	112	7 DU	$22,027	$25,307	$25,867	**$73,201**
Restaurants	34,747 ccf	168	162	88 DU	$93,559	$37,891	$37,356	**$168,806**
Total Non-Residential	**291,991 ccf**	**1,369**	**1,430**	**815 DU**	**$786,208**	**$309,569**	**$330,535**	**$1,426,312**
TOTAL WW SERVICES	1,655,225 ccf	7,944	7,772	25,762 DU	$4,456,826	$1,796,137	$1,796,137	$8,049,100

6.3. Wastewater Revised COS Rate Design for FY 2022

6.3.1. WASTEWATER SERVICE CHARGES

Residential customers will be assessed a monthly Wastewater service charge based on the number of dwelling units. Total cost of service allocated to each customer class will be divided by the unit to get the Revised COS Rate in Table 6-16.

Table 6-16: Development of FY 2022 Wastewater Service Charges

Customer Classes	Total Cost of Service	Flows (CCF)	Dwelling Units	Revised COS Rate
Residential				
Residential Unrestricted	$2,770,347		7,059 DU	**$32.71 / EDU**
Multi-Family Restricted	$2,374,617		12,736 DU	**$15.54 / EDU**
Multi-Family Unrestricted	$1,477,823		5,152 DU	**$23.91 / EDU**
Total Residential	**$6,622,788**		**24,947 DU**	
Non-Residential				
Low St. Commercial	$16,405	4,244 ccf		**$3.87 / ccf**
Medium St. Commercial	$1,167,900	244,819 ccf		**$4.78 / ccf**
High St. Commercial	$73,201	8,181 ccf		**$8.95 /ccf**
Restaurants	$168,806	34,747 ccf		**$4.86 / ccf**
Total Non-Residential	**$1,426,312**	**291,991 ccf**		

6.3.2. CAPITAL FACILITY CHARGES

The Capital Improvement Program Revenue Requirements (in Table 6-3) are allocated to each customer class based on the allocation of O&M revenue requirement. The revised Capital Facility Charges are shown in Table 6-17 below.

Table 6-17: Development of FY 2022 Revised Capital Facility Charges

	FY 2022	O&M Rev Req	%	Capital Facility Rev Req	Units of Services	Unit Capital Facility charges
		A (Table 6-16)	B = A / [A11]	C = [C11] x B	D (Table 6—10)	E = C / D
1	**Residential**				**EDUs**	
2	Residential Unrestricted	$2,770,347	34.42%	$555,712	7,059 EDU	**$6.56 / EDU**
3	Multi-Family Restricted	$2,374,617	29.50%	$476,332	12,736 EDU	**$3.12 / EDU**
4	Multi-Family Unrestricted	$1,477,823	18.36%	$296,441	5,152 EDU	**$4.79 / EDU**
5						
6	**Non-Residential**				**Billed sewer flows (ccf)**	
7	Low St. Commercial	$16,405	0.20%	$3,291	4,244 ccf	**$0.78 / ccf**
8	Medium St. Commercial	$1,167,900	14.51%	$234,273	244,819 ccf	**$0.96 / ccf**
9	High St. Commercial	$73,201	0.91%	$14,684	8,181 ccf	**$1.79 / ccf**
10	Restaurants	$168,806	2.10%	$33,861	34,747 ccf	**$0.97 / ccf**
11	**Total**	**$8,049,100**	**100.00%**	**$1,614,593**		

6.4. Proposed FY 2023 Wastewater Rates

The calculated monthly service and Capital Facility Charges shown in Table 6-16 and Table 6-17 are "Revised COS Rates" using FY 2022 revenue requirements. To calculate the proposed rates for FY 2023, the FY 2023 revenue increases are applied uniformly on all revised COS rates.

6.4.1. MONTHLY SERVICE CHARGES

From Table 6-2, FY 2023 WW operating revenue requirements is expected to increase 6.0% as shown in Table 6-18 below.

Table 6-18: FY 2023 WW Operating Revenue Requirements

WW Operating Revenue Requirements	FY 2023
WW O&M Expenses	$9,328,100
Less (-) Non-Operating Revenues	-$665,600
Less (-) Rate Stab Utilization	-$127,868
Total WW Operating Revenue Requirements	**$8,535,932**
Current WW Revenues	$8,052,766
Revenue Increase	**6.0%**

Table 6-19 shows the proposed FY 2023 wastewater service charges along with current, revised, and estimated impacts from the current rates.

Table 6-19: Proposed FY 2023 Monthly Wastewater Service Charges

Wastewater Service Charges		FY 2022		FY 2023	Impact from Current Rates	
		Current	Revised COS	Proposed	$ Increase	% Increase
		A	B (Table 6-16)	C = B x 1.06	D = C - A	E = D / A
Residential ($/EDU)						
Residential Unrestricted		$25.76	$32.71	**$34.67**	$8.91	34.6%
Multi-Family Restricted		$20.44	$15.54	**$16.47**	-$3.97	-19.4%
Multi-Family Unrestricted		$24.30	$23.91	**$25.34**	$1.04	4.3%
Commercial Use ($/ccf)						
Animal Kennel	Medium St.	$4.23	$4.78	**$5.07**	$0.84	19.9%
Car Wash	Medium St.	$4.21	$4.78	**$5.07**	$0.86	20.4%
Dept. - Retail Store	Medium St.	$4.23	$4.78	**$5.07**	$0.84	19.9%
Dry Cleaner	Medium St.	$3.71	$4.78	**$5.07**	$1.36	36.7%
Parks Golf Courses	Medium St.	$3.70	$4.78	**$5.07**	$1.37	37.0%
Health Spa	Medium St.	$4.22	$4.78	**$5.07**	$0.85	20.1%
Hospital	Medium St.	$3.71	$4.78	**$5.07**	$1.36	36.7%
Hotel	Medium St.	$6.41	$4.78	**$5.07**	-$1.34	-20.9%
Market	High St.	$8.40	$8.95	**$9.49**	$1.09	13.0%
Mortuaries	High St.	$8.37	$8.95	**$9.49**	$1.12	13.4%
Nursery	Medium St.	$3.76	$4.78	**$5.07**	$1.31	34.8%
Prof/Financial Office	Medium St.	$4.23	$4.78	**$5.07**	$0.84	19.9%
Public Institution	Medium St.	$4.17	$4.78	**$5.07**	$0.90	21.6%
Auto Service Station	Medium St.	$4.22	$4.78	**$5.07**	$0.85	20.1%
Restaurants	Restaurants	$4.00	$4.86	**$5.15**	$1.15	28.8%
Schools	Medium St.	$4.38	$4.78	**$5.07**	$0.69	15.8%
Theater	Medium St.	$4.23	$4.78	**$5.07**	$0.84	19.9%
Warehouse/Storage	Low St.	$3.35	$3.87	**$4.10**	$0.75	22.4%
Basic Commercial	Medium St.	$3.71	$4.78	**$5.07**	$1.36	36.7%

6.4.2. CAPITAL FACILITY CHARGES

Similar to service charges, Capital Facility Charges are also increased uniformly at 8.1% (Table 6-20) on the revised COS rates (Table 6-17). Table 6-21 shows the proposed FY 2023 Wastewater Capital Facility Charges.

Table 6-20: FY 2023 Capital Improvement Revenue Requirements

WW Capital Rev Req	FY 2023
Capital Improvement Program	$1,614,000
Plus (+) Debt Service	$512,800
Plus (+) Capital Reserve Funding	-$380,802
Total WW Capital Revenue Requirements	**$1,745,998**
Current WW Capital Facility Revenues	$1,615,169
Revenue Increase	**8.1%**

Table 6-21: Proposed FY 2023 Wastewater Capital Facility Charges

WW Capital Facility Charges	FY 2022		FY 2023	Impact from Current Rates	
	Current	Revised COS	Proposed	$ Increase	% Increase
	A	B (Table 6-17)	C = B x 1.081	D = C - A	E = D / A
Residential ($/EDU)					
Residential Unrestricted	$4.93	$6.56	**$7.09**	$2.16	43.8%
Multi-Family Restricted	$3.91	$3.12	**$3.37**	-$0.54	-13.8%
Multi-Family Unrestricted	$4.65	$4.79	**$5.18**	$0.53	11.4%
Commercial					
5/8"	$4.34	N/A	N/A		
3/4"	$7.34	N/A	N/A		
1"	$13.55	N/A	N/A		
1 1/2"	$24.07	N/A	N/A		
2"	$70.96	N/A	N/A		
Public Authority					
1"	$4.93	N/A	N/A		
1 1/2"	$24.65	N/A	N/A		
2"	$39.71	N/A	N/A		
Non-Residential					
Low St. Commercial		$0.78	**$0.84**		
Medium St. Commercial		$0.96	**$1.04**		
High St. Commercial		$1.79	**$1.93**		
Restaurants		$0.97	**$1.05**		

6.5. Wastewater Customer Impacts

To understand the impacts on customers due to the COS revision, Raftelis calculated a series of customer impacts as shown in Table 6-22 and Table 6-23. Residential customer impacts are mainly driven by the updated household density for each customer class. Non-residential classes are impacted partially because of the revised groupings and the revised loadings.

Table 6-22: Customer Impacts of FY 2022 Revised COS Rates for Service Charges

Wastewater Service Charges	Current	Revised COS	$ Increase	% Increase
	A	B (Table 6-16)	C = B - A	D = C / A
Residential ($/EDU)				
Residential Unrestricted	$25.76	$32.71	$6.95	27.0%
Multi-Family Restricted	$20.44	$15.54	-$4.90	-24.0%
Multi-Family Unrestricted	$24.30	$23.91	-$0.39	-1.6%
Commercial Use ($/ccf)				
Animal Kennel	$4.23	$4.78	$0.55	13.0%
Car Wash	$4.21	$4.78	$0.57	13.5%
Dept. - Retail Store	$4.23	$4.78	$0.55	13.0%
Dry Cleaner	$3.71	$4.78	$1.07	28.8%
Parks Golf Courses	$3.70	$4.78	$1.08	29.2%
Health Spa	$4.22	$4.78	$0.56	13.3%
Hospital	$3.71	$4.78	$1.07	28.8%
Hotel	$6.41	$4.78	-$1.63	-25.4%
Market	$8.40	$8.95	$0.55	6.5%
Mortuaries	$8.37	$8.95	$0.58	6.9%
Nursery	$3.76	$4.78	$1.02	27.1%
Prof/Financial Office	$4.23	$4.78	$0.55	13.0%
Public Institution	$4.17	$4.78	$0.61	14.6%
Auto Service Station(repair)	$4.22	$4.78	$0.56	13.3%
Restaurants	$4.00	$4.86	$0.86	21.5%
Schools	$4.38	$4.78	$0.40	9.1%
Theater	$4.23	$4.78	$0.55	13.0%
Warehouse/Storage	$3.35	$3.87	$0.52	15.5%
Basic Commercial	$3.71	$4.78	$1.07	28.8%

Wastewater Service Charges	Revised COS Rates	Current Rates	FY 2022 Total Rev Req		
Customer Classes	A (Table 6-16)	B	Current	Revised COS	% Change
Residential					
Residential Unrestricted	$32.71 / EDU	$25.76 / EDU	$2,182,078	$2,770,347	27.0%
Multi-Family Restricted	$15.54 / EDU	$20.44 / EDU	$3,123,886	$2,374,617	-24.0%
Multi-Family Unrestricted	$23.91 / EDU	$24.30 / EDU	$1,502,323	$1,477,823	-1.6%
Total Residential			$6,808,287	$6,622,788	-2.7%
Non-Residential					
Low St. Commercial	$3.87 / ccf	varied	$14,217	$16,405	15.4%
Medium St. Commercial	$4.78 / ccf	varied	$1,019,540	$1,167,900	14.6%
High St. Commercial	$8.95 / ccf	varied	$68,689	$73,201	6.6%
Restaurants	$4.86 / ccf	varied	$138,988	$168,806	21.5%
Total Non-Residential			$1,241,434	$1,426,312	14.9%
TOTAL WASTEWATER SERVICES			**$8,049,721**	**$8,049,100**	**0.0%**

Table 6-23 shows the impacts of FY 2023 from current rates (including the COS revision impact shown in Table 6-22 and required revenue increases for FY 2023).

Table 6-23: Customer Impacts of Revised COS and Revenue Increases in FY 2023

Wastewater Service Charges		FY 2022		FY 2023	Impact from Current Rates	
		Current	Revised COS	Proposed	$ Increase	% Increase
		A	B (Table 6-16)	C = B x 1.06	D = C - A	E = D / A
Residential ($/EDU)						
Residential Unrestricted		$25.76	$32.71	**$34.67**	$8.91	34.6%
Multi-Family Restricted		$20.44	$15.54	**$16.47**	-$3.97	-19.4%
Multi-Family Unrestricted		$24.30	$23.91	**$25.34**	$1.04	4.3%
Commercial Use ($/ccf)						
Animal Kennel	Medium St.	$4.23	$4.78	**$5.07**	$0.84	19.9%
Car Wash	Medium St.	$4.21	$4.78	**$5.07**	$0.86	20.4%
Dept. - Retail Store	Medium St.	$4.23	$4.78	**$5.07**	$0.84	19.9%
Dry Cleaner	Medium St.	$3.71	$4.78	**$5.07**	$1.36	36.7%
Parks Golf Courses	Medium St.	$3.70	$4.78	**$5.07**	$1.37	37.0%
Health Spa	Medium St.	$4.22	$4.78	**$5.07**	$0.85	20.1%
Hospital	Medium St.	$3.71	$4.78	**$5.07**	$1.36	36.7%
Hotel	Medium St.	$6.41	$4.78	**$5.07**	-$1.34	-20.9%
Market	High St.	$8.40	$8.95	**$9.49**	$1.09	13.0%
Mortuaries	High St.	$8.37	$8.95	**$9.49**	$1.12	13.4%
Nursery	Medium St.	$3.76	$4.78	**$5.07**	$1.31	34.8%
Prof/Financial Office	Medium St.	$4.23	$4.78	**$5.07**	$0.84	19.9%
Public Institution	Medium St.	$4.17	$4.78	**$5.07**	$0.90	21.6%
Auto Service Station	Medium St.	$4.22	$4.78	**$5.07**	$0.85	20.1%
Restaurants	Restaurants	$4.00	$4.86	**$5.15**	$1.15	28.8%
Schools	Medium St.	$4.38	$4.78	**$5.07**	$0.69	15.8%
Theater	Medium St.	$4.23	$4.78	**$5.07**	$0.84	19.9%
Warehouse/Storage	Low St.	$3.35	$3.87	**$4.10**	$0.75	22.4%
Basic Commercial	Medium St.	$3.71	$4.78	**$5.07**	$1.36	36.7%

7. Recycled Water Revenue Requirements and Proposed Rates

7.1. Recycled Water System

In FY 2015, the District completed the expansion of its recycled water system, including water recycling plant (WRP) upgrades to tertiary treatment processes and recycled water distribution system pipeline expansion. In FY 2019, the District completed the Phase II expansion of the Recycled Water Distribution System. With the Recycled Water Expansion Project's completion, all recycled water customers (existing and converted customers) are now supplied with high quality tertiary recycled water. The following sources financed the recycled water expansion capital cost for both phases: State Revolving Fund (SRF) Loan, grants, and the restricted reserve (revenues from Tier 3 and Tier 4 potable usage dedicated to recycled water expansion) and recycled water charges from recycled water customers.

7.2. Projected Recycled Water Sales

The District has completed the Phase II Recycled Water Retrofit Project and anticipates serving 275 Recycled Water accounts in FY 2023. The projected recycled water sales for FY 2022 are estimated at 1,400 AF. The District projects an increase of 85 AF for FY 2023. The estimated Recycled Water sales for FY 2022 and budgeted water sales for FY 2023 are shown in Table 7-1.

Table 7-1: Recycled Water Sales

Description	RW Sales	
	ccf	AF
FY 2022 Estimated Actual Sales	609,840	1,400
FY 2023 Budgeted Sales	646,865	1,485
Increase	37,025	85
% Increase	6%	

7.3. Revenue Requirement and Proposed Rates

In FY 2015, the District began separating recycled water costs into an independent Recycled Water Enterprise Fund. Table 7-2 summarizes the recycled water revenue requirements from rates for FY 2023. Recycled water O&M expenses and supply (Line 1) and Debt Service (Line 2) will be partially offset by restricted reserve funding (Line 5), capital charges (Line 6), MWD LRP Rebates (Line 7), and several other sources of revenues (Lines 8, 9, 10). The remaining revenue requirement to be recovered from recycled water rates is shown in Line 14. The line items shown below are further detailed in Appendix 4 – Cash Flow Analysis for Recycled Water Funds, developed by District Staff and provided to Raftelis as the basis for the cost of service analysis.

Table 7-2: Recycled Water Revenue Requirement from Rates

Line No	Recycled Water Rev Requirements	FY 2023	Note
1	Recycled Water O&M Expenses	$1,741,900	Appendix 4
2	Debt Service	$1,832,000	Appendix 4
3			
4	**Less (-) Other Revenues**		
5	Restricted Reserves Funding of Debt Service	-$712,996	Appendix 4
6	Recycled Water Meter Capital Charge Funding of Debt	-$160,584	Appendix 4
7	MWD Rebates	-$345,300	Appendix 4
8	MNWD Payment for RW Service to Golf Course	-$11,000	Appendix 4
9	JPIA Refund	$0	Appendix 4
10	Property Taxes	-$89,600	Appendix 4
11	**Subtotal Less (-) Other Revenues**	**-$1,319,480**	
12			
13	**Plus (+) Operating Reserve Funding**	**$0**	
14	**Total Revenue Requirements from Recycled Water Rates**	**$2,254,420**	

All recycled water customers connected to the recycled water distribution system will be assessed the same Monthly Service Charges (Table 7-3) and Capital Facility Charges (Table 7-4) as potable customers to recover the customer service, meter service, a portion of capacity, and other recycled water related fixed costs and to pay for capital improvements to the expanded recycled water system.

Table 7-3: FY 2023 Proposed Monthly Service Charges

Meter Size	# of RW accounts	FY 2023 Proposed	FY 2022 Current	$ Change	% Change
5/8"		**$17.46**	$16.56	$0.90	5.4%
3/4"		**$23.62**	$22.24	$1.38	6.2%
1"		**$35.93**	$33.60	$2.33	6.9%
1 1/2"	28	**$66.70**	$62.00	$4.70	7.6%
2"	247	**$128.25**	$118.80	$9.45	8.0%
Total Accounts / Projected Annual Revenues	**275**	**$402,544**	**$372,955**	**$29,589**	**7.9%**

Table 7-4: FY 2023 Proposed Capital Facility Charges

Meter Size	# of RW accounts	FY 2023 Rates	FY 2022 Rates	$ Change	% Change
5/8-in		**$5.09**	$4.66	$0.43	9.2%
3/4-in		**$5.09**	$4.66	$0.43	9.2%
1-in		**$8.50**	$7.78	$0.72	9.3%
1 1/2-in	28	**$20.65**	$18.91	$1.74	9.2%
2-in	247	**$51.84**	$47.47	$4.37	9.2%
Total	**275**	**$160,592**	**$147,055**	**$13,537**	**9.2%**

Table 7-5 derives the revenue required from the Recycled Water Commodity Rate (Line 3) by subtracting the Monthly Service Charge Revenue (Line 2) shown in Table 7-3 from the Total Revenue Requirements (Line 1). The unit recycled water commodity rate is calculated using the net revenue requirements from recycled water commodity rates (Line 3) divided by projected recycled water sales (Line 4). The recycled water commodity rate for FY 2023 is $2.87 / ccf or $1,250 / AF, which is 90% of the Tier 2 Potable Water Commodity Rate for FY 2023 and provides an economic incentive for irrigation customers to convert to recycled water.

Table 7-5: Recycled Water Commodity Rate Calculation

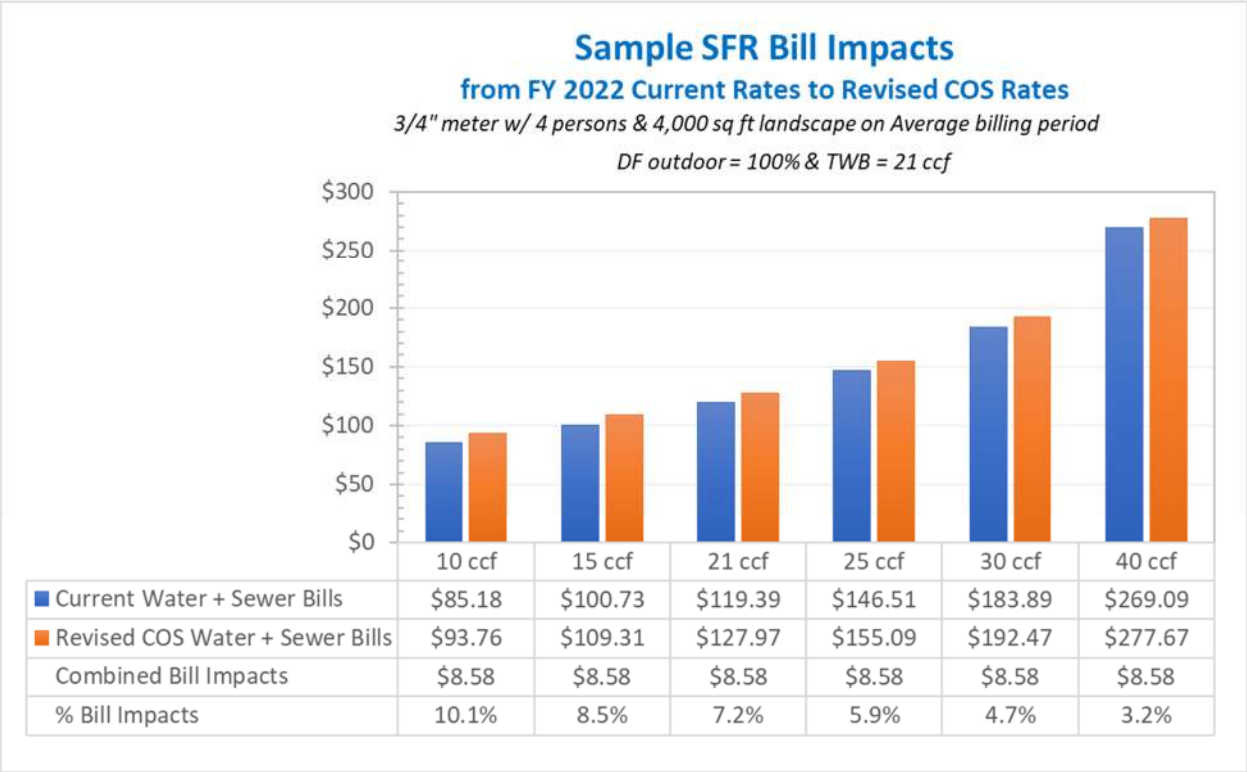
Line #	Description	FY 2023
1	Total Revenue Requirements from Recycled Water Rates	$2,254,420
2	Less (-) Monthly Service Charges (Table 7-3)	-$402,544
3	**Net Revenue Requirements from Recycled Water Usage Rate**	**$1,851,876**
4	Projected Recycled Water Sales (ccf)	646,865
5	**Unit Recycled Water Usage Rate ($/ccf)**	**$2.87**
6	Unit Recycled Water Usage Rate ($/AF)	$1,250
7	% of Tier 2 Potable Rate	90%

8. Customer Impact Analysis

8.1.1. FY 2022 CURRENT TO REVISED COST OF SERVICE RATES

Figure 8-1 shows a breakdown of water and wastewater bills at various water usage levels for a single-family residential user with four occupants and a 4,000 sq. ft. landscape area serviced by a ¾-in meter. The combined water and wastewater bill increase would be $8.58 per month, resulting from revised cost of service changes in wastewater service and capital charges.

Figure 8-1: SFR Total Monthly Bill Impact at FY 2022 Current and Revised FY 2022 COS Rates

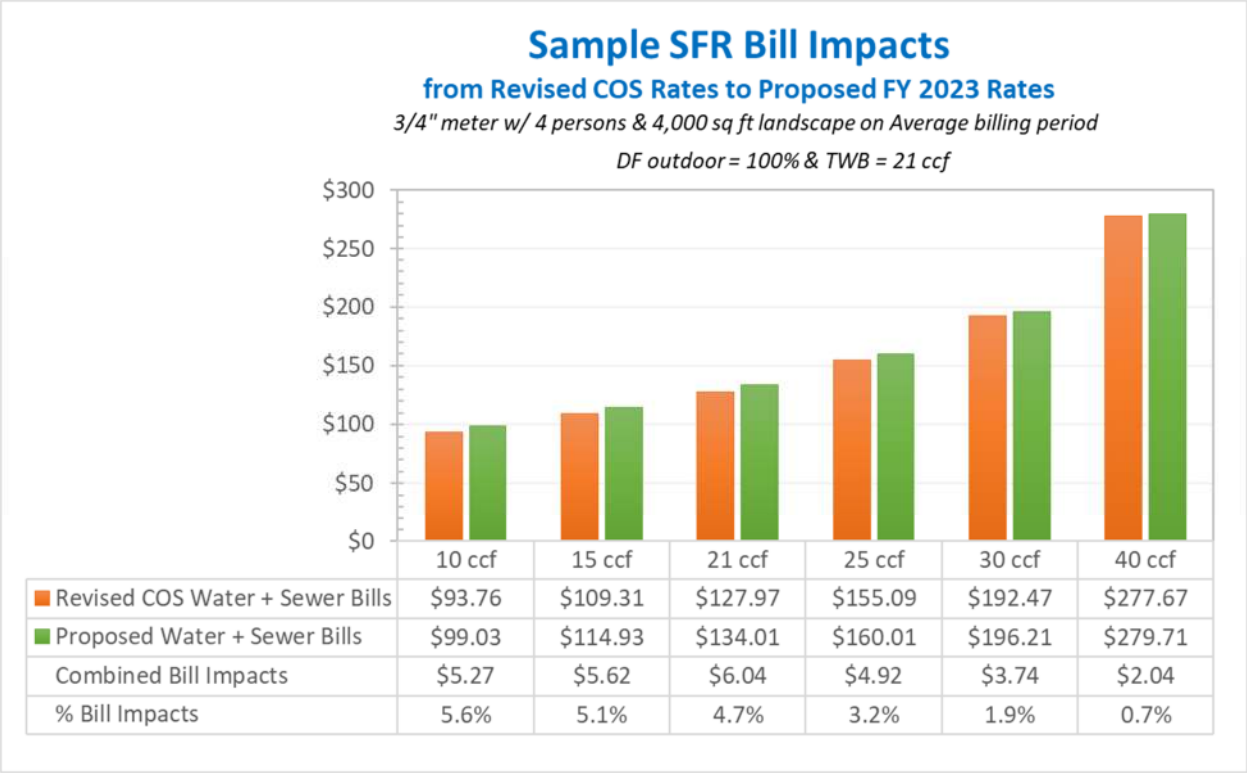


	10 ccf	15 ccf	21 ccf	25 ccf	30 ccf	40 ccf
Current Water + Sewer Bills	$85.18	$100.73	$119.39	$146.51	$183.89	$269.09
Revised COS Water + Sewer Bills	$93.76	$109.31	$127.97	$155.09	$192.47	$277.67
Combined Bill Impacts	$8.58	$8.58	$8.58	$8.58	$8.58	$8.58
% Bill Impacts	10.1%	8.5%	7.2%	5.9%	4.7%	3.2%

8.1.2. FY 2022 REVISED COST OF SERVICE RATES TO FY 2023 RATES

Figure 8-2 shows a breakdown of water and wastewater bills at various water usage levels for a single-family residential user with four occupants and a 4,000 sq. ft. landscape area serviced by a ¾-in meter at current water rates and revised FY 2022 COS rates for wastewater compared to proposed FY 2023 water and wastewater rates. The combined water and wastewater bill increase would range from $2.04 to $6.04 per month, depending on the monthly billed water usage. The bill impacts shown result from increases in revenue requirements for FY 2023.

Figure 8-2: SFR Total Monthly Bill Impact at FY 2022 Revised Cost Of Service Rates to FY 2023 Rates

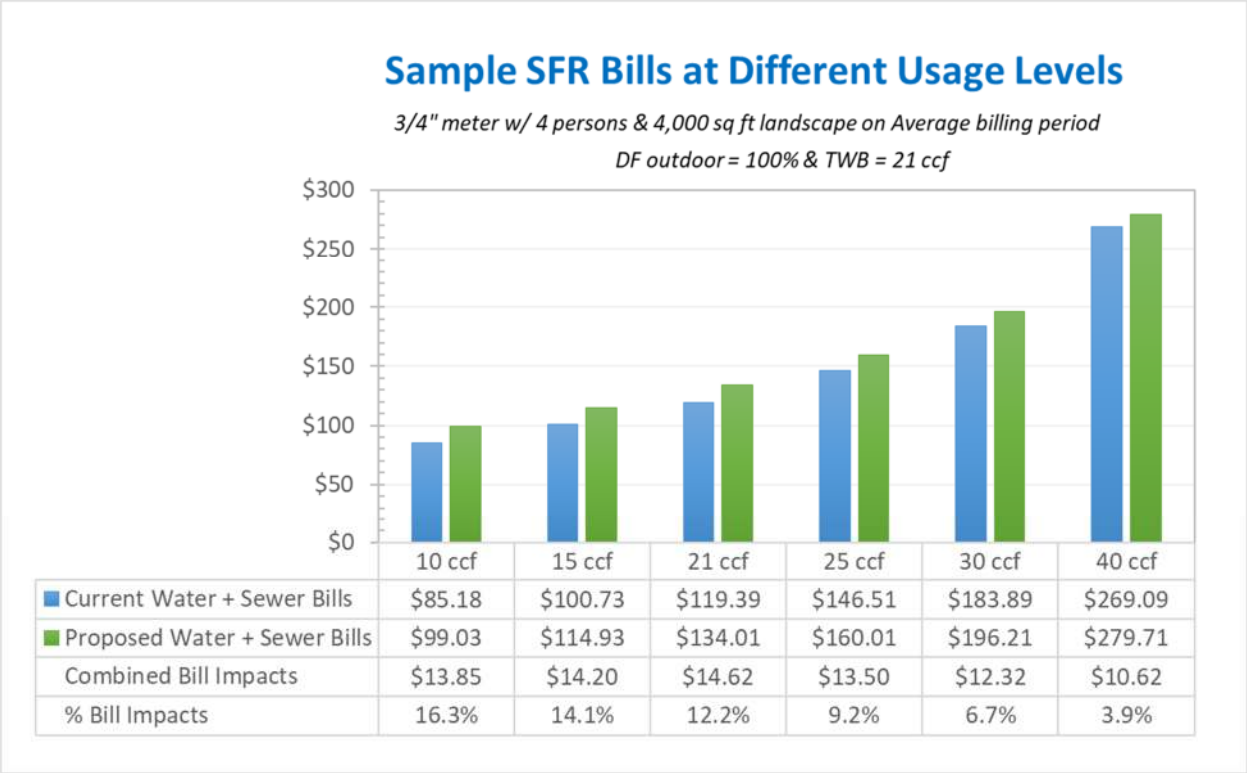


	10 ccf	15 ccf	21 ccf	25 ccf	30 ccf	40 ccf
Revised COS Water + Sewer Bills	$93.76	$109.31	$127.97	$155.09	$192.47	$277.67
Proposed Water + Sewer Bills	$99.03	$114.93	$134.01	$160.01	$196.21	$279.71
Combined Bill Impacts	$5.27	$5.62	$6.04	$4.92	$3.74	$2.04
% Bill Impacts	5.6%	5.1%	4.7%	3.2%	1.9%	0.7%

8.1.3. FY 2022 CURRENT RATES TO FY 2023 RATES

Figure 8-3 shows a breakdown of water and wastewater bills at various water usage levels for a single-family residential user with four occupants and a 4,000 sq. ft. landscape area serviced by a ¾-in meter at current water and wastewater rates compared to proposed FY 2023 rates. The combined water and wastewater bill increase would range from $10.62 to $14.62 per month, depending on the monthly billed water usage. The bill impacts shown from changes in water and wastewater service and capital charges and the revision in cost of service rates. Recycled water rate impacts are not shown, as residential users do not purchase recycled water.

Figure 8-3: SFR Total Monthly Bills at Different Usage Levels at Current and Proposed FY 2023 Rates



	10 ccf	15 ccf	21 ccf	25 ccf	30 ccf	40 ccf
Current Water + Sewer Bills	$85.18	$100.73	$119.39	$146.51	$183.89	$269.09
Proposed Water + Sewer Bills	$99.03	$114.93	$134.01	$160.01	$196.21	$279.71
Combined Bill Impacts	$13.85	$14.20	$14.62	$13.50	$12.32	$10.62
% Bill Impacts	16.3%	14.1%	12.2%	9.2%	6.7%	3.9%

APPENDICES

APPENDIX 1: PASS-THROUGH WATER SUPPLY COST

Source: Purchased Water Analysis.2223.MWDFinal.xlsx sent by Jason Hayden 4/20/22

	2021/22 Budget		2022/23 Budget	
	Jul 2021	Jan 2022	Jul 2022	Jan 2023
Total Period Demand (AF)	4,000	3,000	4,000	3,000
Total Annual Demand (AF)		7,000		7,000
MWD Period Demand (AF)	2,225	1,225	2,225	1,225
MWD Annual Demand (AF)		3,450		3,450
MWD Untreated Commodity Rates				
System Access Rate	373.00	389.00	389.00	368.00
System Power Rate	161.00	167.00	167.00	166.00
Water Stewardship Rate	-	-	-	-
MWD Tier 1 Rate	243.00	243.00	243.00	321.00
Subtotal Untreated Full Service	**777.00**	**799.00**	**799.00**	**855.00**
Treatment Surcharge	327.00	344.00	344.00	354.00
Total Treated Full Service Rate	**1,104.00**	**1,143.00**	**1,143.00**	**1,209.00**
Total Treated Full Service Annual Cost	**2,456,400**	**1,400,175**	**2,543,175**	**1,481,025**
MWD Fixed Charges				
Capacity Reservation Charge	74,172	84,570	83,391	68,328
Readiness To Serve Charge	196,626	211,751	242,420	272,837
Total MWD Fixed Charges		**567,119**		**666,976**
Total MWD Cost		**4,423,694**		**4,691,176**
Total MWD Unit Cost ($/AF)		**1,282**		**1,360**
MWDOC Connection Rate ($/meter)	**12.60**			
ETWD Meters	9,578			
MWDOC Connection Charge ($)		**120,683**		
Baker Water Treatment Plant				
Period Demand (AF)	1,775	1,775	1,775	1,775
Annual Demand (AF)		3,550		3,550
Baker Raw Water Cost	**1,379,175**	**1,418,225**	**1,418,225**	**1,517,625**
Baker O&M Unit Cost (per AF)	210	210	210	210
SAC Surcharge	8.38	8.38	8.38	8.38
SCP Surcharge	1.00	1.00	1.00	1.00
Baker O&M Annual Cost	**389,407**	**389,407**	**389,407**	**389,407**
Baker Capital Cost (Debt Service)				
Total Period Baker Water Treatment Plant Cost	**1,768,582**	**1,807,632**	**1,807,632**	**1,907,032**
Total Annual Baker Water Treatment Plant Cost		**3,576,214**		**3,714,664**
Baker Water Treatment Plant Unit Cost($/AF)		**1,007**		**1,046**
Capital Charge Revenue Funding				
Total Baker Water Treatment Plant Cost		**3,576,214**		**3,714,664**
Total Purchased Water Cost			**2,935,850**	
MWD		4,423,694		4,691,176
MWDOC		120,683		-
Baker		3,576,214		3,714,664
Total Purchased Water Cost		**8,120,591**		**8,405,840**
Total Expense (Less Baker Debt Service)		**8,120,591**		**8,405,840**
Percent Increase Budget to Budget per Unit				3.51%
Overall Imported Water Effective Rate				
Fiscal Year Cost per Acre Foot Purchased		**1,160**		**1,201**
Fiscal Year Cost per CCF Purchased		**2.66**		**2.76**
Fiscal Year Rate per CCF Sold		**2.78**		**2.88**
Delta Billing Rate				**0.10**

APPENDIX 2A: O&M EXPENSES ALLOCATIONS TO WATER, RECYCLED WATER AND WASTEWATER FUNDS FOR FY 2023

Source: 2022-23 Budget Worksheets.xlsx sent by Jason Hayden 4/23/2022

	FY 2023	Water	Sewer	Recycled Water	Total
Source of Supply	8,819,100	8,819,100			**8,819,100**
Treatment – Water	0	0			**0**
Pumping – Water	323,300	323,300			**323,300**
T&D – Water	594,800	594,800			**594,800**
Customer Accounts	67,000	67,000			**67,000**
Pumping – Sewer	365,400		365,400		**365,400**
Treatment Plant	2,115,000		2,115,000		**2,115,000**
Outside Treatment	0		0		**0**
T&D – Sewer	182,700		182,700		**182,700**
Tertiary Plant	10,600			10,600	**10,600**
T&D – Recycled	387,800			387,800	**387,800**
Operations Support	286,600	114,600	149,000	23,000	**286,600**
Fleet	305,300	122,100	158,800	24,400	**305,300**
Indirect Operating Costs				0	**0**
Administration	956,500	414,100	469,900	72,500	**956,500**
Information Technology	491,400	196,600	255,500	39,300	**491,400**
Indirect Administration Costs	654,400	261,800	340,300	52,300	**654,400**
Depreciation & Amortization	4,163,100	814,100	1,805,000	1,544,000	**4,163,100**
Interest Costs	2,697,900	1,119,000	451,800	1,127,100	**2,697,900**
Labor Costs	9,838,200	3,453,600	5,258,000	1,126,600	**9,838,200**
Total	**32,259,100**	**16,300,100**	**11,551,400**	**4,407,600**	**32,259,100**
Total Expenses (Less Depreciation & Interest)	**25,398,100**	**14,367,000**	**9,294,600**	**1,736,500**	**25,398,100**

APPENDIX 2B: O&M EXPENSES ALLOCATIONS TO WATER, RECYCLED WATER AND WASTEWATER FUNDS FOR FY 2022

Source: 10YearCashFlow.2021.Final.xlsx uploaded by ETWD staff 2/1/2021

	FY 2022	Water	Sewer	Recycled Water	Total
Source of Supply	8,259,767	8,259,767			8,259,767
Treatment – Water	39,500	39,500			39,500
Pumping – Water	306,500	306,500			306,500
T&D – Water	592,300	592,300			592,300
Customer Accounts	4,000	4,000			4,000
Pumping – Sewer	324,800		324,800		324,800
Treatment Plant	959,500		959,500		959,500
Outside Treatment	992,000		992,000		992,000
T&D – Sewer	179,100		179,100		179,100
Tertiary Plant	297,500			297,500	297,500
T&D – Recycled	11,000			11,000	11,000
Operations Support	243,200	97,280	126,464	19,456	243,200
Fleet	256,400	102,560	133,328	20,512	256,400
Indirect Operating Costs	43,700	17,480	22,724	3,496	43,700
Administration	208,200	83,280	108,264	16,656	208,200
Information Technology	310,000	124,000	161,200	24,800	310,000
Indirect Administration Costs	1,620,000	648,000	842,400	129,600	1,620,000
Depreciation & Amortization	4,356,900	1,742,760	2,265,588	348,552	4,356,900
Interest Costs	718,000	252,000	66,000	400,000	718,000
Labor Costs	9,066,000	3,626,400	4,714,320	725,280	9,066,000
Total	**28,788,367**	**15,895,827**	**10,895,688**	**1,996,852**	**28,788,367**
Total Expenses (Less Depreciation & Interest)	**23,713,467**	**13,901,067**	**8,564,100**	**1,248,300**	**23,713,467**

APPENDIX 3: CASH FLOW ANALYSIS FOR WATER FUND

Source: 22-23 Budget - Revised 4-21-22.xlsx sent by Jason Hayden 4-21-2022

Water Cash Flow			FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
BEGINNING RESERVE BALANCES			**$4,982,230**	**$5,066,530**	**$4,304,234**	**$3,661,243**	**$3,122,650**	**$2,743,399**
OPERATIONS & MAINTENANCE CASH FLOW								
O&M REVENUES								
Revenues under current rates			**$12,648,868**	**$12,668,184**	**$12,668,184**	**$12,668,184**	**$12,668,184**	**$12,668,184**
Fixed Service Charges			$4,109,512	$4,183,762	$4,183,762	$4,183,762	$4,183,762	$4,183,762
Fire Service Charges / Flood Meters			$121,925	$122,426	$122,426	$122,426	$122,426	$122,426
Unrestricted Commodity Rates			$8,417,431	$8,361,996	$8,361,996	$8,361,996	$8,361,996	$8,361,996
Additional Fixed Revenue Required			**$0**	**$117,145**	**$267,677**	**$423,477**	**$584,731**	**$751,628**
Fiscal Year	**Adjustments**	**Effective Months**						
FY 2023	2.80%	12		$117,145	$117,145	$117,145	$117,145	$117,145
FY 2024	3.50%	12			$150,532	$150,532	$150,532	$150,532
FY 2025	3.50%	12				$155,800	$155,800	$155,800
FY 2026	3.50%	12					$161,253	$161,253
FY 2027	3.50%	12						$166,897
MWD Pass-through Rev Projections			**$0**	**$291,852**	**$758,815**	**$1,254,964**	**$1,838,668**	**$2,393,186**
FY 2023				$291,852	$291,852	$291,852	$291,852	$291,852
FY 2024					$466,963	$466,963	$466,963	$466,963
FY 2025						$496,148	$496,148	$496,148
FY 2026							$583,704	$583,704
FY 2027								$554,519
Total Unrestricted Water Service Rate Revenue			**$12,648,868**	**$13,077,181**	**$13,694,676**	**$14,346,625**	**$15,091,582**	**$15,812,998**
Other Sources of Cash								
Funding from Restricted Reserve for Conservation Program			$200,000	$200,000	$200,000	$200,000	$200,000	$200,000
Property Taxes - General Fund Revenue			$354,391	$272,522	$284,522	$296,522	$308,522	$320,522
Property Taxes (Funds Tier 1 Offset)			$81,609	$175,478	$175,478	$175,478	$175,478	$175,478
Operating Grants & Reimbursements			$0	$400	$400	$400	$400	$400
Miscellaneous Revenue			$55,000	$31,000	$31,000	$31,000	$31,000	$31,000
Cellular Site Lease Revenue (Funds Tier 1 Offset)			$235,000	$235,000	$235,000	$235,000	$235,000	$235,000
Other Non-operating Revenue			$8,000	$8,000	$8,000	$8,000	$8,000	$8,000
Other Income (R-6 Partners)			$122,500	$123,000	$125,000	$125,000	$125,000	$125,000
Investment Income			$40,000	$40,000	$60,000	$60,000	$60,000	$60,000
Subtotal Other Sources of Cash			**$1,096,500**	**$1,085,400**	**$1,119,400**	**$1,131,400**	**$1,143,400**	**$1,155,400**
TOTAL O&M REVENUES (Unrestricted)			**$13,745,368**	**$14,162,581**	**$14,814,076**	**$15,478,025**	**$16,234,982**	**$16,968,398**
O&M REVENUE REQUIREMENTS								
Water Purchased Costs			$8,121,017	$8,405,840	$8,859,434	$9,361,881	$9,948,505	$10,485,502
Other Operating Expenses			$5,540,190	$5,853,760	$6,218,186	$6,410,164	$6,493,278	$6,630,640
Subtotal Other Sources of Cash			**$13,661,207**	**$14,259,600**	**$15,077,620**	**$15,772,045**	**$16,441,783**	**$17,116,142**
OPEB (115 Trust)								
TOTAL O&M REVENUE REQUIREMENTS			**$13,661,207**	**$14,259,600**	**$15,077,620**	**$15,772,045**	**$16,441,783**	**$17,116,142**
OTHER REV REQUIREMENTS								
Restricted Reserves Funding of Conservation Program			$200,000	$200,000	$200,000	$200,000	$200,000	$200,000
Restricted Reserves Funding of RW Conversion Program			$626,317	$626,317	$626,317	$626,317	$626,317	$626,317
Total Transfer to Restricted Reserves			-$826,317	-$826,317	-$826,317	-$826,317	-$826,317	-$826,317
ANNUAL O&M SURPLUS (DEFICIT)			**$84,161**	**-$97,019**	**-$263,544**	**-$294,020**	**-$206,800**	**-$147,744**

Water Cash Flow			FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
CAPITAL REPLACEMENT & REFURBISHMENT PROGRAM								
CAPITAL PROGRAM REVENUE								
Revenue from Existing Capital Charge			$1,259,969	$1,259,969	$1,259,969	$1,259,969	$1,259,969	$1,259,969
Capital Charge Revenue Increase			$0	$115,917	$239,747	$374,721	$521,843	$682,206
Fiscal Year	**Adjustments**	**Effective Months**						
FY 2023	9.20%	12		$115,917	$115,917	$115,917	$115,917	$115,917
FY 2024	9.00%	12			$123,830	$123,830	$123,830	$123,830
FY 2025	9.00%	12				$134,974	$134,974	$134,974
FY 2026	9.00%	12					$147,122	$147,122
FY 2027	9.00%	12						$160,363
Subtotal Capital Charge Revenue			**$1,259,969**	**$1,375,886**	**$1,499,715**	**$1,634,690**	**$1,781,812**	**$1,942,175**
Restricted Reserve Funding of Baker Debt Service			$184,400	$184,200	$184,400	$184,300	$109,300	$26,800
Restricted Reserve Funding of 2022 Rev Bond				$100,000	$100,000	$100,000	$100,000	$100,000
TOTAL CAPITAL REVENUE			**$1,444,369**	**$1,660,086**	**$1,784,115**	**$1,918,990**	**$1,991,112**	**$2,068,975**
CAPITAL EXPENDITURES								
Capital Replacement & Refurbishment Program			$759,968	$760,000	$760,000	$760,000	$760,000	$760,000
Baker WTP Debt Service			$684,262	$684,263	$684,262	$684,263	$684,262	$684,263
2022 Rev Bonds Debt Service				$881,100	$719,300	$719,300	$719,300	$719,300
TOTAL CAPITAL EXPENDITURES			**$1,444,230**	**$2,325,363**	**$2,163,562**	**$2,163,563**	**$2,163,562**	**$2,163,563**
ANNUAL CAPITAL SURPLUS (DEFICIT)			**$138**	**-$665,277**	**-$379,447**	**-$244,573**	**-$172,450**	**-$94,588**
TOTAL ANNUAL RESERVE IMPACT			**$84,299**	**-$762,296**	**-$642,991**	**-$538,593**	**-$379,251**	**-$242,332**
ENDING RESERVE BALANCES			**$5,066,530**	**$4,304,234**	**$3,661,243**	**$3,122,650**	**$2,743,399**	**$2,501,067**

APPENDIX 4: CASH FLOW ANALYSIS FOR RECYCLED WATER FUND

Source: 22-23 Budget - Revised 4-21-22.xlsx sent by Jason Hayden 4-21-2022

Recycled Water Cash Flow			FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
BEGINNING RESERVE BALANCES			**-$440,721**	**-$468,261**	**-$468,261**	**-$482,478**	**-$497,309**	**-$512,876**
OPERATIONS & MAINTENANCE CASH FLOW								
O&M REVENUES								
Revenues under current rates			**$2,183,530**	**$2,173,582**	**$2,173,582**	**$2,173,582**	**$2,173,582**	**$2,173,582**
Fixed Service Charges			$372,955	$380,472	$380,472	$380,472	$380,472	$380,472
Commodity Rates			$1,810,575	$1,793,110	$1,793,110	$1,793,110	$1,793,110	$1,793,110
Additional Fixed Service Revenue Required			**$0**	**$10,653**	**$24,343**	**$38,511**	**$53,176**	**$68,353**
Fiscal Year	**Adjustments**	**Effective Months**						
FY 2023	2.80%	12		$10,653	$10,653	$10,653	$10,653	$10,653
FY 2024	3.50%	12			$13,689	$13,689	$13,689	$13,689
FY 2025	3.50%	12				$14,169	$14,169	$14,169
FY 2026	3.50%	12					$14,664	$14,664
FY 2027	3.50%	12						$15,178
RW Commodity Increase Required			**$0**	**$70,185**	**$160,746**	**$257,776**	**$374,211**	**$484,178**
Year	**Rate Action**							
FY 2023	RW Commodity Increase			$70,185	$70,185	$70,185	$70,185	$70,185
FY 2024	RW Commodity Increase				$90,561	$90,561	$90,561	$90,561
FY 2025	RW Commodity Increase					$97,030	$97,030	$97,030
FY 2026	RW Commodity Increase						$116,436	$116,436
FY 2027	RW Commodity Increase							$109,967
Total Unrestricted RW Service Rate Revenue			**$2,183,530**	**$2,254,420**	**$2,358,670**	**$2,469,869**	**$2,600,969**	**$2,726,113**
Other Sources of Cash								
Restricted Reserves Funding of Debt Service			$393,402	$712,996	$871,350	$825,050	$760,600	$702,900
Recycled Water Meter Capital Charge Funding of Debt			$147,055	$160,584	$175,036	$190,790	$207,961	$226,677
MWD LRP Rebate			$326,625	$345,300	$360,000	$326,000	$287,000	$248,000
MNWD Payment for RW Service to Golf Course			$11,000	$11,000	$11,000	$11,000	$11,000	$11,000
JPIA Refund								
Property Taxes			$76,300	$89,600	$91,000	$94,000	$96,000	$99,000
Subtotal Other Sources of Cash			**$954,382**	**$1,319,480**	**$1,508,386**	**$1,446,840**	**$1,362,561**	**$1,287,577**
TOTAL O&M REVENUES (Unrestricted)			**$3,137,912**	**$3,573,900**	**$3,867,057**	**$3,916,708**	**$3,963,529**	**$4,013,691**
O&M REVENUE REQUIREMENTS								
General & Administrative			$348,600		$418,400	$426,800	$441,400	$451,100
Operations & Maintenance			$778,848		$1,344,300	$1,381,100	$1,412,200	$1,450,400
Other Operating Expenses (Cash Outlays)			$26,000		$26,624	$27,689	$28,797	$29,948
Subtotal O&M			**$1,153,448**	**$1,741,900**	**$1,789,324**	**$1,835,589**	**$1,882,397**	**$1,931,448**
OPEB (115 Trust)								
DEBT SERVICE								
Recycled Phase I			$1,602,958					
Recycled Phase II - SRF			$409,046					
2022 Refunded SRF Bonds				$1,814,800	$2,074,750	$2,078,750	$2,079,500	$2,077,000
2022 Project Financing Bonds				$17,200	$17,200	$17,200	$17,200	$17,200
Subtotal Debt Service			**$2,012,004**	**$1,832,000**	**$2,091,950**	**$2,095,950**	**$2,096,700**	**$2,094,200**
TOTAL O&M REVENUE REQUIREMENTS			**$3,165,452**	**$3,573,900**	**$3,881,274**	**$3,931,539**	**$3,979,097**	**$4,025,648**
ANNUAL O&M SURPLUS (DEFICIT)			**-$27,540**	**$0**	**-$14,217**	**-$14,831**	**-$15,567**	**-$11,958**
TOTAL ANNUAL RESERVE IMPACT			**-$27,540**	**$0**	**-$14,217**	**-$14,831**	**-$15,567**	**-$11,958**
ENDING RESERVE BALANCES			**-$468,261**	**-$468,261**	**-$482,478**	**-$497,309**	**-$512,876**	**-$524,834**

APPENDIX 5A: FY 2022 CASH FLOW FOR WW FUND

Source: 10YearCashFlow.2021.Final.xlsx uploaded by ETWD staff 2/1/2021

Sewer Cash Flow			FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
BEGINNING RESERVE BALANCES			**$10,903,133**	**$10,724,988**	**$10,544,793**	**$10,379,400**	**$10,235,871**	**$10,083,389**
OPERATIONS & MAINTENANCE CASH FLOW								
O&M REVENUES								
Revenues under current rates			**$7,592,774**	**$7,592,774**	**$7,592,774**	**$7,592,774**	**$7,592,774**	**$7,592,774**
Fixed Service Charges			$7,592,774	$7,592,774	$7,592,774	$7,592,774	$7,592,774	$7,592,774
Additional Service Revenue Required			**$456,326**	**$697,799**	**$987,969**	**$1,288,295**	**$1,599,132**	**$1,920,849**
Year	**Adjustments**	**Effective Months**						
FY 2022	6.0%	12	$456,326	$456,326	$456,326	$456,326	$456,326	$456,326
FY 2023	3.0%	12		$241,473	$241,473	$241,473	$241,473	$241,473
FY 2024	3.5%	12			$290,170	$290,170	$290,170	$290,170
FY 2025	3.5%	12				$300,326	$300,326	$300,326
FY 2026	3.5%	12					$310,837	$310,837
FY 2027	3.5%	12						$321,717
Total Sewer Service Rate Revenue			**$8,049,100**	**$8,290,573**	**$8,580,743**	**$8,881,069**	**$9,191,907**	**$9,513,623**
Other Sources of Cash								
Property Taxes - General Fund Revenue			$545,000	$555,900	$567,018	$578,358	$589,926	$601,724
Investment Income			$50,000	$90,000	$112,500	$135,000	$135,000	$135,000
Subtotal Other Sources of Cash			**$595,000**	**$645,900**	**$679,518**	**$713,358**	**$724,926**	**$736,724**
TOTAL O&M REVENUES (Unrestricted)			**$8,644,100**	**$8,936,473**	**$9,260,261**	**$9,594,428**	**$9,916,832**	**$10,250,348**
O&M REVENUE REQUIREMENTS								
O&M Expenses			$8,564,100	$8,862,264	$9,171,249	$9,483,552	$9,814,909	$10,158,203
DEBT SERVICE								
Northline Lift Station			$258,146	$258,146	$258,146	$258,146	$258,146	$258,146
Subtotal Debt Service			**$258,146**	**$258,146**	**$258,146**	**$258,146**	**$258,146**	**$258,146**
TOTAL O&M REVENUE REQUIREMENTS			**$8,822,246**	**$9,120,409**	**$9,429,395**	**$9,741,698**	**$10,073,055**	**$10,416,349**
ANNUAL O&M SURPLUS (DEFICIT)			**-$178,146**	**-$183,936**	**-$169,133**	**-$147,270**	**-$156,222**	**-$166,001**
CAPITAL REPLACEMENT & REFURBISHMENT PROGRAM								
CAPITAL PROGRAM REVENUE								
Revenue from Existing Capital Charge			$1,614,593	$1,614,593	$1,614,593	$1,614,593	$1,614,593	$1,614,593
Capital Charge Revenue Increase			$0	$0	$0	$0	$0	$0
Subtotal Capital Charge Revenue			**$1,614,593**	**$1,614,593**	**$1,614,593**	**$1,614,593**	**$1,614,593**	**$1,614,593**
TOTAL CAPITAL REVENUE			**$1,614,593**	**$1,614,593**	**$1,614,593**	**$1,614,593**	**$1,614,593**	**$1,614,593**
CAPITAL EXPENDITURES								
Capital Replacement & Refurbishment Program			$1,614,593	$1,610,852	$1,610,852	$1,610,852	$1,610,852	$1,610,852
TOTAL CAPITAL EXPENDITURES			**$1,614,593**	**$1,610,852**	**$1,610,852**	**$1,610,852**	**$1,610,852**	**$1,610,852**
ANNUAL CAPITAL SURPLUS (DEFICIT)			**$0**	**$3,741**	**$3,741**	**$3,741**	**$3,741**	**$3,741**
TOTAL ANNUAL RESERVE IMPACT			**-$178,146**	**-$180,195**	**-$165,393**	**-$143,529**	**-$152,481**	**-$162,260**
ENDING RESERVE BALANCES			**$10,724,988**	**$10,544,793**	**$10,379,400**	**$10,235,871**	**$10,083,389**	**$9,921,129**

APPENDIX 5B: FY 2023 CASH FLOW FOR WW FUND

Source: 22-23 Budget - Revised 4-21-22.xlsx sent by Jason Hayden 4-21-2022

Sewer Cash Flow			FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
BEGINNING RESERVE BALANCES			**$10,837,875**	**$10,502,584**	**$9,993,913**	**$9,805,586**	**$9,860,318**	**$10,024,662**
OPERATIONS & MAINTENANCE CASH FLOW								
O&M REVENUES								
Revenues under current rates			**$8,049,721**	**$8,052,766**	**$8,052,766**	**$8,052,766**	**$8,052,766**	**$8,052,766**
Fixed Service Charges			$8,049,721	$8,052,766	$8,052,766	$8,052,766	$8,052,766	$8,052,766
Additional Service Revenue Required			**$0**	**$483,166**	**$888,623**	**$1,179,218**	**$1,433,097**	**$1,622,815**
Year	**Adjustments**	**Effective Months**						
FY 2023	6.00%	12		$483,166	$483,166	$483,166	$483,166	$483,166
FY 2024	4.75%	12			$405,457	$405,457	$405,457	$405,457
FY 2025	3.25%	12				$290,595	$290,595	$290,595
FY 2026	2.75%	12					$253,880	$253,880
FY 2027	2.00%	12						$189,717
Total Sewer Service Rate Revenue			**$8,049,721**	**$8,535,932**	**$8,941,388**	**$9,231,983**	**$9,485,863**	**$9,675,580**
Other Sources of Cash								
Property Taxes - General Fund Revenue			$566,800	$582,400	$594,048	$605,929	$618,048	$630,408
Grants, Rebates, Reimbursements								
Mis. Operating Income				$20,800				
Other Non-Operating Revenue			$52,000	$52,000	$79,000	$85,000	$85,000	$85,000
Investment Income			$10,400	$10,400	$10,400	$10,400	$10,400	$10,400
Subtotal Other Sources of Cash			**$629,200**	**$665,600**	**$683,448**	**$701,329**	**$713,448**	**$725,808**
TOTAL O&M REVENUES (Unrestricted)			**$8,678,921**	**$9,201,532**	**$9,624,836**	**$9,933,312**	**$10,199,310**	**$10,401,389**
O&M USES OF CASH REQUIREMENTS								
Wastewater System Operations & Maintenance Expenses								
General & Administrative			$2,265,900	$2,645,000	$2,717,800	$2,773,800	$2,870,600	$2,931,600
Operations & Maintenance			$6,371,312	$6,516,700	$6,688,500	$6,865,200	$7,040,200	$7,228,400
Other Operating Expenses			$169,000	$167,700	$174,500	$181,500	$188,800	$196,400
Utilization of O&M Cash for Debt Service Activities			$258,200	$0	$0			
O&M Expenses			**$9,064,412**	**$9,329,400**	**$9,580,800**	**$9,820,500**	**$10,099,600**	**$10,356,400**
OPEB (115 Trust)								
TOTAL O&M REVENUE REQUIREMENTS			**$9,064,412**	**$9,329,400**	**$9,580,800**	**$9,820,500**	**$10,099,600**	**$10,356,400**
NET OPERATING CASH CHANGES			**-$385,491**	**-$127,868**	**$44,036**	**$112,812**	**$99,710**	**$44,989**
Replenishment/(Utilization) of Reserve Balances								
Replenish/(Utilize) Working Capital Reserve			-$385,491				$99,710	$44,989
Replenish/(Utilize) Rate Stabilization Reserve				-$127,868	$44,036	$112,812		
Replenish/(Utilize) Operations Reserve								
NET IMPACT ON RESERVES BALANCES FROM O&M			**-$385,491**	**-$127,868**	**$44,036**	**$112,812**	**$99,710**	**$44,989**

Sewer Cash Flow			FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
BEGINNING RESERVE BALANCES			**$10,837,875**	**$10,502,584**	**$9,993,913**	**$9,805,586**	**$9,860,318**	**$10,024,662**
CAPITAL REPLACEMENT & REFURBISHMENT PROGRAM								
CAPITAL PROGRAM REVENUE								
Utilization of O&M Cash for Debt Service Activities			$258,200	$0	$0	$0	$0	$0
Revenue from Existing Capital Charge			$1,664,145	$1,615,169	$1,615,169	$1,615,169	$1,615,169	$1,615,169
Capital Charge Revenue Increase			$0	$130,829	$287,968	$459,251	$583,716	$715,649
Fiscal Year	**Adjustments**	**Effective Months**						
FY 2023	8.10%	12		$130,829	$130,829	$130,829	$130,829	$130,829
FY 2024	9.00%	12			$157,140	$157,140	$157,140	$157,140
FY 2025	9.00%	12				$171,282	$171,282	$171,282
FY 2026	6.00%	12					$124,465	$124,465
FY 2027	6.00%	12						$131,933
Subtotal Capital Charge Revenue			**$1,664,145**	**$1,745,998**	**$1,903,138**	**$2,074,420**	**$2,198,885**	**$2,330,818**
TOTAL CAPITAL REVENUE			**$1,922,345**	**$1,745,998**	**$1,903,138**	**$2,074,420**	**$2,198,885**	**$2,330,818**
CAPITAL EXPENDITURES								
Annual Projected Cash Outlays			$1,613,945	$1,614,000	$1,614,000	$1,614,000	$1,614,000	$1,614,000
TOTAL CAPITAL EXPENDITURES			**$1,613,945**	**$1,614,000**	**$1,614,000**	**$1,614,000**	**$1,614,000**	**$1,614,000**
DEBT SERVICE PAYMENTS								
2010 SRF Loan Payments			$258,200	$0	$0	$0	$0	$0
Principal Payments			*$192,600*					
Interest Expense			*$65,600*					
2022 Revenue Bonds (SRF Refunded)			$0	$239,000	$247,750	$244,750	$246,500	$247,750
Principal Payments				*$145,000*	*$160,000*	*$165,000*	*$175,000*	*$185,000*
Interest Expense				*$94,000*	*$87,750*	*$79,750*	*$71,500*	*$62,750*
2022 Revenue Bonds (New Money)			$0	$273,800	$273,751	$273,751	$273,751	$273,751
Principal Payments				*$0*	*$0*	*$0*	*$0*	*$0*
Interest Expense				*$273,800*	*$273,751*	*$273,751*	*$273,751*	*$273,751*
TOTAL DEBT SERVICE PAYMENTS			**$258,200**	**$512,800**	**$521,501**	**$518,501**	**$520,251**	**$521,501**
ANNUAL CAPITAL SURPLUS (DEFICIT)			**$50,200**	**-$380,802**	**-$232,363**	**-$58,081**	**$64,634**	**$195,317**
TOTAL ANNUAL RESERVE IMPACT			**-$335,291**	**-$508,671**	**-$188,327**	**$54,731**	**$164,345**	**$240,306**
ENDING RESERVE BALANCES			**$10,502,584**	**$9,993,913**	**$9,805,586**	**$9,860,318**	**$10,024,662**	**$10,264,968**

APPENDIX 6: RESIDENTIAL HOUSEHOLD DATA

Source: Census data B25124: TENURE BY HOUSEHOLD SIZE BY UNITS IN STRUCTURE
https://data.census.gov/cedsci/table?q=B25124%3A%20TENURE%20BY%20HOUSEHOLD%20SIZE%20BY%20UNITS%20IN%20STRUCTURE&g=1600000US0648256&y=2019&d=ACS%205-Year%20Estimates%20Detailed%20Tables
2019 ACS 5 Year Estimates Detailed Tables

Aliso Viejo		
Density Analysis	**SFR**	**MFR**
Number of people	38,285	12,239
Number of households	12,506	6,009
Household density	3.06	2.04

Laguna Hills		
Density Analysis	**SFR**	**MFR**
Number of people	24,935	6,683
Number of households	8,213	2,824
Household density	3.04	2.37

Lake Forest		
Density Analysis	**SFR**	**MFR**
Number of people	65,338	18,389
Number of households	21,072	8,266
Household density	3.10	2.22

Mission Viejo		
Density Analysis	**SFR**	**MFR**
Number of people	83,861	10,919
Number of households	28,702	4,865
Household density	2.92	2.24

ETWD (excl. Laguna Woods)		
Density Analysis	**SFR**	**MFR**
Number of people	212,419	48,230
Number of households	70,493	21,964
Household density	**3.01**	**2.20**

Density Analysis	Total Laguna Woods
Number of people	15,720
Number of households	11,003
Household density	**1.43**