EL TORO WATER DISTRICT

Water, Recycled Water, and Wastewater Rate Study

Final Report / April 16, 2018

RAFTELIS

RAFTELIS

April 16, 2018

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

Subject: Water, Recycled Water and Wastewater Rate Study Report

Dear Mr. Cafferty:

As part of the annual cost of service and rate update process, El Toro Water District (ETWD or District) engaged Raftelis Financial Consultants, Inc. 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) 2018-19. The updated rates, scheduled to be effective on July 1, 2018, reflect projected changes in net revenue requirements for each enterprise and projected water sales for FY 2018-19.

This *Water, Recycled Water and Wastewater Rate 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 course of the study. If we can be of further assistance, please call me at 626-583-1894 or Khanh Phan at 626-233-6762.

Sincerely,

Sudhir Pardiwala
Executive Vice President

Khanh Phan
Sr. Consultant

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GLOSSARY

AF	Acre foot / acre feet
AWWA	American Water Works Association
CCF	100 cubic feet = 748 gallons
CII	Commercial / Industrial / Institutional (i.e. Commercial and Public Authority)
COS	Cost of Service
DF	Drought Factor (see Section 4 for details)
EDU	Equivalent dwelling unit
ET_0	reference Evapotranspiration (see Section 4 for details)
ETAF	ET Adjustment Factors (see Section 4 for details)
FY	Fiscal year
GPCD	Gallons per capita per day
IRR	Irrigation
IWB	Indoor Water Budget (see Section 4 for details)
M1 Manual	M1 Manual, Principles of Water Rates, Fees and Charges, Sixth Edition published by AWWA
MFR	Multi-Family Residential
MWD	Metropolitan Water District of Southern California
MWDOC	Municipal Water District of Orange County
O&M	Operations & Maintenance
OWB	Outdoor Water Budget (see Section 4 for details)
R&R	Replacement and Refurbishment
Raftelis	Raftelis Financial Consultants, Inc.
RW	Recycled Water
SFR	Single Family Residential
SQ FT	Square feet
TWB	Total Water Budget = Indoor Water Budget + Outdoor Water Budget

V_{indoor} / $V_{outdoor}$	Indoor Variance / Outdoor Variance (see Section 4 for details)
WB	Water Budget
WRP	Water Recycling Plant

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1. EXECUTIVE SUMMARY

1.1 BACKGROUND OF THE STUDY

The District engaged Raftelis Financial Consultants, Inc. (Raftelis) to conduct the Water, Recycled Water (RW) and Wastewater Rate Study (Study) to develop rates for all three enterprises that are equitable and in compliance with Proposition 218. This *Water, Recycled Water and Wastewater Rate Study Report 2018* (Report) summarizes the key findings and recommendations related to the development of the respective rates.

The District's current water and wastewater rate structure consists of the following components to ensure that rates are charged equitably to all customers, provide adequate revenues to fund operating and capital costs, and are simple to administer and implement while continuing to promote water efficiency and conservation:

- 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 (i.e., Recycled Water expansion) programs
    - Capital Replacement and Refurbishment (R&R) Charges by meter size to pay for capital replacement and refurbishment of the existing water system
    - Monthly Service Charges for Fire Services to recover a portion of operating costs
- Wastewater (WW)
    - O&M Charges (by dwelling units for residential customers and by water usage for non-residential customers) by customer classes
    - Capital R&R Charges by meter size to pay for capital R&R 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 2019, effective July 1, 2018.

Table 1-1: FY 2019 Proposed Monthly Water Service Charges

Meter Size	FY 2018 Rates	FY 2019 Rates	$ Change	% Change
5/8-in	$11.80	$12.96	$1.16	9.8%
3/4-in	$15.82	$17.37	$1.55	9.8%
1-in	$23.85	$26.20	$2.35	9.9%
1 1/2-in	$43.92	$48.25	$4.33	9.9%
2-in	$84.07	$92.36	$8.29	9.9%

1.2.2 Capital R&R Charges

The District will retain the current Capital R&R Charges.

Table 1-2: FY 2019 Proposed Monthly Water Capital R&R Charges

Meter Size	FY 2018 Rates	FY 2019 Rates	$ Increase	% Increase
5/8-in	$4.66	$4.66	$0.00	0%
3/4-in	$4.66	$4.66	$0.00	0%
1-in	$7.78	$7.78	$0.00	0%
1 1/2-in	$18.91	$18.91	$0.00	0%
2-in	$47.47	$47.47	$0.00	0%

1.2.3 Commodity Rates

The District has decided not to increase the Commodity Rates. Rather, it will fund the increase in the water supply costs with restricted reserves and retain the FY 2018 rates.

Table 1-3: FY 2019 Proposed Water Commodity Rates

Tier	FY 2018	FY 2019	$ Increase	% Increase
Tier 1 - Essential Use	$2.52	$2.52	$0.00	0%
Tier 2 - Efficient Use	$2.91	$2.91	$0.00	0%
Tier 3 - Inefficient Use	$6.08	$6.08	$0.00	0%
Tier 4 - Excessive Use	$7.82	$7.82	$0.00	0%
Uniform - Commercial Use	$2.89	$2.89	$0.00	0%

1.3 PROPOSED WASTEWATER RATES

1.3.1 Service Charges

There is little change in the relative distribution of costs in the Wastewater Enterprise, therefore the rates will be updated to account for any necessary adjustments to meet the revenue requirements projected for FY 2019. The revenue adjustment will be applied uniformly to the rates for all Wastewater classes.

Table 1-4 provides the proposed rates for FY 2019 with a comparison to the FY 2018 rates. Note that, due to rounding, the percent increase for each class varies slightly from the overall increase of 2.83 percent.

Table 1-4: FY 2019 Proposed Wastewater Service Charges

Customer Class	FY 2018 Rates	FY 2019 Rates	$ Increase	% Increase
Residential Unrestricted	$23.63 / EDU	$24.30 / EDU	$0.67	2.84%
Multi-Family Restricted	$18.74 / EDU	$19.28 / EDU	$0.54	2.88%
Multi-Family Unrestricted	$22.28 / EDU	$22.92 / EDU	$0.64	2.87%
Animal Kennel/Hospital	$3.88 / ccf	$3.99 / ccf	$0.11	2.84%
Car Wash	$3.86 / ccf	$3.97 / ccf	$0.11	2.85%
Department/Retail Store	$3.88 / ccf	$3.99 / ccf	$0.11	2.84%
Dry Cleaners	$3.40 / ccf	$3.50 / ccf	$0.10	2.94%
Golf Course/Camp/Park	$3.39 / ccf	$3.49 / ccf	$0.10	2.95%
Health Spa	$3.87 / ccf	$3.98 / ccf	$0.11	2.84%
Hospital/Convalescent Home	$3.40 / ccf	$3.50 / ccf	$0.10	2.94%
Hotel	$5.87 / ccf	$6.04 / ccf	$0.17	2.90%
Market	$7.70 / ccf	$7.92 / ccf	$0.22	2.86%
Mortuary	$7.67 / ccf	$7.89 / ccf	$0.22	2.87%
Nursery/Greenhouse	$3.44 / ccf	$3.54 / ccf	$0.10	2.91%
Professional/Financial Office	$3.88 / ccf	$3.99 / ccf	$0.11	2.84%
Public Institution	$3.82 / ccf	$3.93 / ccf	$0.11	2.88%
Repair/Service Station	$3.87 / ccf	$3.98 / ccf	$0.11	2.84%
Restaurant	$3.66 / ccf	$3.77 / ccf	$0.11	3.01%
Schools	$4.01 / ccf	$4.13 / ccf	$0.12	2.99%
Theater	$3.88 / ccf	$3.99 / ccf	$0.11	2.84%
Warehouse/Storage	$3.07 / ccf	$3.16 / ccf	$0.09	2.93%
Basic Commercial	$3.40 / ccf	$3.50 / ccf	$0.10	2.94%

1.3.2 Capital R&R Charges

The Wastewater Enterprise will also retain its current Capital R&R Charges with no proposed increase.

Table 1-5: FY 2019 Proposed Monthly Wastewater Capital R&R Charges

Customer Classes	Current Capital R&R Charges	FY 2019 Capital R&R Charges	$ Increase	% Increase
Residential				
Residential Unrestricted	$4.93 / EDU	$4.93 / EDU	$0.00	0.0%
Multi-Family Restricted	$3.91 / EDU	$3.91 / EDU	$0.00	0.0%
Multi-Family Unrestricted	$4.65 / EDU	$4.65 / EDU	$0.00	0.0%
Non-Residential				
5/8"	$4.34 / month	$4.34 / month	$0.00	0.0%
3/4"	$7.34 / month	$7.34 / month	$0.00	0.0%
1"	$13.55 / month	$13.55 / month	$0.00	0.0%
1 1/2"	$24.07 / month	$24.07 / month	$0.00	0.0%
2"	$70.96 / month	$70.96 / month	$0.00	0.0%
Public Authority				
1"	$4.93 / month	$4.93 / month	$0.00	0.0%
1 1/2"	$24.65 / month	$24.65 / month	$0.00	0.0%
2"	$39.71 / month	$39.71 / month	$0.00	0.0%

1.4 PROPOSED RECYCLED WATER RATES

With the completion of the Recycled Water Expansion Project, all RW customers (existing and converted customers) are now supplied with higher quality tertiary RW, and are subject to the corresponding rates that support the annual cost of providing tertiary RW. The existing RW rate is $2.62/ccf, which is approximately 90 percent of the Tier 2 potable water rate. There is no proposed increase in the RW rate for FY 2019. All RW customers connected to the new recycled water distribution system will be assessed Monthly Service Charges (Table 1-6) and Capital R&R Charges (Table 1-7), the same as potable meters to recover the customer service, meter service, a portion of capacity and other RW related fixed costs and to pay for capital R&R of the expanded RW system.

Table 1-6: FY 2019 Proposed Monthly Recycled Water Service Charges

Meter Size	FY 2018 Rates	FY 2019 Rates	$ Change	% Change
5/8-in	$11.80	$12.96	$1.16	9.8%
3/4-in	$15.82	$17.37	$1.55	9.8%
1-in	$23.85	$26.20	$2.35	9.9%
1 1/2-in	$43.92	$48.25	$4.33	9.9%
2-in	$84.07	$92.36	$8.29	9.9%

Table 1-7: FY 2019 Proposed Monthly Recycled Water Capital R&R Charges

Meter Size	FY 2018 Rates	FY 2019 Rates	$ Increase	% Increase
5/8-in	$4.66	$4.66	$0.00	0%
3/4-in	$4.66	$4.66	$0.00	0%
1-in	$7.78	$7.78	$0.00	0%
1 1/2-in	$18.91	$18.91	$0.00	0%
2-in	$47.47	$47.47	$0.00	0%

1.5 PROPOSED FIRE SERVICE CHARGES

The District proposes to increase the Monthly Fire Service Charges by 9.9%, increasing revenue by $10,000. As shown in Table 1-8, all Fire Service customers pay $7.67 a month. With the rate increase, all Fire Service customers will pay $8.43 a month.

Table 1-8: Proposed Monthly Fire Service Charges

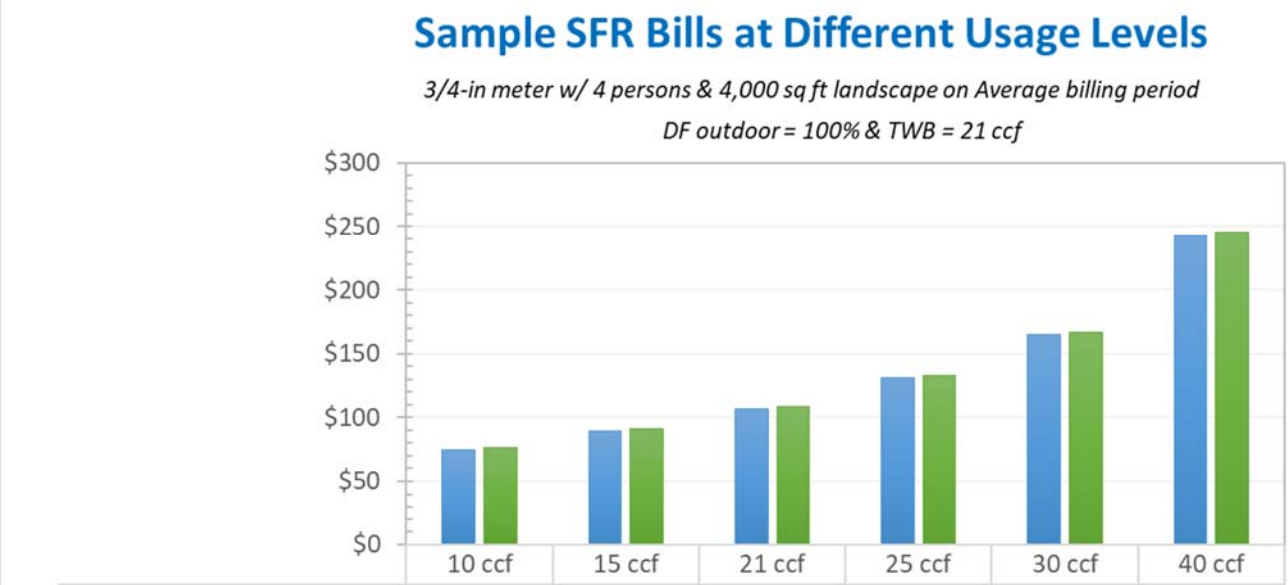
Meter Size	Quantity	Current Rate	Annual Revenue	Proposed Rate	Annual Revenue
4”	26	$7.67	$9,572	$8.43	$10,521
6”	89	$7.67	$49,149	$8.43	$54,019
8”	52	$7.67	$38,289	$8.43	$42,083
10”	4	$7.67	$3,682	$8.43	$4,046
	171		**$100,692**		**$110,669**

1.6 CUSTOMER IMPACT ANALYSIS

Figure 9-1 shows a breakdown of water and wastewater bills at various water usage levels for a single family residential user with 4 occupants and 4,000 sq. ft. landscape area serviced by a ¾-in meter. The combined water and wastewater bill increase would be $2.22 per month, resulting from increases in water and

wastewater monthly fixed service charges. Note that the impacts for recycled water are not shown because residential users do not purchase recycled water.

Figure 1-1: SFR Total Monthly Bill at Different Usage Levels



	10 ccf	15 ccf	21 ccf	25 ccf	30 ccf	40 ccf
Current Water + WW Bills	$74.63	$89.18	$106.64	$130.96	$164.84	$243.04
Proposed Water + WW Bills	$76.85	$91.40	$108.86	$133.18	$167.06	$245.26
Combined Bill Impacts	$2.22	$2.22	$2.22	$2.22	$2.22	$2.22
% Bill Impacts	3.0%	2.5%	2.1%	1.7%	1.3%	0.9%

2. INTRODUCTION

2.1 DISTRICT BACKGROUND

The El Toro Water District (District), located within 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 34000, for the purposes of providing water and wastewater services to the service area. The District is governed by a publicly elected Board of Directors. The District is nearly built out and encompasses the entirety of 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. Constructed in phases since 1960, the District's water system is relatively modern. It contains 6 reservoirs with a combined capacity of 287 million gallons, over 180 miles of water lines, and 8 booster pump stations with 12 pressure zones to deliver water to approximately 9,800 metered water accounts. The District also participated in a five-agency collaboration to fund and construct a local water treatment plant (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 114 miles of collection system pipeline, 3,200 manholes, and 11 pump stations which pump to the District's treatment plant with a rated capacity of 6 million gallons per day. Much of the District's effluent is reused through RW sales. The District completed its Water Recycling Plant (WRP) upgrades to produce higher quality tertiary RW in FY 2015. To make RW available to more customers, the District increased its RW distribution system by adding 19 miles of RW distribution pipeline. The Phase I distribution expansion enabled RW sales to 210 additional irrigation accounts. The conversion of the 210 accounts to RW was completed in June 2016. The District is currently constructing a Phase II RW Project that will add 5 miles of RW distribution pipeline and 65 recycled water meters. The Phase II Project has increased FY 2019 RW estimated sales to 1,485 AF.

2.2 STUDY BACKGROUND AND OBJECTIVES

As part the annual cost of service and rate update process, the District engaged Raftelis to conduct the Water, Recycled Water (RW) and Wastewater Rate Study (Study) to develop rates for all three enterprises that are equitable and in compliance with Proposition 218.

The major objectives of the study include the following:

1. Determine the revenue requirements from water, wastewater, and recycled water rates for FY 2019 to meet operating and capital expenses
2. Update the water rates to meet the District's goals and objectives, including defensibility, affordability for essential use and promoting efficiency and conservation
3. Update the recycled water rates
4. Update the wastewater rates
5. Conduct customer impact analyses for the proposed water, recycled water, and wastewater rates

This *2018 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 provided 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 set forth in Water Code Section 370 et seq. which governs 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 and 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 property

The rates developed in this Rate Study use a methodology to establish an equitable system of fixed and variable charges that recover the cost of providing service and fairly apportion 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 where 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 findings and determinations for individual customers establishes a standard for efficient usage and then establishes a budget for each individual customer. That defines how much water is considered efficient. 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" have 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 the way that 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 requirement of Proposition 218.

The recent Appellate case of Griffith v. Pajaro Valley Water Management Agency (2013) California Court of Appeal, Sixth District has provided much guidance on several important Proposition 218 issues, including the issue of proportionality. In Pajaro, the Appellate Court held in part as follows:

1. That Pajaro's costs of using supplemental water along the coast to prevent salt water 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.

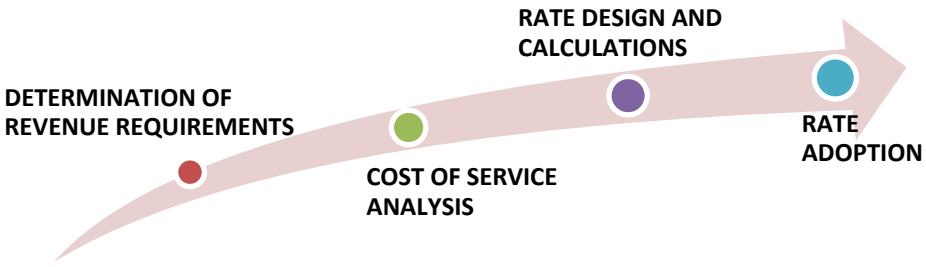
Under Item 2 noted above, utilities can develop rates by customer class and meet the requirements of Proposition 218, as opposed to the strict interpretation which would require cost proportionality for each parcel receiving service. This was another major clarification of Proposition 218 since cost 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 Prop 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 the overall water resources. In the District's case, recycled water adds a water resource that provides benefit by freeing up potable water for inefficient users 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 recycled water system development to Tiers 3 and 4 residential/irrigation usage as well as to commercial use at a proportional rate based on the assumption that 10 percent of CII water use is non-essential. See Section 6.2.1.2 for further detail.

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." To develop utility rates that comply with Proposition 218 and industry standards while meeting other emerging goals and objectives of the utility, there are four major steps:

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 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 water 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 respective customer classes according to the 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. and 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 clearly 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, at a public hearing, the agency shall consider all written protests against the proposed rates. If there is no majority protest, the agency can officially adopt the new rates.

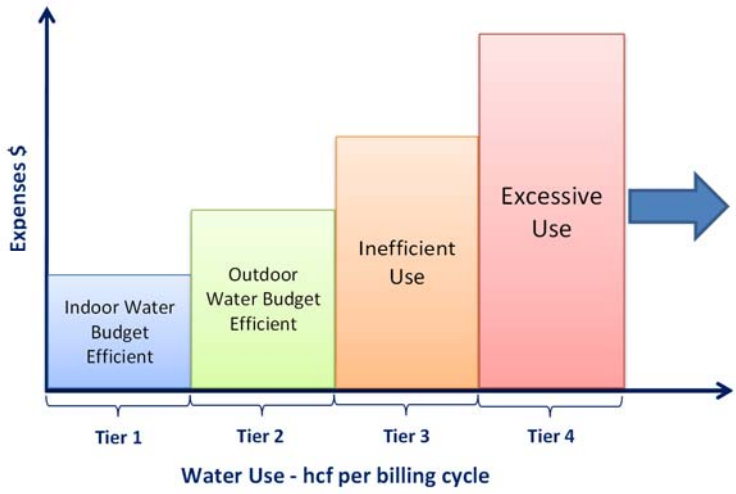
3. WATER BUDGET AND TIER DEFINITIONS

Since July 1, 2010, the District has implemented a 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 is described here for completeness of this report.

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 shows an example of 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



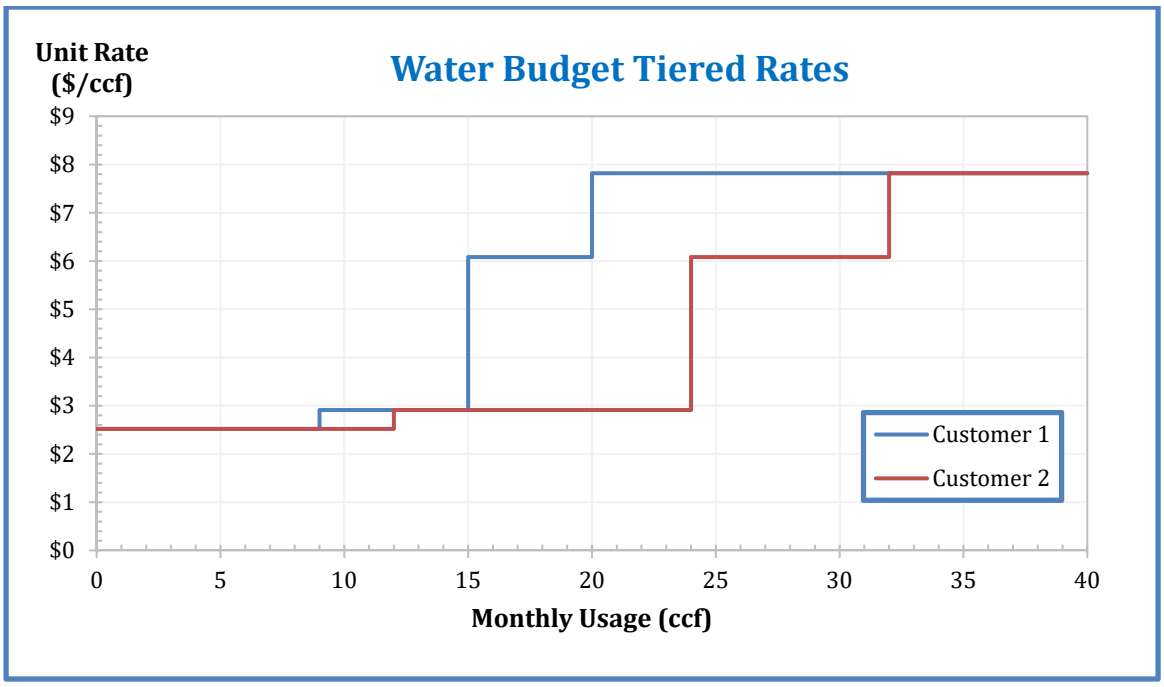
It is worth noting that water budget rate structures are customized for each customer, which results in different tier breaks for different customers. For example, as illustrated by Figure 3-2[1], which examines the usage of two customers of a hypothetical water utility. The first 9 units consumed by Customer 1 is charged at Tier 1 rate, whereas Customer 2 has 12 units at Tier 1 rate ($2.52/ccf) for indoor use. The next 6 units (10 – 15 units) consumed by Customer 1 is reserved for outdoor use, which is charged at Tier 2 rate ($2.91/ccf), and any usage exceeding 20 units[2] will be deemed excessive and charged at the Tier 4 Rate ($7.82/ccf). Similarly, for Customer 2, Tier 2 spans from 13-24 units, and usage exceeding 32 units will be charged at Tier 4 Rate

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

[2] Tier 3 = 30% of Total Water Budget (TWB) whereas TWB = Indoor WB + Outdoor WB

($7.82/ccf). Customer 2, with larger indoor and outdoor water budget (or allotment), represents a residential customer with larger family and bigger irrigated landscape area than Customer 1.

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



Similar to 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 a 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[4], Section 10608 of the Water Code, established the provisional standard for indoor residential water use at 55 gallons per capita per day.

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

[4] 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.

- Household Size – Number of residents per dwelling unit. The 2010 census lists the average household size at 2.91 persons, which includes single and multi-family housing. Typically, single family household size is greater than 3 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 as follows based on customer characteristics.
    - Single Family: Household Size = 4 persons
    - Apartment: Household Size = 2 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 or 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 the indoor water budget for each billing cycle.
- 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 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 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 evapotranspiration (ET) Adjustment Factor. The irrigable landscape area, measured as square footage of landscape surface on a customer's property, is estimated using the Orange County Assessors' parcel data - 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 (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 outdoor water budget is as follows:

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

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.
        - $$\text{Landscape Area (sq ft)} = 70\% * \left(\text{Lot Size} - \frac{\text{Building Size}}{\text{Number of Floors}} \right)$$
    - 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.
- $DF_{outdoor}$ – 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.
- $V_{outdoor}$ – 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 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

The table below 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: FY 2019 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 – Functional*	OWB	ETAFNew = 70%; ETAFExisting = 80%; DFoutdoor = 100%
Irrigation – Recreational**	OWB	$ETAF_{Recreational}$ = 100%; $DF_{outdoor}$ = 100%

Irrigation – 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 below. The main difference between Single Family/Multi-Family and Irrigation accounts is that Irrigation accounts do not have a Tier 1 allotment which 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 subject to the District's policy decisions. The tier definitions are based on Raftelis usage and impact analysis and numerous policy discussions with the Board. The first 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 usage up to 30 percent of the total water budget and usage exceeding 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 a 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 cut back by 10 percent, we define indoor and efficient outdoor (or process) use at 90 percent of total use and the 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 usage defined here.

4. PASS-THROUGH WATER SUPPLY COSTS

The District purchases water from the Municipal Water District of Orange County (MWDOC), a member agency of Metropolitan Water District of Southern California (MWD). MWD rates are scheduled to increase in January 2019. The MWD rate increases, along with MWDOC's other costs, will be included in the blended rates charged to the District. As shown in Table 4-1, total combined water supply costs from the MWDOC purchased water and the Baker Treatment Plan costs are partially offset by capital charge revenue funding shown in Line 6. Dividing the total costs by the projected water sales (Line 8) results in the unit rate shown in Line 9. See Appendix 1 for detailed breakdown of water supply costs. Table 4-2 and Table 4-3 show that projected water supply rates remain at the current supply rate.

Table 4-1: Water Supply Revenue Requirements

Line #	Revenue Requirements	Budget FY 2019
1	MWDOC Fixed Costs	$0.706M
2	MWDOC Variable Costs	$4.268M
3	Baker Raw Water Cost	$2.394M
4	Baker O&M Annual Cost	$0.643M
5	Plus Baker Capital Cost (Debt Service)	$0.684M
6	Less Capital Charge Revenue Funding	-$0.600M
7	**Total Water Supply Costs**	**$8.095M**
8	Projected Water Sales	3,136,321 ccf
9	**Water Supply Unit Rate (Line 7/Line 8)**	**$2.58 /ccf**

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

Fiscal Year (FY)	Water Supply Unit Rate $ / hundred cubic feet (ccf)
FY 2018	$2.58 / ccf
FY 2019	$2.58 / ccf
Increase / Change	$0.00 / ccf

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

Tiers	Descriptions	Current FY 2018	Proposed FY 2019
Tier 1 – Indoor Use	MWDOC + Baker Blended	$2.58	$2.58
Tier 2 – Outdoor Use	MWDOC + Baker Blended	$2.58	$2.58
Tier 3 – Inefficient Use	MWDOC + Baker Blended	$2.58	$2.58
Tier 4 – Excessive Use	MWDOC + Baker Blended	$2.58	$2.58
Uniform – CII Use	MWDOC + Baker Blended	$2.58	$2.58

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 2. These revenues include cell-site leases, property taxes, investment revenues, and others. The District began making annual debt payments totaling $0.684M annually for its contribution to the Baker Treatment Plant's construction. This Debt Service (Line 3) is added to the O&M expenses. Next, the District will use reserves to offset some of the operating expenses and reduce the revenue required from rates for FY 2019 (Line 4). The District will continue to fund Recycled Water Restricted Reserve and the Conservation Program using FY 2018 rates. The total revenue required from rates, excluding Fire Service, is shown in Line 5.

Details of the figures presented in Table 5-1can 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 long-term financial needs of the District. Raftelis based its determination of the revenue requirements and cost of service for FY 2019 on the Financial Plan developed by District Staff.

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

Line #	Water Operating Revenue Requirements	FY 2019 Budgeted	Notes
1	Total Water O&M Expenses	$13.273M	
2	Less (-) Non-Operating Revenues	-$1.811M	Appendix 3
3	Plus (+) Debt Service	$0.684M	Appendix 3
4	Plus (+) Operating Reserve Funding	-$0.481M	Appendix 3
5	**Total Rev Req from Rates, excluding Fire SC[6]**	**$11.665M**	

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 R&R revenue requirement from rates. The District has chosen to offset a portion of the total capital costs through restricted reserve funding in order to not increase the revenue required from rates in FY 2019.

[5] May include some rounding errors

[6] Total Revenue Requirement does not include restricted reserve funding of Recycled Water and Conservation.

Table 5-2: Water Capital Revenue Requirements

Line #	Water Capital Revenue Requirements	Water
1	Water Capital Expenditures	$785,000
2	Plus (+) Baker Capital Funding	$600,000
3	Less (-) Restricted Reserve Funding	($100,000)
4	Total Water Capital R&R Revenue Requirement	$1,285,000
5	Current Water Capital R&R Revenues	$1,285,000
6	**% Rate Increase**	**0%**

5.2 COST OF SERVICE ANALYSIS

To allocate costs appropriately to the different usage classes and determine the cost of service rates, revenue requirements are allocated to the following cost causation categories[7] consistent with the Base Extra 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. Base fixed costs: fixed costs associated with operating and maintaining water system 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 water system to deliver water to meet peak demand.
4. RW Funding: The use of RW for non-potable needs releases potable supply for inefficient and excessive use. RW 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 for debt services used to finance the RW expansion project completed in FY 2015 as well as the Phase II RW expansion currently under construction and proposed to be in service in FY 2019.
5. Conservation: Program cost to promote water conservation.
6. Revenue Offsets: Property taxes and cell tower lease revenues to provide incentive for indoor/domestic use.

The cost causation categories 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.

Commodity Rate Components

[7] See Appendix 6 for details about cost allocations

- Water supply: to recover imported water supply costs.
- Delivery / Peaking: to recover remaining peaking costs associated with operating and maintaining water system 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 help encourage water conservation.
- Revenue offsets: A portion of the property taxes and cell tower lease revenues to provide incentive for indoor/domestic use.

Capital R&R Charges:

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

Table 5-3 below summarizes the unrestricted revenue requirement for each cost category. The Total Cost of Service (Line 7) is divided among the various cost components (Lines 1-6). The District Board directs District staff to provide a revenue offset for essential use provided by non-rate revenues (Line 5). The revenue requirements for water supply, base fixed, and peaking were determined using COS allocation methods recommended by the AWWA. Details of how the revenue requirements for these three cost causation categories were determined can be found in Appendix 6.

Table 5-3: Unrestricted Revenue Requirements by Cost Categories

Line #	Revenue Requirements	FY 2019	Monthly Service Charges	Unrestricted Water Commodity Rates	Water Capital R&R
1	Water Supply	$8,095,230		$8,095,230	
2	Billing & CS	$475,182	$475,182		
3	Base Fixed	$2,104,354	$2,104,354		
4	Peaking	$1,395,669	$669,669	$726,000	
5	Rev Offset	($405,682)		($405,682)	
6	Capital R&R	$1,285,000			$1,285,000
7	**Net Revenue Requirement**	**$12,949,753**	**$3,249,205**	**$8,415,548**	**$1,285,000**

The total revenue requirement for each cost causation category is then assigned to a rate component. For example, it is appropriate that the entirety of the water supply revenue requirement is assigned to the water supply rate component. The Revenue Offset is assigned entirely to the water supply component.

The AWWA M1 Manual describes a cost of service approach to setting water rates which 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 costs associated with serving customers irrespective of the amount or rate of water they use, such as billing and customer service costs. These types of costs are referred to as customer-related costs and typically are costs

that would be recovered through a fixed monthly service charge. These costs are usually recovered on a per-customer basis or some other non-consumptive basis. 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, and these costs also 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 as 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. To balance between affordability and revenue stability, 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. 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, and 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 5-2):

- The monthly service charge includes customer service, fixed base costs and a portion of the peaking costs (shown in Table 5-4 and Table 5-5).
- 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 5-4: 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 & Customer 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

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 were used to determine the capacity of the meters. For example, a 2-inch meter, on the average, used 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 is used to calculate the equivalent meter units to recover the meters & capacity costs (based on ETWD Cost of Service Study Report for Water, Wastewater and Recycled Water prepared in April 2009).

Table 5-5: Proposed Monthly Service Charges Calculations

Meter Size	Water Accounts A	Bills / year B = A x 12	Meter Capacity Ratios C	EMUs[8] D = B x C
5/8"	2,384	28,608	1.00	28,608
¾"	4,856	58,272	1.50	87,408
1"	444	5,328	2.50	13,320
1 ½"	683	8,196	5.00	40,980
2"	1,201	14,412	10.00	144,120
Total	**9,568**	**114,816 Bills**		**314,436 EMUs**

	Billing & Customer Service	Meters & Capacity
Revenue Requirements *(Table 5-3)*	$475,182	$2,774,023
Units of Service *(Table 5-5)*	114,816 bills / yr	314,436 EMUs / yr
Unit Cost of Service	**$4.14**	**$8.82**

Meter Size	Billing & CS A	Meters & Capacity B[9]	Proposed FY 2019 C = A + B	Current FY 2018 D	$ Change E = C – D	% Change F = E / D
5/8"	$4.14	$8.82	**$12.96**	$11.80	$1.16	9.8%
¾"	$4.14	$13.23	**$17.37**	$15.82	$1.55	9.8%
1"	$4.14	$22.06	**$26.20**	$23.85	$2.35	9.8%
1 ½"	$4.14	$44.11	**$48.25**	$43.92	$4.33	9.8%
2"	$4.14	$88.22	**$92.36**	$84.07	$8.29	9.8%

[8] EMUs = equivalent meter units

[9] $8.82 x Meter Capacity Ratio for each meter size

5.3 PROPOSED RATES

As discussed above, the District has determined that it will not increase its Capital R&R charges in FY 2019. In addition, the District has also chosen to offset any increases in water supply costs with restricted reserve funds. As a result, the District will not be increasing either the Capital R&R Charges or the Commodity Rates in FY 2019.

5.3.1 Monthly Service Charges

Based on the revenue requirements as shown in Table 5-3 and the Monthly Service Charge calculations in Table 5-5, the proposed Monthly Service Charges for FY 2019 are shown below.

Table 5-6: Proposed Monthly Water Service Charges

Meter Size	Billing & CS (A)	Meters & Capacity (B)	Proposed FY 2018 (C = A+B)	Current FY 2017 (D)	$ Change (E = C – D)	% Change (F = E/D)	Water Accounts (G)
5/8"	$4.14	$8.82	$12.96	$11.80	$1.16	9.8%	2,384
¾"	$4.14	$13.23	$17.37	$15.82	$1.55	9.8%	4,856
1"	$4.14	$22.06	$26.20	$23.85	$2.35	9.8%	444
1 ½"	$4.14	$44.11	$48.25	$43.92	$4.33	9.8%	683
2"	$4.14	$88.22	$92.36	$84.07	$8.29	9.8%	1,201
Projected Revenues[10]	**$475,338**	**$2,773,749**	**$3,249,087**	**$2,958,095**	**$290,992**	**9.8%**	**9,568**

5.3.2 Capital R&R Charges

As discussed above, the District will retain the current Capital R&R Charges.

Table 5-7: Proposed Monthly Water Capital R&R Charges

Meter Size	Current FY 2018	Proposed FY 2019	Water Accounts	RW Accts	Water + RW Accounts
5/8"	$4.66	**$4.66**	2,384	0	2,384
¾"	$4.66	**$4.66**	4,856	0	4,856
1"	$7.78	**$7.78**	444	0	444
1 ½"	$18.91	**$18.91**	683	10	693
2"	$47.47	**$47.47**	1,201	200	1,401
Projected Revenues			**$1,285,437**	**$116,197**	**$1,401,634**

[10] Projected Revenues = Σ (Service Charges x # of Accounts for each meter size) x 12 bills/year

5.3.3 Commodity Rates

The District has decided to retain the current commodity rates by using funds from restricted reserves to offset increases in supply costs.

Table 5-8: FY 2019 Proposed Water Commodity Rates

Tier	FY 2018	FY 2019	$ Change	% Change
Tier 1 - Essential Use	$2.52	$2.52	$0.0	0.0%
Tier 2 - Efficient Use	$2.91	$2.91	$0.0	0.0%
Tier 3 - Inefficient Use	$6.08	$6.08	$0.0	0.0%
Tier 4 - Excessive Use	$7.82	$7.82	$0.0	0.0%
Uniform - Commercial Use	$2.89	$2.89	$0.0	0.0%

6. WASTEWATER REVENUE REQUIREMENTS AND PROPOSED RATES

6.1 MONTHLY SERVICE CHARGES

Raftelis reviewed the relative amounts of the revenue requirements of the wastewater enterprise provided by the District, which are not significantly different from those of the prior year. As a result, we will retain the current cost of service allocations and propose across the board revenue adjustments to meet the revenue requirements for FY 2019. Table 6-1 shows the calculation of the Wastewater O&M revenue requirement from rates. The Wastewater O&M expenses (Line 1) will be partially offset by non-operating revenues (Line 2). The District also continues to have a debt obligation (Line 3) due entirely to the Northline Lift Station. The resulting revenue requirement for FY 2019 is shown in Line 5 and compared to the projected FY 2019 revenues from current rates in Line 6. The projected revenue from current rates was provided in the Wastewater Enterprise's cash flow statement. The revenue adjustment required to meet the Enterprise's O&M obligations is 2.83% shown in Line 8.

Table 6-1: Wastewater O&M Revenue Requirements from Rates

Line #	Wastewater Operating Revenue Requirements	Budget FY 2019	Notes
1	Total WW O&M Expenses	**$7,940,557**	Appendix 2
2	Less (-) Non-Operating Revenues	($399,119)	Appendix 5
3	Plus (+) Debt Service	$258,146	Appendix 5
4	Plus (+) Operating Reserve Funding	$416	Appendix 5
5	**Total Revenue Requirement from WW Rates**	**$7,800,000**	
6	Current WW Service Revenues	$7,585,000	Appendix 5
7	Required Revenue Increase	$215,000	Appendix 5
8	**Overall WW Rate Increase**	**2.83%**	

Table 6-2 provides the proposed rates for FY 2019 with a comparison to the FY 2018 rates. Note that, due to rounding, the percent increase for each class varies slightly from the overall increase of 2.83 percent.

Table 6-2: FY 2019 Proposed Wastewater Service Charges

Customer Class	FY 2018 Rates	FY 2019 Rates	$ Increase	% Increase
Residential Unrestricted	$23.63 / EDU	$24.30 / EDU	$0.67	2.84%
Multi-Family Restricted	$18.74 / EDU	$19.28 / EDU	$0.54	2.88%
Multi-Family Unrestricted	$22.28 / EDU	$22.92 / EDU	$0.64	2.87%
Animal Kennel/Hospital	$3.88 / ccf	$3.99 / ccf	$0.11	2.84%
Car Wash	$3.86 / ccf	$3.97 / ccf	$0.11	2.85%
Department/Retail Store	$3.88 / ccf	$3.99 / ccf	$0.11	2.84%
Dry Cleaners	$3.40 / ccf	$3.50 / ccf	$0.10	2.94%
Golf Course/Camp/Park	$3.39 / ccf	$3.49 / ccf	$0.10	2.95%
Health Spa	$3.87 / ccf	$3.98 / ccf	$0.11	2.84%
Hospital/Convalescent Home	$3.40 / ccf	$3.50 / ccf	$0.10	2.94%
Hotel	$5.87 / ccf	$6.04 / ccf	$0.17	2.90%
Market	$7.70 / ccf	$7.92 / ccf	$0.22	2.86%
Mortuary	$7.67 / ccf	$7.89 / ccf	$0.22	2.87%
Nursery/Greenhouse	$3.44 / ccf	$3.54 / ccf	$0.10	2.91%
Professional/Financial Office	$3.88 / ccf	$3.99 / ccf	$0.11	2.84%
Public Institution	$3.82 / ccf	$3.93 / ccf	$0.11	2.88%
Repair/Service Station	$3.87 / ccf	$3.98 / ccf	$0.11	2.84%
Restaurant	$3.66 / ccf	$3.77 / ccf	$0.11	3.01%
Schools	$4.01 / ccf	$4.13 / ccf	$0.12	2.99%
Theater	$3.88 / ccf	$3.99 / ccf	$0.11	2.84%
Warehouse/Storage	$3.07 / ccf	$3.16 / ccf	$0.09	2.93%
Basic Commercial	$3.40 / ccf	$3.50 / ccf	$0.10	2.94%

6.2 CAPITAL R&R CHARGES

The Wastewater Enterprise also charges a separate Capital R&R Charge. As shown in Table 6-3, there is no increase in revenue requirements for WW Capital R&R charges. The proposed Capital R&R Charges are shown in Table 6-4.

Table 6-3: Wastewater Capital R&R Revenue Requirements

Wastewater Revenue Requirement from Rates	Budget FY 2019 *(Appendix 5)*
Total Capital Expenditures	$1,615,000
Current Wastewater Capital R&R Revenues	$1,615,000
Overall Capital R&R Rate Increase	**0%**

Table 6-4: FY 2019 Proposed Monthly Wastewater Capital R&R Charges

Customer Classes	Current Capital R&R Charges	FY 2019 Capital R&R Charges	$ Increase	% Increase
Residential				
Residential Unrestricted	$4.93 / EDU	$4.93 / EDU	$0.00	0.0%
Multi-Family Restricted	$3.91 / EDU	$3.91 / EDU	$0.00	0.0%
Multi-Family Unrestricted	$4.65 / EDU	$4.65 / EDU	$0.00	0.0%
Non-Residential				
5/8"	$4.34 / month	$4.34 / month	$0.00	0.0%
3/4"	$7.34 / month	$7.34 / month	$0.00	0.0%
1"	$13.55 / month	$13.55 / month	$0.00	0.0%
1 1/2"	$24.07 / month	$24.07 / month	$0.00	0.0%
2"	$70.96 / month	$70.96 / month	$0.00	0.0%
Public Authority				
1"	$4.93 / month	$4.93 / month	$0.00	0.0%
1 1/2"	$24.65 / month	$24.65 / month	$0.00	0.0%
2"	$39.71 / month	$39.71 / month	$0.00	0.0%

7. RECYCLED WATER REVENUE REQUIREMENTS AND PROPOSED RATES

7.1 RECYLED WATER SYSTEM

Prior to the completion of the Recycled Water Expansion Project, the District had only one recycled water (RW) customer who purchased secondary treated disinfected recycled water - Laguna Woods Village Golf Course, operated by the Golden Rain Foundation (GRF). There was neither a monthly service charge nor a capital R&R charge for this RW customer since all services were provided based on the terms of the service contract. With the completion of the RW expansion project, all RW customers (existing and converted customers) are now supplied with higher quality tertiary RW and all RW customers are subject to the corresponding rates that support the annual cost of providing tertiary RW.

In FY 2015, the District completed the expansion of its recycled water system, including water recycling plant (WRP) upgrades to tertiary treatment and RW distribution system pipeline expansion. The RW expansion capital cost, was financed by the following sources: State Revolving Fund (SRF) Loan, grants, and from the restricted reserve (revenues from Tier 3 and Tier 4 potable usage dedicated to recycled water expansion). The District is currently constructing a Phase II RW Project that will add 5 miles of RW distribution pipeline and 65 recycled water meters. The Phase II RW expansion capital cost is financed by an SRF Loan and from the restricted reserve.

7.2 PROJECTED RECYCLED WATER SALES

The District currently serves 210 Recycled Water accounts. The projected RW sales for FY 2018 are estimated at 1,275AF. With the Phase II Project coming online, including the addition of 65 new RW meters, the District projects an increase of 210 AF or 16.5% in consumption for FY 2019.

Table 7-1: Recycled Water Sales

	RW Sales	
	ccf	AF
FY 2018 Estimated Actual Sales	555,390	1,275
FY 2019 Budgeted Sales	646,866	1,485
Increase	91,476	210
% Increase	16.5%	

7.3 REVENUE REQUIREMENT AND PROPOSED RATES

In FY 2015, the District began separating Recycled Water costs into an independent RW Enterprise Fund. Table 7-2 summarizes the RW revenue requirements from rates for FY 2019. RW O&M expenses and supply

(Line 3) will be partially offset by non-operating revenues (Line 4). The RW Fund's debt service payment (Line 6) will be partially covered by Restricted Reserve Funding (Line 5). The remaining revenue requirement to be recovered from rates is shown in Line 7. The line items shown below are further detailed in Appendix 4 – Cash Flow Analysis for RW Funds, developed by District Staff and provided to Raftelis for the cost of service analysis.

Table 7-2: Recycled Water Revenue Requirement from Rates

Line #	Revenue Requirement	FY 2019	Notes
1	Treatment Tertiary Recycled Water	$256,950	Appendix 2
2	Other RW O&M	$862,159	Appendix 2
3	**Revenue Requirement for RW**	**$1,119,109**	
4	Less (-) Non-Operating Revenues	($358,598)	Appendix 4
5	Less (-) Restricted Reserve Funding	($443,469)	Appendix 4
6	Plus (+) Debt Service	$1,602,958	Appendix 4
7	**Total Revenue Requirement from Rates**	**$1,920,000**	

All RW customers connected to the recycled water distribution system will be assessed the same Monthly Service Charges (Table 7-3) and Capital R&R Charges (Table 7-4) as potable customers to recover the customer service, meter service, a portion of capacity and other RW related fixed costs and to pay for capital R&R of expanded RW system. After the completion of the RW expansion in FY 2015, all RW customers (existing and converting customers) are now supplied with higher quality tertiary RW, and are subject to the corresponding rates that support the annual projected cost of providing tertiary RW.

Table 7-3: FY 2019 Proposed Monthly Recycled Water Service Charges

Meter Size	FY 2018 Rates A	FY 2019 Rates B	# of RW Accounts C
5/8-in	$11.80	$12.96	0
3/4-in	$15.82	$17.37	0
1-in	$23.85	$26.20	0
1 1/2-in	$43.92	$48.25	10
2-in	$84.07	$92.36	200
Projected RW Revenues *(Column A or B x Column C)*	**$207,038**	**$227,454**	**210 Accounts**

Table 7-4: FY 2019 Proposed Monthly Recycled Water Capital R&R Charges

Meter Size	FY 2018 Rates	FY 2019 Rates	$ Increase	% Increase
5/8-in	$4.66	$4.66	$0.00	0%
3/4-in	$4.66	$4.66	$0.00	0%
1-in	$7.78	$7.78	$0.00	0%
1 1/2-in	$18.91	$18.91	$0.00	0%
2-in	$47.47	$47.47	$0.00	0%

Table 7-5 derives the revenue required from the Recycled Water Commodity Rate (Line 3) by subtracting the Monthly Service Charge Revenue (Line 2) from the Total Revenue Requirements (Line 1). The unit RW commodity rate is calculated using the net revenue requirements from RW commodity rates (Line 3) divided by projected RW sales (Line 4). The RW commodity rate for FY 2019 is unchanged at $2.62 / ccf or $1,141 / AF, which is approximately 90% of Tier 2 Potable Water Commodity Rate for FY 2019 and provides an economic incentive for irrigation customers to convert to RW.

Table 7-5: Recycled Water Commodity Rate Calculation

Line #		FY 2019
1	Total Revenue Requirement from RW Rates	$1,920,000
2	Less (-) Monthly Service Charge	($227,454)
3	**Net Commodity Rate Revenue Requirements**	**$1,692,546**
4	Projected RW Sales	646,866 ccf
5	**Unit RW Commodity Rate ($/ccf)**	**$2.62 /ccf**
6	Unit RW Commodity Rate ($/AF)	$1,141/AF
7	Percent of Tier 2 Potable Water Rate	90%

8. FIRE SERVICE

8.1 PROPOSED FIRE SERVICE CHARGES

The District proposes to increase the Monthly Fire Service Charges by 9.9%, increasing revenue by $10,000. As shown in Table 8-1, all Fire Service customers pay $7.67 a month. With the rate increase, all Fire Service customers will pay $8.43 a month.

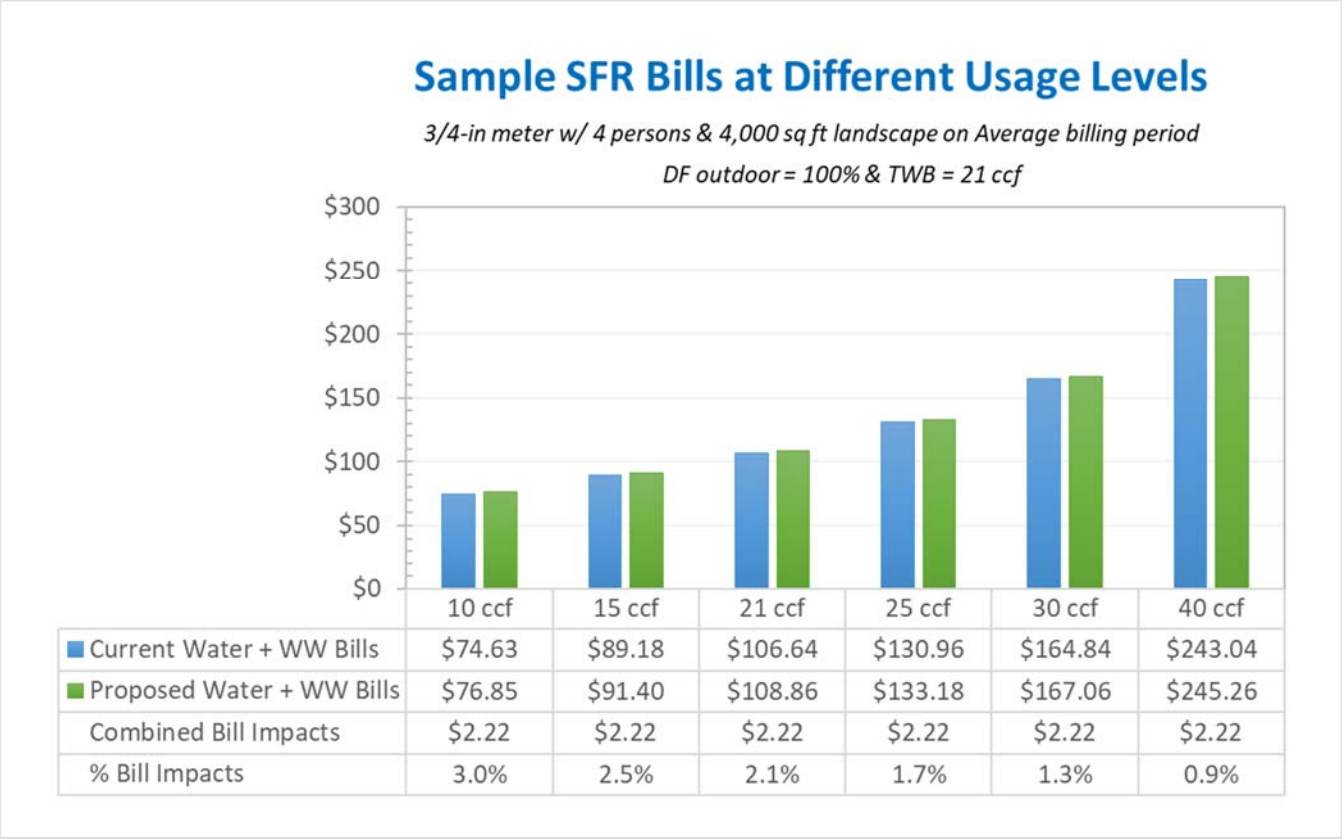
Table 8-1: Proposed Monthly Fire Service Charges

Meter Size	Quantity	Current Rate	Annual Revenue	Proposed Rate	Annual Revenue
4”	26	$7.67	$9,572	$8.43	$10,521
6”	89	$7.67	$49,149	$8.43	$54,019
8”	52	$7.67	$38,289	$8.43	$42,083
10”	4	$7.67	$3,682	$8.43	$4,046
	171		**$100,692**		**$110,669**

9. CUSTOMER IMPACT ANALYSIS

Figure 9-1 shows a breakdown of water and wastewater bills at various water usage levels for a single family residential user with 4 occupants and 4,000 sq. ft. landscape area serviced by a ¾-in meter. The combined water and wastewater bill increase would be $2.22 per month, resulting from increases in water and wastewater monthly fixed service charges. Note that the impacts for recycled water are not shown because residential users do not use recycled water.

Figure 9-1: SFR Total Monthly Bill at Different Usage Levels



	10 ccf	15 ccf	21 ccf	25 ccf	30 ccf	40 ccf
Current Water + WW Bills	$74.63	$89.18	$106.64	$130.96	$164.84	$243.04
Proposed Water + WW Bills	$76.85	$91.40	$108.86	$133.18	$167.06	$245.26
Combined Bill Impacts	$2.22	$2.22	$2.22	$2.22	$2.22	$2.22
% Bill Impacts	3.0%	2.5%	2.1%	1.7%	1.3%	0.9%

10. APPENDICES

10.1 APPENDIX 1 – PASS-THROUGH WATER SUPPLY COST

Source: Budget Data.Raftelis.xls sent by District 4/3/18

EL TORO WATER DISTRICT
2018/19 PURCHASED WATER BUDGET

		2017/18 Budget		2017/18 Projected Actual		2018/19 Budget	
		Jul 2017	Jan 2018	Jul 2017	Jan 2018	Jul 2018	Jan 2019
1	Total Period Demand (AF)	3,930	3,370	4,290	3,700	4,000	3,500
2	Total Annual Demand (AF)		7,300		7,990		7,500
3	Total Water Sales (AF)		7,000		7,690		7,200
4	MWD Period Demand (AF)	2,301	1,741	2,661	2,071	2,321	1,821
5	MWD Annual Demand (AF)		4,042		4,732		4,142
6	**MWD Untreated Commodity Rates**						
7	System Access Rate	289.00	299.00	289.00	299.00	299.00	326.00
8	System Power Rate	124.00	132.00	124.00	132.00	132.00	127.00
9	Water Stewardship Rate	52.00	55.00	52.00	55.00	55.00	69.00
10	MWD Tier 1 Rate	201.00	209.00	201.00	209.00	209.00	209.00
11	**Subtotal Untreated Full Service**	**666.00**	**695.00**	**666.00**	**695.00**	**695.00**	**731.00**
12	Treatment Surcharge	313.00	320.00	313.00	320.00	320.00	319.00
13	**Total Treated Full Service Rate**	**979.00**	**1,015.00**	**979.00**	**1,015.00**	**1,015.00**	**1,050.00**
14	**Total Treated Full Service Annual Cost**	**2,252,752**	**1,767,190**	**2,605,119**	**2,102,065**	**2,355,815**	**1,912,050**
15	**MWD Fixed Charges**						
16	Capacity Reservation Charge	66,323	72,126	66,323	72,126	72,126	71,297
17	Readiness To Serve Charge	220,164	228,318	220,164	228,318	228,318	216,902
18	**Total MWD Fixed Charges**		**586,931**		**586,931**		**588,643**
19	**Total MWD Cost**		**4,606,873**		**5,294,115**		**4,856,508**
20	**Total MWD Unit Cost ($/AF)**		**1,140**		**1,119**		**1,173**
21	**MWDOC Connection Rate ($/meter)**	**11.25**		**11.90**		**12.25**	
22	ETWD Meters	9,562		9,562		9,562	
23	**MWDOC Connection Charge ($)**		**107,573**		**113,788**		**117,135**
24	**Baker Water Treatment Plant**						
25	Period Demand (AF)	1,629	1,629	1,629	1,629	1,679	1,679
26	Annual Demand (AF)		3,258		3,258		3,358
27	**Baker Raw Water Cost**	**1,084,864**	**1,132,103**	**1,084,914**	**1,132,155**	**1,166,905**	**1,227,349**
28	Baker O&M Unit Cost (per AF)	218	218	175	175	182	182
29	SAC Surcharge	8	8	8	8	8.38	8.38
30	SCP Surcharge	1	1	1	1	1.12	1.12
31	**Baker O&M Annual Cost**	**371,672**	**371,672**	**300,616**	**300,616**	**321,536**	**321,536**
32	Baker Capital Cost (Debt Service)	342,131	342,131	342,131	342,131	342,131	342,131
33	**Total Period Baker Water Treatment Plant Cost**	**1,798,667**	**1,845,906**	**1,727,661**	**1,774,902**	**1,830,572**	**1,891,016**
34	**Total Annual Baker Water Treatment Plant Cost**		**3,644,574**		**3,502,562**		**3,721,587**
35	**Baker Water Treatment Plant Unit Cost($/AF)**		**1,119**		**1,075**		**1,108**
36	**Capital Charge Revenue Funding**		**(500,000)**		**(500,000)**		**(600,000)**
37	**Total Baker Water Treatment Plant Cost**		**3,144,574**		**3,002,562**		**3,121,587**
38	**Total Purchased Water Cost**						
39	MWD		4,606,873		5,294,115		4,856,508
40	MWDOC		107,573		113,788		117,135
41	Baker		3,144,574		3,002,562		3,121,587
42	**Total Purchased Water Cost**		**7,859,019**		**8,410,465**		**8,095,230**
43	**Total Expense (Less Baker Debt Service)**		**7,674,757**		**8,226,203**		**8,010,968**
44	Percent Increase Budget to Budget per Unit						0.26%
45	**Overall Imported Water Effective Rate**						
46	Fiscal Year Cost per Acre Foot Purchased		**1,077**		**1,053**		**1,079**
47	Fiscal Year Cost per CCF Purchased		**2.47**		**2.42**		**2.48**
48	Fiscal Year Rate per CCF Sold		**2.58**		**2.51**		**2.58**

10.2 APPENDIX 2 – O&M EXPENSES ALLOCATIONS TO WATER, RECYCLED WATER AND WASTEWATER FUNDS

Source: Budget Data.Raftelis.xls sent by District 4/3/18

	2018/19 Budget	Water	Sewer	Recycled Water	Total
Source of Supply	8,148,467	8,148,467			8,148,467
Pumping Water	247,971	247,971			247,971
Treatment Water	49,641	49,641			49,641
Transmission & Distribution Water	515,692	515,692			515,692
Customer Accounts	0	0			0
Outside Treatment Sewer	919,750		919,750		919,750
Pumping Sewer	369,848		369,848		369,848
Treatment Sewer	762,678		762,678		762,678
Treatment Tertiary Recycled Water	256,950			256,950	256,950
Transmission & Distribution Sewer	284,250		284,250		284,250
T&D Recycled Water	0			0	0
Operations Support	222,111	88,844	115,498	17,769	222,111
Operations Support Power	10,800	4,320	5,616	864	10,800
Fleet	237,885	95,154	123,700	19,031	237,885
Operations Indirect Costs	109,900	43,960	57,148	8,792	109,900
Administration	219,950	87,980	114,374	17,596	219,950
Admin Power	39,900	15,960	20,748	3,192	39,900
Administration Indirect Costs	1,648,600	659,440	857,272	131,888	1,648,600
Depreciation & Amortization	4,306,850	1,722,740	2,239,562	344,548	4,306,850
Interest Expense	769,061	289,290	80,367	399,403	769,061
Total	**19,120,304**	**11,969,460**	**5,950,811**	**1,200,033**	**19,120,304**
Other O&M					
Purchased Water	8,010,968	8,010,968			8,010,968
SOCWA	906,250		906,250		906,250
Fuel & Power	1,077,450	211,780	719,170	$146,500	1,077,450
Operations Indirect Costs	109,900	43,960	57,148	8,792	109,900
Administration	219,950	87,980	114,374	17,596	219,950
Administration Indirect Costs	1,648,600	659,440	857,272	131,888	1,648,600
Depreciation & Amortization	4,306,850	1,722,740	2,239,562	344,548	4,306,850
					0
Interest Expense	769,061	289,290	80,367	399,403	769,061
Total Other O&M	**2,071,275**	**943,301**	**976,668**	**151,306**	**2,071,275**
Labor	8,287,837	3,315,135	4,309,675	663,027	8,287,837
Total Expense	**27,408,141**	**15,284,594**	**10,260,487**	**1,863,060**	**27,408,141**
Less Depreciation & Interest	**22,332,230**	**13,272,564**	**7,940,557**	**1,119,109**	**22,332,230**

10.3 APPENDIX 3 – CASH FLOW ANALYSIS FOR WATER FUND

Source: Budget Data.Raftelis.xls sent by District 4/3/18

WATER CASH FLOW												Budget Year 2019
	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2018-19
BEGINNING RESERVE BALANCE	**6,512,021**	**6,319,497**	**5,838,457**	**5,409,089**	**5,135,890**	**5,032,033**	**5,037,679**	**5,053,182**	**5,062,475**	**5,069,640**	**5,080,918**	**6,319,497**
OPERATIONS & MAINTENANCE CASH FLOW												
O&M REVENUES												
Revenue from 17/18 Commodity Rates (Unrestricted)	9,053,283	8,421,658	8,421,658	8,421,658	8,421,658	8,421,658	8,421,658	8,421,658	8,421,658	8,421,658	8,421,658	8,421,658
Revenue from 17/18 Fixed Meter Rates	2,925,000	2,958,095	2,910,000	2,910,000	2,910,000	2,910,000	2,910,000	2,910,000	2,910,000	2,910,000	2,910,000	2,958,095
Revenue from 17/18 Fire / Flooding Meters	110,000	121,000	132,979	146,239	160,446	172,759	182,230	191,702	201,173	211,592	222,579	121,000
Additional Service Revenue Required												
Year / **Rate Action**												
2018-19 MWD Pass Through		0	0	0	0	0	0	0	0	0	0	0
2018-19 Tier 1 Offset Increase		0	0	0	0	0	0	0	0	0	0	0
2018-19 COS Rate Increase		285,000	285,000	285,000	285,000	285,000	285,000	285,000	285,000	285,000	285,000	285,000
2019-20 MWD Pass Through			219,542	219,542	219,542	219,542	219,542	219,542	219,542	219,542	219,542	0
2019-20 COS Rate Increase			315,000	315,000	315,000	315,000	315,000	315,000	315,000	315,000	315,000	0
2020-21 MWD Pass Through				250,906	250,906	250,906	250,906	250,906	250,906	250,906	250,906	0
2020-21 COS Rate Increase				350,000	350,000	350,000	350,000	350,000	350,000	350,000	350,000	0
2021-22 MWD Pass Through					282,269	282,269	282,269	282,269	282,269	282,269	282,269	0
2021-22 COS Rate Increase					375,000	375,000	375,000	375,000	375,000	375,000	375,000	0
2022-23 MWD Pass Through						313,632	313,632	313,632	313,632	313,632	313,632	0
2022-23 COS Rate Increase						325,000	325,000	325,000	325,000	325,000	325,000	0
2023-24 MWD Pass Through							282,269	282,269	282,269	282,269	282,269	0
2023-24 COS Rate Increase							250,000	250,000	250,000	250,000	250,000	0
2024-25 MWD Pass Through								282,269	282,269	282,269	282,269	0
2024-25 COS Rate Increase								250,000	250,000	250,000	250,000	0
2025-26 MWD Pass Through									282,269	282,269	282,269	0
2025-26 COS Rate Increase									250,000	250,000	250,000	0
2026-27 MWD Pass Through										282,269	282,269	0
2026-27 COS Rate Increase										275,000	275,000	0
2027-28 MWD Pass Through											282,269	0
2027-28 COS Rate Increase											290,000	0
Total Unrestricted Water Service Rate Revenue	**12,088,283**	**11,785,753**	**12,284,179**	**12,898,345**	**13,569,821**	**14,220,766**	**14,762,506**	**15,304,247**	**15,845,987**	**16,413,675**	**16,996,931**	**11,785,753**
Other Sources of Cash												
Restricted Reserves Funding of Conservation Program	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Capital Charge Funding of Baker Debt Service	500,000	600,000	625,000	625,000	600,000	550,000	525,000	500,000	500,000	500,000	500,000	600,000
Property Taxes - General Fund Revenue	308,048	330,342	340,687	351,509	362,523	373,647	384,888	396,240	407,765	419,436	431,223	330,342
Property Taxes (Funds Tier 1 Offset)	221,191	189,691	185,391	181,005	176,531	171,968	167,314	162,566	157,724	152,784	147,746	189,691
Miscellaneous Revenue	50,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000
Other Income (Site Leases)	183,500	215,000	219,300	223,686	228,160	232,723	237,377	242,125	246,967	251,907	256,945	215,000
Other Income (R-6 Partners)	123,400	122,000	124,440	126,929	129,467	132,057	134,698	137,392	140,140	142,942	145,801	122,000
Investment Income	77,000	58,000	29,192	27,045	25,679	25,160	25,188	25,266	25,312	25,348	25,405	58,000
Subtotal Other Sources of Cash	**1,563,139**	**1,690,033**	**1,699,010**	**1,710,174**	**1,697,361**	**1,660,555**	**1,649,465**	**1,638,588**	**1,652,908**	**1,667,418**	**1,682,120**	**1,690,033**
TOTAL O&M REVENUES (Unrestricted)	**13,651,422**	**13,475,786**	**13,983,189**	**14,608,519**	**15,267,182**	**15,881,321**	**16,411,972**	**16,942,835**	**17,498,895**	**18,081,093**	**18,679,051**	**13,475,786**
O&M REVENUE REQUIREMENTS												
Total O & M Expense	13,159,684	13,272,564	13,728,296	14,197,456	14,686,777	15,191,413	15,712,207	16,249,280	16,807,469	17,385,553	17,981,822	13,272,564
Debt Service												
Baker Water Treatment Plant	684,262	684,262	684,262	684,262	684,262	684,262	684,262	684,262	684,262	684,262	684,262	684,262
Subtotal Debt Service	**684,262**	**684,262**	**684,262**	**684,262**	**684,262**	**684,262**	**684,262**	**684,262**	**684,262**	**684,262**	**684,262**	**684,262**
TOTAL O&M REVENUE REQUIREMENTS	**13,843,946**	**13,956,826**	**14,412,558**	**14,881,718**	**15,371,039**	**15,875,675**	**16,396,469**	**16,933,542**	**17,491,731**	**18,069,815**	**18,666,084**	**13,956,826**
ANNUAL O&M SURPLUS (DEFICIT)	**(192,524)**	**(481,040)**	**(429,368)**	**(273,199)**	**(103,857)**	**5,646**	**15,502**	**9,294**	**7,164**	**11,278**	**12,967**	**(481,040)**

WATER CASH FLOW												Budget Year 2019
	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2018-19
CAPITAL REPLACEMENT & REFURBISHMENT PROGRAM												
CAPITAL EXPENDITURES												
Capital Replacement & Refurbishment Program	785,000	785,000	785,000	785,000	785,000	785,000	785,000	785,000	785,000	785,000	785,000	785,000
Baker Pipeline Capacity Purchase						110,000	110,000	110,000	110,000	110,000	110,000	0
Baker Water Treatment Plant							110,000	110,000	110,000	110,000	110,000	0
Baker Water Treatment Plant Construction Period Interest												0
Capital Charge Funding of Baker Debt Service	500,000	600,000	625,000	625,000	600,000	550,000	525,000	500,000	500,000	500,000	500,000	600,000
TOTALCAPITAL EXPENDITURES	**1,285,000**	**1,385,000**	**1,410,000**	**1,410,000**	**1,385,000**	**1,445,000**	**1,530,000**	**1,505,000**	**1,505,000**	**1,505,000**	**1,505,000**	**1,385,000**
CAPITAL PROGRAM REVENUE												
Revenue from Existing Capital Charge	785,000	785,000	785,000	785,000	785,000	785,000	785,000	785,000	785,000	785,000	785,000	785,000
Capital Charge Funding of Baker Debt Service	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Restricted Reserve Funding		100,000	125,000	125,000	100,000	50,000	25,000	0	0	0	0	100,000
Capital Charge Revenue Increase						110,000	110,000	110,000	110,000	110,000	110,000	0
Capital Charge Revenue Increase							110,000	110,000	110,000	110,000	110,000	0
Subtotal Capital Charge Revenue	**1,285,000**	**1,385,000**	**1,410,000**	**1,410,000**	**1,385,000**	**1,445,000**	**1,530,000**	**1,505,000**	**1,505,000**	**1,505,000**	**1,505,000**	**1,385,000**
Loan Proceeds - Baker												
Loan Proceeds - Recycled Water Project- SRF												
Capital Reserves												
TOTAL CAPITAL REVENUE	**1,285,000**	**1,385,000**	**1,410,000**	**1,410,000**	**1,385,000**	**1,445,000**	**1,530,000**	**1,505,000**	**1,505,000**	**1,505,000**	**1,505,000**	**1,385,000**
ANNUAL CAPITAL SURPLUS (DEFICIT)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TOTAL CASH FLOW												
TRANSFER FROM RECYCLED WATER	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
TOTAL ANNUAL RESERVE IMPACT	**(192,524)**	**(481,040)**	**(429,368)**	**(273,199)**	**(103,857)**	**5,646**	**15,502**	**9,294**	**7,164**	**11,278**	**12,967**	**(481,040)**
ENDING RESERVE BALANCE	**6,319,497**	**5,838,457**	**5,409,089**	**5,135,890**	**5,032,033**	**5,037,679**	**5,053,182**	**5,062,475**	**5,069,640**	**5,080,918**	**5,093,884**	**5,838,457**

10.4 APPENDIX 4 – CASH FLOW ANALYSIS FOR RECYCLED WATER FUND

Source: Budget Data.Raftelis.xls sent by District 4/3/18

RECYCLED WATER CASH FLOW												Budget Year 2019
	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2018-19
BEGINNING RESERVE BALANCE	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
OPERATIONS & MAINTENANCE CASH FLOW												
O&M REVENUES												
Revenue from 1718 Commodity Rates	1,510,000	1,695,000	1,850,342	1,898,672	1,960,810	2,022,948	2,078,182	2,133,416	2,188,650	2,243,885	2,299,119	1,695,000
Revenue from 1718 Fixed Meter Rates	205,000	205,000	264,000	264,000	264,000	264,000	264,000	264,000	264,000	264,000	264,000	205,000
Additional Service Revenue Required												
Year / **Rate Action**												0
2018-19 COS Rate Increase		20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
2019-20 COS Rate Increase			22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	0
2020-21 COS Rate Increase				31,000	31,000	31,000	31,000	31,000	31,000	31,000	31,000	0
2021-22 COS Rate Increase					33,000	33,000	33,000	33,000	33,000	33,000	33,000	0
2022-23 COS Rate Increase						28,000	28,000	28,000	28,000	28,000	28,000	0
2023-24 COS Rate Increase							22,000	22,000	22,000	22,000	22,000	0
2024-25 COS Rate Increase								22,000	22,000	22,000	22,000	0
2025-26 COS Rate Increase									22,000	22,000	22,000	0
2026-27 COS Rate Increase										24,000	24,000	0
2027-28 COS Rate Increase											24,000	0
Total Recycled Water Service Rate Revenue	**1,715,000**	**1,920,000**	**2,156,342**	**2,235,672**	**2,330,810**	**2,420,948**	**2,498,182**	**2,575,416**	**2,652,650**	**2,731,885**	**2,811,119**	**1,920,000**
Other Sources of Cash												
Restricted Reserves Funding of Debt Service	509,779	312,469	540,211	510,230	466,737	420,644	379,971	361,937	346,679	332,330	321,029	312,469
Recycled Water Meter Capital Charge Funding of Debt	115,000	131,000	147,000	147,000	147,000	157,000	177,000	177,000	177,000	177,000	177,000	131,000
MWD LRP Rebate	250,000	314,750	362,250	362,250	362,250	362,250	362,250	362,250	362,250	362,250	362,250	314,750
Property Taxes	41,350	43,848	45,355	46,278	47,215	48,178	49,166	50,181	51,214	52,271	53,356	43,848
Restricted Reserve - SRF Loan												0
Subtotal Other Sources of Cash	**916,128**	**802,067**	**1,094,815**	**1,065,758**	**1,023,203**	**988,072**	**968,387**	**951,367**	**937,143**	**923,851**	**913,635**	**802,067**
TOTAL O&M REVENUES	**2,631,128**	**2,722,067**	**3,251,157**	**3,301,429**	**3,354,013**	**3,409,020**	**3,466,569**	**3,526,784**	**3,589,794**	**3,655,736**	**3,724,753**	**2,722,067**
O&M REVENUE REQUIREMENTS												
Total O & M Expense	1,028,170	1,119,109	1,183,551	1,233,823	1,286,407	1,341,414	1,398,963	1,459,178	1,522,188	1,588,130	1,657,148	1,119,109
Debt Service												
Recycled Water SRF Loan - Phase 1	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958
Recycled Water SRF Loan - Phase II			464,648	464,648	464,648	464,648	464,648	464,648	464,648	464,648	464,648	0
Subtotal Debt Service	**1,602,958**	**1,602,958**	**2,067,606**	**2,067,606**	**2,067,606**	**2,067,606**	**2,067,606**	**2,067,606**	**2,067,606**	**2,067,606**	**2,067,606**	**1,602,958**
TOTAL O&M REVENUE REQUIREMENTS	**2,631,128**	**2,722,067**	**3,251,157**	**3,301,429**	**3,354,013**	**3,409,020**	**3,466,569**	**3,526,784**	**3,589,794**	**3,655,736**	**3,724,753**	**2,722,067**
ANNUAL O&M SURPLUS (DEFICIT)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

RECYCLED WATER CASH FLOW												Budget Year 2019
	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2018-19
CAPITAL REPLACEMENT & REFURBISHMENT PROGRAM												
												0
CAPITAL EXPENDITURES												0
Capital Replacement & Refurbishment Program												0
Recycled Water Expansion Project												0
Recycled Water Meter Capital Charge Funding of Debt	115,000	131,000	147,000	147,000	147,000	157,000	177,000	177,000	177,000	177,000	177,000	131,000
TOTALCAPITAL EXPENDITURES	**115,000**	**131,000**	**147,000**	**147,000**	**147,000**	**157,000**	**177,000**	**177,000**	**177,000**	**177,000**	**177,000**	**131,000**
CAPITAL PROGRAM REVENUE												
Revenue from Existing Capital Charge	115,000	131,000	147,000	147,000	147,000	157,000	177,000	177,000	177,000	177,000	177,000	131,000
Subtotal Capital Charge Revenue	**115,000**	**131,000**	**147,000**	**147,000**	**147,000**	**157,000**	**177,000**	**177,000**	**177,000**	**177,000**	**177,000**	**131,000**
Recycled Water Project Grant	0											
Restricted Reserves Funding of Recycled Water Project	0	0										
Loan Proceeds - Recycled Water Project- SRF	0											
Capital Reserves												0
TOTAL CAPITAL REVENUE	**115,000**	**131,000**	**147,000**	**147,000**	**147,000**	**157,000**	**177,000**	**177,000**	**177,000**	**177,000**	**177,000**	**131,000**
ANNUAL CAPITAL SURPLUS (DEFICIT)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TRANSFER TO WATER COST CENTER		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TRANSFER TO SEWER COST CENTER		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TOTAL CASH FLOW												
TOTAL ANNUAL RESERVE IMPACT	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
ENDING RESERVE BALANCE	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

10.5 APPENDIX 5 – CASH FLOW ANALYSIS FOR WASTEWATER FUND

Source: Budget Data.Raftelis.xls sent by District 4/3/18

SEWER CASH FLOW													Budget Year 2019
		2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2018-19
BEGINNING RESERVE BALANCE		**6,512,021**	**6,679,021**	**6,679,438**	**6,678,118**	**6,679,656**	**6,684,071**	**6,685,744**	**6,683,273**	**6,684,470**	**6,686,305**	**6,684,894**	**6,679,021**
OPERATIONS & MAINTENANCE CASH FLOW													
O&M REVENUES													
Revenue from 17/18 Service Rates		7,585,000	7,585,000	7,585,000	7,585,000	7,585,000	7,585,000	7,585,000	7,585,000	7,585,000	7,585,000	7,585,000	7,585,000
													0
Additional Service Revenue Required													
Year	**Rate Action**												
2018-19	COS Rate Increase		215,000	215,000	215,000	215,000	215,000	215,000	215,000	215,000	215,000	215,000	215,000
2019-20	COS Rate Increase			360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	0
2020-21	COS Rate Increase				335,000	335,000	335,000	335,000	335,000	335,000	335,000	335,000	0
2021-22	COS Rate Increase					350,000	350,000	350,000	350,000	350,000	350,000	350,000	0
2022-23	COS Rate Increase						360,000	360,000	360,000	360,000	360,000	360,000	0
2023-24	COS Rate Increase							375,000	375,000	375,000	375,000	375,000	0
2024-25	COS Rate Increase								400,000	400,000	400,000	400,000	0
2025-26	COS Rate Increase									415,000	415,000	415,000	0
2026-27	COS Rate Increase										430,000	430,000	0
2027-28	COS Rate Increase											485,000	0
Total Wastewater Service Rate Revenue		**7,585,000**	**7,800,000**	**8,160,000**	**8,495,000**	**8,845,000**	**9,205,000**	**9,580,000**	**9,980,000**	**10,395,000**	**10,825,000**	**11,310,000**	**7,800,000**
Other Sources of Cash													
Release SRF Restricted Reserve													0
Restricted Reserve Funding of WRP SRF Debt Service													0
Property Taxes		304,411	311,119	316,692	322,655	328,699	334,899	341,256	347,777	354,412	361,190	368,141	311,119
MNWD Payment for RW Service to Golf Course		11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000
Capital Facilities Fee		0	0	0	0	0	0	0	0	0	0	0	0
Investment Income		94,000	77,000	33,397	33,391	33,398	33,420	33,429	33,416	33,422	33,432	0	77,000
Subtotal Other Sources of Cash		**409,411**	**399,119**	**361,090**	**367,045**	**373,097**	**379,320**	**385,685**	**392,193**	**398,834**	**405,621**	**379,141**	**399,119**
TOTAL O&M REVENUES		**7,994,411**	**8,199,119**	**8,521,090**	**8,862,045**	**9,218,097**	**9,584,320**	**9,965,685**	**10,372,193**	**10,793,834**	**11,230,621**	**11,689,141**	**8,199,119**
O&M REVENUE REQUIREMENTS													
Total O & M Expense		7,569,265	7,940,557	8,264,263	8,602,362	8,955,536	9,324,501	9,710,010	10,112,851	10,533,853	10,973,886	11,433,865	7,940,557
Debt Service													
State Revolving Fund Loan													0
Northline Lift Station		258,146	258,146	258,146	258,146	258,146	258,146	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**	**258,146**	**258,146**	**258,146**	**258,146**	**258,146**	**258,146**
TOTAL O&M REVENUE REQUIREMENTS		**7,827,411**	**8,198,703**	**8,522,409**	**8,860,508**	**9,213,682**	**9,582,647**	**9,968,155**	**10,370,996**	**10,791,999**	**11,232,032**	**11,692,011**	**8,198,703**
ANNUAL O&M SURPLUS (DEFICIT)		**167,000**	**416**	**(1,319)**	**1,538**	**4,415**	**1,673**	**(2,471)**	**1,197**	**1,836**	**(1,411)**	**(2,870)**	**416**

SEWER CASH FLOW												Budget Year 2019
	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2018-19
CAPITAL REPLACEMENT & REFURBISHMENT PROGRAM												
CAPITAL EXPENDITURES												
Capital Replacement & Refurbishment Program	1,615,000	1,615,000	1,615,000	1,615,000	1,615,000	1,615,000	1,615,000	1,615,000	1,615,000	1,615,000	1,615,000	1,615,000
						140,000	140,000	140,000	140,000	140,000	140,000	0
							140,000	140,000	140,000	140,000	140,000	0
TOTAL CAPITAL EXPENDITURES	**1,615,000**	**1,615,000**	**1,615,000**	**1,615,000**	**1,615,000**	**1,755,000**	**1,895,000**	**1,895,000**	**1,895,000**	**1,895,000**	**1,895,000**	**1,615,000**
CAPITAL PROGRAM REVENUE												
Revenue from Existing Capital Charge	1,615,000	1,615,000	1,615,000	1,615,000	1,615,000	1,615,000	1,615,000	1,615,000	1,615,000	1,615,000	1,615,000	1,615,000
Capital Charge Revenue Increase						140,000	140,000	140,000	140,000	140,000	140,000	0
Capital Charge Revenue Increase							140,000	140,000	140,000	140,000	140,000	0
Subtotal Capital Charge Revenue	**1,615,000**	**1,615,000**	**1,615,000**	**1,615,000**	**1,615,000**	**1,755,000**	**1,895,000**	**1,895,000**	**1,895,000**	**1,895,000**	**1,895,000**	**1,615,000**
Loan Proceeds - Northline												
Capital Reserves												
TOTAL CAPITAL REVENUE	**1,615,000**	**1,615,000**	**1,615,000**	**1,615,000**	**1,615,000**	**1,755,000**	**1,895,000**	**1,895,000**	**1,895,000**	**1,895,000**	**1,895,000**	**1,615,000**
ANNUAL CAPITAL SURPLUS (DEFICIT)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TOTAL CASH FLOW												
TRANSFER FROM RECYCLED WATER	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
TOTAL ANNUAL RESERVE IMPACT	**167,000**	**416**	**(1,319)**	**1,538**	**4,415**	**1,673**	**(2,471)**	**1,197**	**1,836**	**(1,411)**	**(2,870)**	**416**
ENDING RESERVE ANALYSIS	**6,679,021**	**6,679,438**	**6,678,118**	**6,679,656**	**6,684,071**	**6,685,744**	**6,683,273**	**6,684,470**	**6,686,305**	**6,684,894**	**6,682,025**	**6,679,438**

10.6 APPENDIX 6 – DETAILED WATER COST OF SERVICE ANALYSIS

	Peaking Factors	Base Cost Allocation	Peaking Cost Allocation
Max Day	2.00 x Average Demand	50.0%	50.0%
Max Hour	3.00 x Average Demand	33.3%	66.7%
Average Demand		41.7%	58.3%

The appropriate allocation factors between base and extra capacity vary with system design. The water utility is comprised of various facilities, each designed and operated to fulfill a given function. To provide adequate service to its customers at all times, the utility must be capable of providing the total water demand as well as peak demand.

Different facilities are designed to meet different peaking demands. These characteristics are used to allocate costs to functional cost components. Since all customers do not exert their maximum demand for water at the same time, water facilities are designed to meet coincidental demands for all customers.

Comparison of historical system coincidental maximum day and maximum hour demands to average day demands results in appropriate ratios for allocation of capital costs and operating expenses to base and extra capacity cost components. A maximum day to average day ratio of 2.0 is used based on demands experienced in the District's system. This indicates that 50 percent of the capacity of the facilities designed and operated for maximum day demand is needed for average or base use and 50 percent is used for maximum day extra capacity requirements.

Cost of service is allocated to functional cost components using either water system demand ratios developed above or direct assignment, such as billing costs. The separation of costs into functional components provides a means for distributing such costs to customers based on their respective responsibilities for each type of service.

O&M expenses are generally allocated to the functional cost components that best reflect the design parameter associated with that expense. For example, source of supply meets the average day requirements of the system; thus, related expenses are allocated to the base cost component. The treatment plant and transmission mains are designed to meet maximum day demands of the system and so related expenses are allocated to the base and maximum day cost components. In a similar manner, pump stations and distribution mains are designed to meet the maximum hour demands of the system so related expenses are allocated to the base, maximum day and maximum hour cost components. Customer accounts, general and administration, and operations support expenses are directly associated with the cost of billing customers and is allocated to the billing cost component.

Water Revenue Requirements	2018-19	Water Supply	Billing & CS	Meters	Water Revenue Requirement Components Base Fixed	Peaking	RW	Conservation	Rev Offset	Capital R&R
O&M Expenses (excl. Interest & Depreciation)										
Source of Supply	$8,148,467	98.3%			1.7%					
Pumping Water	$247,971				33.3%	66.7%				
Treatment Water	$49,641				50.0%	50.0%				
Transmission & Distribution Water	$515,692				50.0%	50.0%				
Customer Accounts	$0				41.7%	58.3%				
Outside Treatment Sewer	$0				100.0%					
Operations Support	$88,844		17%		83.0%					
Operations Support Power	$4,320		0%		100.0%					
Fleet	$95,154				100.0%					
Operations Indirect Costs	$43,960		0%		100.0%					
Administration	$87,980		30%		70.0%					
Admin Power	$15,960		30%		70.0%					
Administration Indirect Costs	$659,440		30%		70.0%					
Labor	$3,315,135		7.0%		64.4%	28.6%				
Subtotal O&M Expenses (excl. Interest & Depreciation)	**$13,272,564**	**$8,010,968**	**$475,182**	**$0**	**$3,390,745**	**$1,395,669**	**$0**	**$0**	**$0**	**$0**
Other Revenue Requirements										
Debt Service	$684,262	100.0%								
Unrestricted Capital R&R Funding	$785,000									100.0%
Restricted Capital R&R Funding (Baker WTP)	$600,000									100.0%
Subtotal Other Revenue Requirements	**$2,069,262**	**$684,262**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,385,000**
***Less* Other Revenues**										
Fire Service Charges	($121,000)				100.0%	0.0%				
Restricted Reserves Funding of Conservation Program	($100,000)				100.0%	0.0%				
Capital Charge Funding of Baker Debt Service	($600,000)	100.0%				0.0%				
Restricted Reserve Funding	($100,000)									100.0%
Property Taxes - General Fund Revenue	($330,342)				99.7%	0.0%			0.3%	
Property Taxes (Funds Tier 1 Offset)	($189,691)								100.0%	
Miscellaneous Revenue	($75,000)				100.0%	0.0%				
Other Income (Site Leases)	($215,000)					0.0%			100.0%	
Other Income (R-6 Partners)	($122,000)				100.0%	0.0%				
Investment Income	($58,000)				100.0%	0.0%				
Subtotal Other Revenues	**($1,911,033)**	**($600,000)**	**$0**	**$0**	**($805,351)**	**$0**	**$0**	**$0**	**($405,682)**	**($100,000)**
***Plus* Operating Reserve Funding**	($481,040)				100%					
***Plus* Capital Reserve Funding**	$0									100%
NET REV REQUIREMENTS FROM RATES, EXC. FIRE SC	**$12,949,753**	**$8,095,230**	**$475,182**	**$0**	**$2,104,354**	**$1,395,669**	**$0**	**$0**	**($405,682)**	**$1,285,000**

Water Revenue Requirements	2018-19	Water Rate Components							
		Billing & CS	Meters & Capacity	Water Supply	Peak Delivery	RW	Conservation	Rev Offset	Capital R&R
Water Supply	$8,095,230			$8,095,230					
Billing & CS	$475,182	$475,182							
Meters	$0								
Base Fixed	$2,104,354		$2,104,354						
Peaking	$1,395,669		$669,669		$726,000				
RW	$0					$0			
Conservation	$0						$0		
Rev Offset	($405,682)							($405,682)	
Capital R&R	$1,285,000								$1,285,000
NET REVENUE REQUIREMENTS	**$12,949,753**	**$475,182**	**$2,774,023**	**$8,095,230**	**$726,000**	**$0**	**$0**	**($405,682)**	**$1,285,000**
Rev from Current Rates		**$2,958,095**		**$8,091,708**	**$734,645**	**$860,211**	**$133,435**	**($404,691)**	**$1,285,437**
Units of Service		114,816 bills	314,436 EMUs						
Unit Cost of Service		$4.14	$8.82						