

# Ken-Caryl Ranch Water & Sanitation District

## Water and Sewer Service Rate and Tap Fee Study

Report / April 19, 2019







April 19, 2019

Mr. Timothy R. Anderson  
District Manager  
10698 W. Centennial Road  
Littleton, Colorado 80127

**Subject: Water and Sewer Rate and Tap Fee Study**

Dear Mr. Anderson,

Raftelis is pleased to provide this Water and Sewer Rate and Tap Fee Study (Rate Study) Report for the Ken-Caryl Ranch Water and Sanitation District. The major objectives of the Rate Study included:

- ) The development of 10-year water and wastewater utility financial plans to identify funding requirements and a capital financing strategy to pay for projected water and wastewater capital expenditures.
- ) The completion of water and wastewater cost of service studies to equitably allocate costs to the District's different customer classes based on their unique customer class characteristics.
- ) A review of the District's water and wastewater rate structures to insure the equitable recovery of the costs allocated to each customer class while promoting conservation/efficient water use.
- ) An update of the District's water and wastewater system development charges.

This report summarizes our key rate study findings and recommendations. It has been a pleasure working with you and District staff. Please do not hesitate to contact John or myself if you have any questions regarding the attached report and/or the project.

Sincerely,

A handwritten signature in blue ink that reads "John J. Wright".

**John J. Wright**  
Manager

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- Appendix A - Water Utility Financial Plan
- Appendix B - Water Utility Cost of Service Study
- Appendix C - Water Utility Rate Design
- Appendix D - Wastewater Utility Financial Plan

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# Study Background

On March 26, 2018, the Ken-Caryl Ranch Water and Sanitation District (District) engaged Raftelis to conduct a Water and Sewer Rate and Tap Fee Study (Rate Study) for its water and wastewater utilities. During the period April 2018 - December 2018, Raftelis completed the study with the assistance of District staff. On December 19, 2018, the District Board of Directors (Board) adopted water and wastewater rates and tap fees for 2019 based on the findings and recommendations described in this report. The major objectives of the Rate Study included:

- J The development of 10-year water and wastewater utility financial plans to identify funding requirements and a capital financing strategy to pay for projected water and wastewater capital expenditures.
- J The completion of water and wastewater cost of service studies to equitably allocate costs to the District's different customer classes based on their unique customer class characteristics.
- J A review of the District's water and wastewater rate structures to insure the equitable recovery of the costs allocated to each customer class while promoting conservation/efficient water use.
- J An update of the District's water and wastewater system development charges.

# Water Utility Rate Study

## Water Utility Profile

Table 1 provides a profile of the District's water utility customer billed consumption and revenue based on actual 2017 results. Note that approximately 40% of the District's total water rate revenue was earned from minimum charges under the rate structure that is being significantly modified in 2019. Under the new rate structure adopted by the Board for 2019, the percentage of revenues recovered from fixed charges (i.e., a monthly service charge based on meter size) will fall to approximately 34%.

**Table 1: Water Service Customer Metrics**

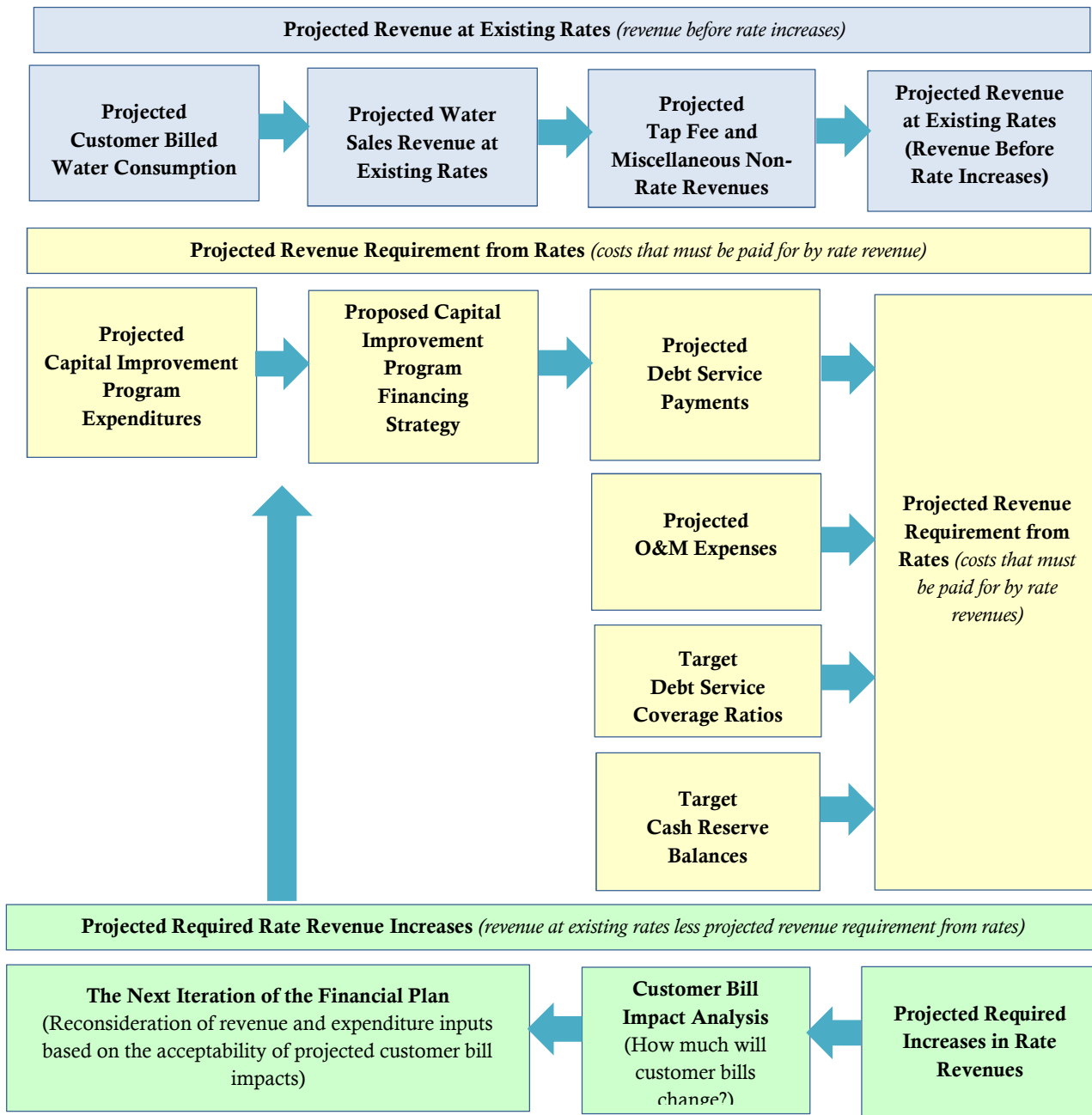
Customer Type	Customer Accounts	Billed Consumption (Kgal)	Minimum Charge Revenue	Volumetric Revenue	Total Revenue
Residential	3,396	415,591	\$1,088,078	1,388,415	2,476,493
Multi-Family Residential	317	37,470	394,092	151,023	545,115
Commercial	171	165,014	217,581	765,558	983,139
Irrigation-Only	42	59,846	50,286	314,259	364,544
<b>Total</b>	<b>3,926</b>	<b>677,921</b>	<b>\$1,750,037</b>	<b>\$2,619,254</b>	<b>\$4,369,291</b>

## Water Utility Financial Plan

Raftelis prepared a financial plan for the District's water utility for the years 2019-2028. The purpose of the financial plan was to estimate the amount of rate revenue required to insure the on-going financial integrity of the District's water utility. Financial integrity was defined as a level of funding adequate to pay for projected capital improvement program (CIP) expenditures and maintain adequate cash reserve balances. The financial planning process is to establish the total amount of revenue that must be recovered from utility customers during each year of the planning horizon. This utility-wide revenue requirement from rates is then allocated, through the cost of service process, to each customer class based on the specific demands they impose on the utility system. Figure 1 illustrates the role of financial planning in the utility cost of service process. Note that in Figure 1, references are made to projected debt

service payments and target debt service coverage ratios. The District's water and wastewater utilities currently have no outstanding debt and no new debt is projected to be required for either utility over the 2019-2028 planning horizon analyzed by Raftelis.

**Figure 1: Steps in the Financial Planning Process**



**KEY ASSUMPTIONS USED IN THE WATER FINANCIAL PLAN**

The key assumptions made by Raftelis in the preparation of the District's water utility financial plan is that purchased water costs (i.e., the payments made to Denver Water for treated water) will increase at a rate of 3.0% annually. Similarly, annual construction cost inflation associated with the District's capital improvement program was also assumed to increase at 3.0% annually. Overall operating expenses were projected to increase at a rate of 3.0% annually.



## WATER UTILITY FINANCIAL PLAN RESULTS

Table 2 summarizes the District's water utility financial plan prepared by Raftelis and presented to the District Board. Appendix A to this report provides a detail of the water utility financial plan.

**Table 2: Water Utility Financial Plan (\$ Thousands)**

Metric	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Annual % Rate Revenue Increase	3.9%	7.0%	9.0%	9.0%	9.0%	9.0%	9.0%	8.0%	5.0%	5.0%
<b>Revenues</b>										
Rate Revenues	\$4,567.9	\$4,919.2	\$5,362.8	\$5,846.5	\$6,373.7	\$6,948.5	\$7,575.1	\$8,182.4	\$8,593.0	\$9,024.1
Miscellaneous Revenue	<u>104.1</u>	<u>98.3</u>	<u>84.7</u>	<u>73.7</u>	<u>75.8</u>	<u>85.7</u>	<u>93.2</u>	<u>91.1</u>	<u>85.3</u>	<u>84.1</u>
Total Revenues	4,672.0	5,017.5	5,447.5	5,920.2	6,449.5	7,034.2	7,668.3	8,273.5	8,678.3	9,108.2
<b>Operating Expenses</b>										
Purchased Water	3,382.0	3,483.5	3,588.0	3,695.6	3,806.5	3,920.7	4,038.3	4,159.5	4,284.3	4,412.8
Maintenance	357.2	367.9	378.9	390.3	402.0	414.0	426.5	439.3	452.4	466.0
Administrative	630.3	649.2	668.7	688.7	709.4	730.7	752.6	775.2	798.4	822.4
Contingency	<u>59.5</u>	<u>61.3</u>	<u>63.1</u>	<u>65.0</u>	<u>66.9</u>	<u>69.0</u>	<u>71.0</u>	<u>73.2</u>	<u>75.4</u>	<u>77.6</u>
Total	4,429.0	4,561.8	4,698.7	4,839.6	4,984.8	5,134.4	5,288.4	5,447.1	5,610.5	5,778.8
<b>Capital Improvements</b>										
Distribution	210.0	90.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Transmission	170.0	550.0	1,780.0	640.0	0.0	660.0	1,480.0	650.0	650.0	0.0
Pumps	80.0	20.0	0.0	0.0	90.0	0.0	0.0	0.0	10.0	0.0
Meters	51.0	603.5	773.5	816.0	714.0	0.0	731.0	0.0	0.0	0.0
Administration	<u>122.4</u>	<u>102.0</u>	<u>149.6</u>	<u>0.0</u>	<u>13.6</u>	<u>61.2</u>	<u>13.6</u>	<u>0.0</u>	<u>0.0</u>	<u>61.2</u>
Total	633.4	1,365.5	2,703.1	1,456.0	817.6	721.2	2,224.6	3,560.0	3,660.0	3,151.2
<b>Annual Results</b>										
Total Expenditures	<u>5,062.3</u>	<u>5,927.3</u>	<u>7,401.8</u>	<u>6,295.6</u>	<u>5,802.4</u>	<u>5,855.6</u>	<u>7,513.0</u>	<u>9,007.1</u>	<u>9,270.5</u>	<u>8,930.0</u>
Net Operating Surplus/(Deficit)	(390.3)	(909.8)	(1,954.3)	(375.4)	647.1	1,178.6	155.3	(733.5)	(592.2)	178.2
<b>Cash Reserves</b>										
Beginning Cash	8,090.1	7,699.8	6,790.0	4,835.7	4,460.3	5,107.4	6,286.0	6,441.3	5,707.8	5,115.6
Ending Cash	\$7,699.8	\$6,790.0	\$4,835.7	\$4,460.3	\$5,107.4	\$6,286.0	\$6,441.3	\$5,707.8	\$5,115.6	\$5,293.8

## WATER UTILITY REVENUE REQUIREMENT FROM RATES

As noted above, the financial planning process determines the amount of water rate revenues that must be recovered from customers. This amount, referred to as the revenue requirement from rates, is the level of rate revenues necessary to pay for utility operating and capital costs. An alternative presentation of the determination of this amount for 2019 is shown in Table 3.

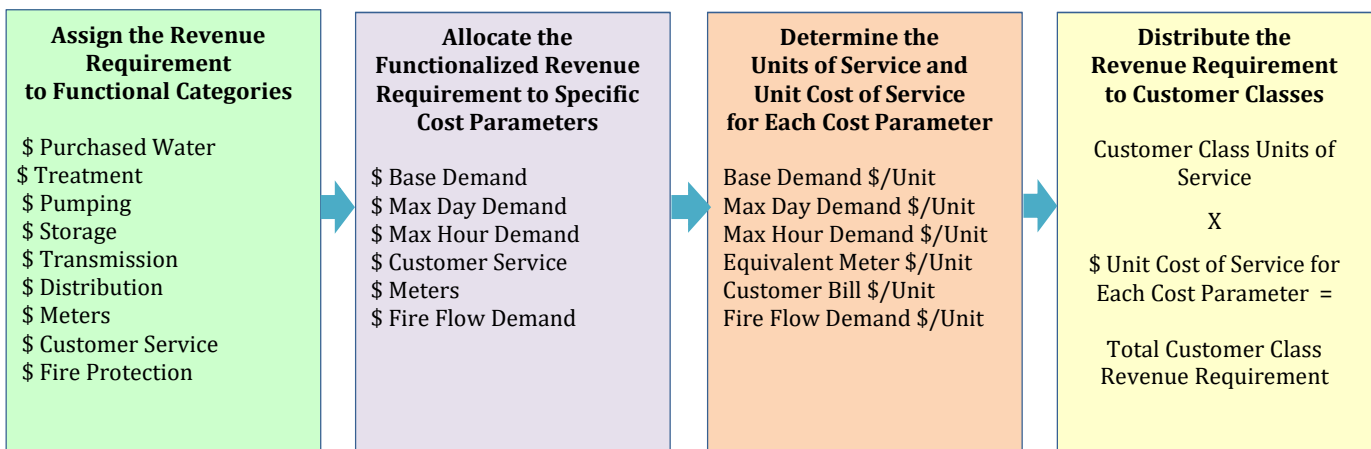
**Table 3: 2019 Water Utility Revenue Requirement from Rates**

Item	2019
Operating Expenses	
Purchased Water	\$3,382,032
Operations & Maintenance	357,160
Administrative	630,282
Reserve for Replacement Capital	<u>59,483</u>
Total Operating Expense	4,428,956
Capital Improvements	
Distribution System	210,000
Transmission System	170,000
Pumps	80,000
Meters	51,000
Administration	<u>122,385</u>
Total Capital Improvements	633,385
Total Expenditures	5,062,341
Add: Net Operating Surplus/(Deficit)	<u>(390,340)</u>
Gross Revenue Requirement from Rates	4,672,001
Less: Non-Rate Revenues	
System Development Charges	2,500
Other	22,660
Interest Income	<u>78,950</u>
Total Non-Rate Revenues	104,110
Net Revenue Requirement from Rates	\$4,567,891

## Water Utility Cost of Service Study

After projecting the revenue requirement from rates, a cost of service study (COS study) is conducted to determine the amount of rate revenue that must be recovered from each customer class based on their unique usage characteristics. To accomplish this objective, Raftelis uses a multi-step cost allocation process that included a comprehensive analysis of customer water consumption characteristics. The procedures used by Raftelis in the water utility COS study were based on industry accepted methods as published by the American Water Works Association (AWWA) in the publication, "*Manual of Water Supply Practices M1, Principles of Water Rates, Fees, and Charges, Seventh Edition*" (AWWA Manual M1). Figure 2 provides a visual overview of key steps in the cost of service study process used to determine the customer class revenue requirements from rates.

**Figure 2: Determination of Customer Class Revenue Requirements**



## THE IMPORTANCE OF CUSTOMER CLASS PEAKING FACTORS

A water utility system cannot be designed, constructed or operated merely to meet the average day demands imposed by customers. Instead, it must be designed, constructed and operated to meet the coincident (i.e., total system) maximum day and maximum hour peak demands imposed by customers. These peak demands occur on a single day or during a single hour each year and are invariably significantly greater than typical average day demands. To illustrate this point, Table 4 compares the maximum day water demands occurring on the District's water utility system for the three-year period 2015-2017. All the maximum day demands shown in the Table 4 occurred during the summer months of July, August or September. This is normative for Colorado front-range utilities who typically experience both maximum day and maximum hour peak demands during the summer irrigation season.

**Table 4: Water Utility Total System Coincidental Demands**

Year	Annual Average Day Purchases from Denver Water (kgal)	Estimated Maximum Day Purchases from Denver Water (kgal)	Estimated Maximum Hour Purchases from Denver Water (kgal)	Estimated District Maximum Day Peaking Factor	Estimated District Maximum Hour Peaking Factor
2015	1,922	4,185	6,728	2.18	3.50
2016	2,158	4,499	7,552	2.09	3.50
2017	2,103	4,478	7,361	2.13	3.50
Average	2,061	4,388	7,214	2.13	3.50

Due to the peak demands they impose on a water utility system, customer classes that have higher maximum day and maximum hour peaking factors generally make a large proportional contribution to the coincident peak demands experienced by a utility, i.e., place greater summer season demands on the system. As a result, through of the cost of service process, they are allocated a larger proportional share of the water utility revenue requirement.

The approach employed by Raftelis to estimate customer class peaking factors are those described in Appendix A of the *AWWA Manual M1*. Specifically, we conducted a detailed analysis of the monthly and annual billed water consumption characteristics of each customer class during 2017. This resulted in an estimate, for each individual year, of customer class average day, maximum day, and maximum hour peaking factors. Table 5 shows the estimated maximum day peaking factors for District customers. These peaking factors are normative for Colorado front-range utilities. Specifically, Irrigation-Only customers have the highest estimated maximum day peaking factors due to the significant demands they place on the water utility system during the outdoor irrigation season. In contrast, Multi-Family Residential and Commercial customers have the lowest maximum day peaking factors because the majority of their water consumption is not associated with outdoor watering.

**Table 5: Calculated Customer Class Peaking Factors**

Customer Class	Maximum Month Volume	Average Day in Maximum Month	Annual Volume	Annual Average Day	Ratio of Avg. Day in Maximum Month to Annual Average Day
Residential	80,555	2,599	415,591	1,139	2.28
Multi-Family Residential	5,360	173	37,470	103	1.68
Commercial	27,951	902	165,014	452	1.99
Commercial Irrigation Only	16,016	4	496	1	3.26
MF Residential Irrigation Only	133	517	59,350	163	3.18

## 2019 COST OF SERVICE STUDY SUMMARY RESULTS

Table 6 shows the results of the water utility COS study for 2019 which compares the estimated 2019 cost of service for each customer class to the level of revenue projected to be collected in 2019 *if* existing 2018 rates remain in place without modification. There is misalignment between the level of revenue projected to be collected from each

customer class in 2019 and the estimated cost of providing service to them. This is particularly true as it relates to customers in the Multi-Family Residential customer class that are estimated to be paying approximately 41.4% more than the costs incurred to provide service to them. Similarly, customers with irrigation-only water taps are estimated to be paying approximately 21.51% less than the costs incurred to provide them service. Appendix B to this report provides a detail of the water utility cost of service study.

**Table 6: Water Utility Cost-of-Service Study Results**

Customer Class	Test Year 2019 Revenue at Existing Rates	Test Year 2019 Cost of Service	\$ Change	% Change	Comment
Residential	\$2,477,952	\$2,895,937	417,985	16.9%	Paying too little
Multi-Family Residential	546,866	320,673	(226,193)	-41.4%	Paying too much
Commercial	983,139	832,358	(150,781)	-15.3%	Paying too much
Irrigation	364,544	441,349	76,805	21.1%	Paying too little
Private Fire	\$51,608	\$77,576	25,968	50.3%	Paying too much
<b>Total</b>	<b>\$4,424,108</b>	<b>\$4,567,891</b>	<b>143,784</b>	<b>3.3%</b>	

## Water Utility Rate Design

The rate design process determines how rates should be structured to recover the appropriate amount of revenue from each customer class while achieving specific policy objectives related to issues such as encouraging efficient water use, achieving revenue stability, and maximizing bill affordability for low consumption customers. At the start of the rate study process, Raftelis conducted a pricing objectives workshop with the District's Board to determine what they considered the most critical. Table 7 summarizes the results.

**Table 7: District Board Pricing Objectives**

Rank	Pricing Objective	Weighted Score
1	Financial Sufficiency	31
2	Cost of Service Equity	27
2	Defensibility	27
4	Ease of Implementation	23
4	Revenue Stability	23
6	Rate Stability	21
6	Ease of Customer Understanding	21
8	Minimization of Customer Impacts	20
9	Water Use Efficiency / Demand Management	15
10	Equitable Contribution from New Customers	13
11	Affordability for Disadvantaged Customers	12
12	Economic Development	10

## RATE DESIGN - WATER RATE STRUCTURE MODIFICATIONS

The rate design process determines how rates should be structured to recover the appropriate amount of revenue from each customer class while achieving specific policy objectives related to issues such as encouraging efficient water use, achieving revenue stability, and maximizing bill affordability for low consumption customers. The following water rate structure modifications recommended by Raftelis were adopted by Raftelis and were adopted by the District Board on December 18, 2019 for implementation on February 1, 2019. A detail of the water utility rate design process can be found in Appendix C of this report.

### ***Residential Customers: Elimination of the Monthly Minimum Charge:***

The District has traditionally billed Residential customer accounts using a five-TIER volumetric rate structure. TIER 1 in the rate structure provides each customer account with a minimum monthly usage allowance of 5,000 gallons which is billed at a flat rate of \$26.70 per month. Residential customers must pay this amount *regardless* of their actual

monthly billed water consumption. For example, if a customer uses only 3,000 gallons of water in a particular month, they must pay \$26.70. This rate structure discourages efficient water usage and is inequitable to low consumption customers who routinely use less than 5,000 gallons per month. The new Board adopted Residential water rate design eliminates the monthly minimum usage allowance and the associated monthly minimum charge. In its place, it substitutes a rate structure that requires Residential customers to pay a volumetric rate for all usage along with a monthly service charge based on water meter size. Table 8 summarizes the changes to the Residential customer rate design that will be effective in 2019.

**Table 8: Summary of Residential Customer Rate Design Changes**

Existing 2018		Adopted 2019	
Volumetric Rates for Metered Water Usage		Volumetric Rates for Metered Water Usage	
TIER 1: Minimum Charge (5,000 gallons)	\$0.00	TIER 1: 1-5,000 gallons	\$2.12
TIER 2: 5,001 to 16,000 gallons	5.34	TIER 2: 5,001-16,000 gallons	5.81
TIER 3: 16,001 to 27,000 gallons	5.85	TIER 3: 16,001-27,000 gallons	8.08
TIER 4: 27,001 to 38,000 gallons	6.35	TIER 4: 27,001 to 38,000 gallons	9.85
TIER 5: Over 38,001 gallons	6.86	TIER 5: Over 38,001 gallons	11.26
Monthly Minimum Charge		Monthly Service Charge	
	\$26.70	3/4"	\$19.19
		1"	25.84

**Multi-Family Residential Customers: Elimination of the Monthly Minimum Charge, Change to a Single TIER Rate Structure, Change to Billing on a Per Account Basis:**

The District has traditionally billed Multi-Family Residential customer accounts using a three-TIER volumetric rate structure. TIER 1 in the rate structure provides each customer account with monthly minimum usage allowance of 5,000 gallons which is billed at a flat rate of \$26.70 per month. Multi-Family Residential customer accounts must pay this amount *regardless* of their actual monthly billed water consumption.

The new Board adopted Multi-Family Residential water rate design eliminates the monthly minimum usage allowance and the associated monthly minimum charge. It will be replaced by a new single-TIER volumetric rate structure in which customers pay a volumetric rate for all usage. Under this new rate structure, each Multi-Family Residential customer account will also pay a monthly service charge based on their water meter size. This differs from the District's traditional approach of assessing the current monthly minimum charge of \$26.70 based on the number of dwelling units associated with each Multi-Family Residential customer account. This new approach will result in the collection of water rate revenues from Multi-Family Residential customers that better correspond to the costs incurred by the District to provide them service. Table 9 summarizes the changes to the Multi-Family Residential customer rate design that will be effective in 2019.

**Table 9: Summary of Multi-Family Residential Customer Rate Design Changes**

Existing 2018		Adopted 2019	
Volumetric Rates for Metered Water Usage		Volumetric Rates for Metered Water Usage	
TIER 1: Minimum Charge (5,000 gallons)	\$0.00	All Consumption	\$6.15
TIER 2: 5,001 to 10,000 gallons	5.34		
TIER 3: Over 10,001 gallons	5.85		
Monthly Minimum Charge (Billed on a Per Dwelling Unit Basis)		Monthly Service Charge (Billed on a Per Account Basis)	
	\$26.70	3/4"	\$19.19
		1"	25.84
		1 1/2"	30.28
		2"	79.09
		3"	150.09
		4"	229.96
		6"	451.82
		8"	718.05

***Commercial Customers: Elimination of the Monthly Minimum Charge, Change to a Single TIER Rate Structure:***

The District has traditionally billed Commercial customer accounts using a complex three-TIER volumetric rate structure. TIER 1 in this rate structure is a monthly minimum usage allowance and associated monthly minimum charge. The monthly minimum usage allowance and associated minimum charge increase by water meter size. For example, Commercial customers with a 1" water meter receive a monthly usage allowance of 10,000 gallons, and even if they use less than this amount, they pay a monthly minimum charge of \$48.93. In contrast, Commercial customers with a 2" water meter receive a usage allowance of 42,000 gallons and must pay a monthly minimum charge of \$191.28 even if they use less than 42,000 gallons.

The new Board adopted Commercial customer water rate design eliminates the monthly minimum charge and the associated minimum usage allowances. It will be replaced by a new single-TIER volumetric rate structure in which customers pay a volumetric rate for all water usage (including usage in TIER 1). Under this new rate structure, Commercial customers will also pay a monthly service charge based on their water meter size. Table 10 summarizes the changes to the Commercial customer rate design that will be effective in 2019.

**Table 10: Summary of Commercial Customer Rate Design Changes**

Existing 2018		Adopted 2019	
Volumetric Rates for Metered Water Usage		Volumetric Rates for Metered Water Usage	
TIER 1 Minimum Charge (varies by meter size)	\$0.00	All Consumption	\$4.52
TIER 2: (varies by meter size)	5.34		
TIER 3: (varies by meter size)	5.85		
Monthly Minimum Charge		Monthly Service Charge (Billed on a Per Account Basis)	
3/4"	\$26.70	3/4"	\$19.19
1"	48.93	1"	25.84
1 1/2"	106.76	1 1/2"	30.28
2"	191.28	2"	79.09
3"	427.02	3"	150.09
4"	760.62	4"	229.96
6"	1,708.08	6"	451.82
8"	--	8"	718.05

**Creation of New Irrigation-Only Customer Class:**

Traditionally, the District has not had a separate customer class for outdoor irrigation-only accounts despite the high peak load demands they impose on the water utility system. Instead, these customers have been billed at Residential, Multi-Family Residential, and Commercial customer rates that do not recover adequate revenues to recover the costs incurred by the District to provide them with water service. To rectify this inequity, the Board has authorized the creation of a new Irrigation-Only customer class. Customers in this class will be billed using a single-TIER volumetric rate structure and a monthly service charge based on meter size. Table 11 shows the 2019 rates for the new Irrigation-Only customer class.

**Table 11: Summary of New Irrigation-Only Customer Class Rate Design**

Existing 2018	Adopted 2019	
Dependent on the customer class to which the irrigation-only customer was assigned (Residential, Multi-Family Residential, or Commercial)	Volumetric Rates for Metered Water Usage	
	All Consumption	\$7.04
	Monthly Service Charge (Billed on a Per Account Basis)	
	3/4"	\$19.19
	1"	25.84
	1 1/2"	30.28
	2"	79.09
	3"	150.09
	4"	229.96
	6"	451.82
	8"	718.05

## PROJECTION OF WATER RATES

Table 12 shows the projection of water rates through the 2028 planning horizon.

**Table 12: Projection of Water Utility Rates**

Monthly Service Charge										
Meter Size	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
3/4"	\$19.19	\$20.53	\$22.38	\$24.40	\$26.59	\$28.98	\$31.59	\$34.12	\$35.83	\$37.62
1"	25.84	27.65	30.14	32.85	35.81	39.03	42.54	45.94	48.24	50.65
1.5"	30.28	32.40	35.32	38.49	41.96	45.73	49.85	53.84	56.53	59.36
2"	79.09	84.63	92.24	100.54	109.59	119.46	130.21	140.62	147.66	155.04
3"	150.09	160.60	175.05	190.80	207.98	226.69	247.10	266.87	280.21	294.22
4"	229.96	246.06	268.20	292.34	318.65	347.33	378.59	408.88	429.32	450.79
6"	451.82	483.45	526.96	574.38	626.08	682.43	743.84	803.35	843.52	885.69
8"	718.05	768.31	837.46	912.83	994.99	1,084.54	1,182.15	1,276.72	1,340.55	1,407.58
Fire Line Charges										
4"	28.74	30.75	33.52	36.54	39.82	43.41	47.32	51.10	53.66	56.34
6"	83.49	89.33	97.37	106.14	115.69	126.10	137.45	148.45	155.87	163.66
8"	177.91	190.36	207.50	226.17	246.53	268.71	292.90	316.33	332.15	348.75
Volumetric Rate (\$/kgal)										
Customer Class	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Single Family Residential										
1-5,000 gal	\$2.12	\$2.27	\$2.47	\$2.70	\$2.94	\$3.20	\$3.49	\$3.77	\$3.96	\$4.16
5,000-16,000 gal	5.81	6.22	6.78	7.39	8.05	8.78	9.57	10.33	10.85	11.39
17,000-27,000 gal	8.08	8.65	9.42	10.27	11.20	12.20	13.30	14.37	15.08	15.84
28,000 to 38,000 gal	9.85	10.54	11.49	12.52	13.65	14.88	16.22	17.51	18.39	19.31
Over 38,001 gal	11.26	12.05	13.13	14.31	15.60	17.01	18.54	20.02	21.02	22.07
Multi Family Residential (All Consumption)	\$6.15	\$6.58	\$7.17	\$7.82	\$8.52	\$9.29	\$10.12	\$10.93	\$11.48	\$12.06
Commercial (All Consumption)	\$4.52	\$4.84	\$5.27	\$5.75	\$6.26	\$6.83	\$7.44	\$8.04	\$8.44	\$8.86
Irrigation Only (All Consumption)	\$7.04	\$7.53	\$8.21	\$8.95	\$9.76	\$10.63	\$11.59	\$12.52	\$13.14	\$13.80

## RATE DESIGN - RESIDENTIAL CUSTOMER BILL IMPACTS

The District's decision to eliminate the monthly minimum charge will have a beneficial impact on the water bills of low consumption customers who use less 5,000 gallons. Correspondingly, the bills of higher consumption customers will increase. Table 13 summarizes the estimated combined water and wastewater bill impacts for Residential customers at various levels of monthly water consumption.



**Table 13: Estimated 2019 Residential Customer Bill Impacts**

Monthly Usage (kgal)	Bills Under 2019 Adopted Board Rate Design			Compared to 2019 Bill with No Change in Water Rate Design	
	Water Bill	Wastewater Bill	Total Bill	Dollar Difference	% Difference
0	\$19.19	\$29.38	\$48.57	(\$8.55)	-15.0%
1	21.31	29.38	50.69	(6.43)	-11.3%
2	23.43	29.38	52.81	(4.31)	-7.5%
3	25.55	29.38	54.93	(2.19)	-3.8%
4	27.67	29.38	57.05	(0.07)	-0.1%
5	29.79	29.38	59.17	2.05	3.6%
6	35.60	29.38	64.98	2.31	3.7%
7	41.41	29.38	70.79	2.57	3.8%
8	47.22	29.38	76.60	2.83	3.8%
9	53.03	29.38	82.41	3.10	3.9%
10	58.84	29.38	88.22	3.36	4.0%
11	64.65	29.38	94.03	3.62	4.0%
12	70.46	29.38	99.84	3.88	4.0%
13	76.27	29.38	105.65	4.14	4.1%
14	82.08	29.38	111.46	4.40	4.1%
15	87.89	29.38	117.27	4.67	4.1%
16	93.70	29.38	123.08	4.93	4.2%
17	101.78	29.38	131.16	6.93	5.6%
18	109.86	29.38	139.24	8.93	6.9%
19	117.94	29.38	147.32	10.93	8.0%
20	126.02	29.38	155.40	12.94	9.1%
21	134.10	29.38	163.48	14.94	10.1%
22	142.18	29.38	171.56	16.94	11.0%
23	150.26	29.38	179.64	18.94	11.8%
24	158.34	29.38	187.72	20.94	12.6%
25	166.42	29.38	195.80	22.94	13.3%
26	174.50	29.38	203.88	24.95	13.9%
27	182.58	29.38	211.96	26.95	14.6%
28	192.43	29.38	221.81	30.20	15.8%
29	202.28	29.38	231.66	33.45	16.9%
30	212.13	29.38	241.51	36.71	17.9%
31	221.98	29.38	251.36	39.96	18.9%
32	231.83	29.38	261.21	43.21	19.8%
33	241.68	29.38	271.06	46.46	20.7%
34	251.53	29.38	280.91	49.71	21.5%
35	261.38	29.38	290.76	52.97	22.3%
36	271.23	29.38	300.61	56.22	23.0%
37	281.08	29.38	310.46	59.47	23.7%
38	290.93	29.38	320.31	62.72	24.4%
39	302.19	29.38	331.57	66.86	25.3%
40	313.45	29.38	342.83	70.99	26.1%
41	324.71	29.38	354.09	75.12	26.9%
42	335.97	29.38	365.35	79.25	27.7%
43	347.23	29.38	376.61	83.39	28.4%
44	358.49	29.38	387.87	87.52	29.1%

## Water Utility System Development Charges

System development charges (SDCs) are designed to help recover the cost of growth-related infrastructure required to meet the demands of new customers. The District currently charges an SDC of \$2,500 for new 3/4" connections to its water system. The SDC is intended to help recover a portion of the cost of growth rate infrastructure required to serve new customers. Beginning in 2019, the District will increase the SDC for a 3/4" water system connection to \$4,500. Table 14 shows the calculation of the updated 2019 SDC and the assessment schedule for customers with larger water meters that was also adopted by the Board.

**Table 14: Water System Development Charges**

Water System Development Charge Calculation					
Original Cost	Accumulated Depreciation	Net Book Value	Replacement Cost New	Adjusted Depreciation	Replacement Cost New Less Depreciation
\$20,920,227	\$12,499,094	\$8,421,133	\$48,169,910	\$33,703,127	\$14,466,783
Equivalent 3/4" Connections on System					4,368
Cost per 3/4" Connection (RCNLD / Equivalent 3/4" Connections)					\$3,312
Current 3/4" System Development Charge					\$2,500
Difference					\$812
Water System Development Charge Assessment Schedule					
Water Meter Size	Flow Max Consistent	Flow Equivalency	Proposed Water SDC	Current Water SDC	Difference
3/4"	25	1.00	\$3,312	\$2,500	\$812
1"	40	1.60	5,300	5,000	300
1 1/2"	50	2.00	6,625	10,000	(3,375)
2"	160	6.40	21,199	20,000	1,199
3"	320	12.80	42,397	45,000	(2,603)
4"	500	20.00	66,246	90,000	(23,754)
6"	1000	40.00	132,492	235,000	(102,508)
8"	1600	64.00	211,987	500,000	(288,013)

# Wastewater Utility Rate Study

## Wastewater Utility Profile

The District purchases wholesale wastewater treatment services from the South Platte Water Renewal Partners (formerly known as the Englewood-Littleton Wastewater Treatment Plant). These wholesale wastewater treatment costs, and the other costs incurred by the District to provide wastewater service, are then recovered from customers using the exact same rate structure used by the South Platte Water Renewal Partners. This rate structure consists of a monthly fixed charge for Residential customers and those Commercial customers whose metered wastewater discharges fall below a minimum allowance. Commercial customers whose wastewater discharges fall above the minimum allowance are billed using a volumetric rate per thousand gallons. Because the District recovers costs from customers using a rate structure identical to its wholesale wastewater treatment provider, Raftelis did not conduct a wastewater cost of service study or modify the District's existing wholesale rate structure. Table 15 provides a profile of the District's water utility customer billed consumption and revenue based actual 2017 results.

**Table 15: Wastewater Service Customer Metrics**

Customer Type	Customer Accounts	Billed Consumption (Kgal)	Monthly Charge Revenue	Volumetric Revenue	Total Revenue
Residential	3,986	0	\$1,364,169	\$0	\$1,364,169
Multi-Family Residential (Dwelling Units)	1,204	0	412,057	0	412,057
Commercial Within Minimum	86	0	29,433	0	29,433
Commercial Above Minimum	81	73,926	0	277,223	277,223
<b>Total</b>	<b>5,357</b>	<b>73,926</b>	<b>1,805,658</b>	<b>277,223</b>	<b>2,082,881</b>

# Wastewater Utility Financial Plan

## KEY ASSUMPTIONS USED IN THE WASTEWATER FINANCIAL PLAN

The key assumptions made by Raftelis in the preparation of the District's wastewater utility financial plan is that wastewater treatment costs (i.e., the South Platte Water Renewal Partners) will increase at a rate of 2.0% annually. Similarly, annual construction cost inflation associated with the District's capital improvement program was also assumed to increase at 3.0% annually. All operating expenses, with the exception of personnel costs, were projected to increase at a rate of 3.0% annually. Personnel costs were projected to increase at a rate of 4.0% annually.

## WASTEWATER UTILITY FINANCIAL PLAN RESULTS

Table 16 summarizes the District's water utility financial plan prepared by Raftelis and presented to the District Board. Appendix D to this report provides a detail of the wastewater utility financial plan.

**Table 16: Wastewater Utility Financial Plan (\$ Thousands)**

Metric	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Annual % Rate Revenue Increase	3.90%	3.00%	3.00%	5.00%	6.00%	6.00%	7.00%	7.00%	3.00%	3.00%
<b>Revenues</b>										
Rate Revenues	\$2,084.2	\$2,136.7	\$2,211.9	\$2,278.6	\$2,393.0	\$2,537.0	\$2,689.6	\$2,878.4	\$3,080.4	\$3,173.3
Miscellaneous Revenue	\$47.5	\$49.2	\$51.5	\$49.5	\$38.7	\$29.4	\$22.7	\$23.4	\$32.2	\$36.5
Total Revenues	\$2,184.2	\$2,261.2	\$2,330.2	\$2,442.4	\$2,575.6	\$2,719.0	\$2,901.1	\$3,103.8	\$3,205.5	\$3,305.5
<b>Operating Expenses</b>										
Treatment	1,235.6	1,260.3	1,285.5	1,311.2	1,337.4	1,364.2	1,391.5	1,419.3	1,447.7	1,476.6
Maintenance	168.1	173.2	178.4	183.7	189.2	194.9	200.8	206.8	213.0	219.4
Administrative	305.6	314.8	324.2	334.0	344.0	354.3	364.9	375.9	387.1	296.7
Contingency	59.5	61.3	63.1	65.0	66.9	69.0	71.0	73.2	75.4	77.6
Total	1,759.9	1,800.4	1,841.8	1,884.2	1,927.6	1,972.0	2,017.6	2,064.2	2,111.9	2,160.8
<b>Capital Improvements</b>										
Administration	57.6	48.0	70.4	0.0	6.4	28.8	6.4	0.0	0.0	28.8
Lift Stations	210.0	30.0	40.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0
Meters	9.0	106.5	136.5	144.0	126.0	0.0	129.0	0.0	0.0	0.0
Collection	0.0	110.0	0.0	0.0	0.0	480.0	1,840.0	0.0	0.0	1,390.0
Interceptor	0.0	0.0	0.0	1,040.0	2,000.0	580.0	0.0	0.0	0.0	0.0
Total	276.6	294.5	246.9	1214.0	2132.4	1088.8	1975.4	0.0	0.0	1418.8
<b>Annual Results</b>										
Total Expenditures	2,036.5	2,094.9	2,088.7	3,098.2	4,060.0	3,060.8	3,993.0	2,064.2	2,111.9	3,579.6
Net Operating Surplus/(Deficit)	147.7	166.3	241.5	-655.7	-1,484.4	-341.8	-1,091.9	1,039.6	1,093.6	-274.1
<b>Cash Reserves</b>										
Beginning Cash	3,829.9	3,977.6	4,143.8	4,385.3	3,729.6	2,245.2	1,903.4	811.5	1,851.1	2,944.7
Ending Cash	\$3,977.6	\$4,143.8	\$4,385.3	\$3,729.6	\$2,245.2	\$1,903.4	\$811.5	\$1,851.1	\$2,944.7	\$2,670.6

## WASTEWATER UTILITY REVENUE REQUIREMENT FROM RATES

As noted above, the financial planning process determines the amount of wastewater rate revenues that must be recovered from customers. This amount, referred to as the revenue requirement from rates, is the level of rate revenues necessary to pay for utility operating and capital costs. An alternative presentation of the determination of this amount for 2019 is shown in Table 17.

**Table 17: 2019 Wastewater Utility Revenue Requirement from Rates**

Item	2019
Operating Expenses	
Wastewater Treatment	\$1,235,581
Operations & Maintenance	168,140
Administrative	296,718
Reserve for Replacement Capital	59,483
Total Operating Expense	1,759,922
Capital Improvements	
Administration	57,615
Lift Station	210,000
Meters	9,000
Collection	0
Interceptor	0
Total Capital Improvements	276,615
Total Expenditures	2,036,537
Add: Net Operating Surplus/(Deficit)	147,663
Gross Revenue Requirement from Rates	2,184,201
Less: Non-Rate Revenues	
System Development Charges	600
Other	18,540
Interest Income	28,354
Total Non-Rate Revenues	47,494
Net Revenue Requirement from Rates	\$2,136,707

## PROJECTION OF WASTEWATER RATES

Raftelis did not conduct a wastewater cost of service study as the District's wastewater rates are exactly the same as those charged by the South Platte Water Renewal Partners (formerly known as the Littleton/Englewood Wastewater Treatment Plant). Table 18 shows a projection of District's wastewater rates through the 2028 planning horizon based on the required rate revenue increases developed as part of the wastewater utility financial planning process.

**Table 18: Projection of Wastewater Rates**

Monthly Minimum Charge											
Meter Size	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Residential	\$28.52	\$29.38	\$30.26	\$31.16	\$32.72	\$34.69	\$36.77	\$39.34	\$42.09	\$43.36	\$44.66
MF Residential (per Unit)	28.52	29.38	30.26	31.16	32.72	34.69	36.77	39.34	42.09	43.36	44.66
Commercial	28.52	29.38	30.26	31.16	32.72	34.69	36.77	39.34	42.09	43.36	44.66
Volume Rate (\$/kgal)											
Customer Class	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Residential	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
MF Residential (per Unit)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Commercial - Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Commercial - Above Min.	3.75	3.86	3.98	4.10	4.30	4.56	4.83	5.17	5.53	5.70	5.87

## Wastewater Utility System Development Charges

Table 19 shows the calculation of the updated 2019 SDC and the assessment schedule for customers with larger water meters that was also adopted by the Board.

**Table 19: Wastewater System Development Charges**

Wastewater System Development Charge Calculation					
Original Cost	Accumulated Depreciation	Net Book Value	Replacement Cost New	Adjusted Depreciation	Replacement Cost New Less Depreciation
\$17,838,831	\$9,404,758	\$8,434,073	\$38,931,727	\$25,852,592	\$13,079,134
Equivalent 3/4" Connections on System					4,368
Less: White Deer Subdivision					127
Equivalent 3/4" Connections on System (Net of White Deer)					4,241
Cost per 3/4" Connection (RCNLD / Equivalent 3/4" Connections)					3,084
Current 3/4" System Development Charge					\$600
Difference					\$2,484
Wastewater System Development Charge Assessment Schedule					
Water Meter Size	Flow Max Consistent	Flow Equivalency	Proposed WW SDC	Current WW SDC	Difference
3/4"	25	1.00	\$3,084	\$600	\$2,484
1"	40	1.60	4,935	1,200	3,735
1 1/2"	50	2.00	6,169	2,400	3,769
2"	160	6.40	19,739	4,800	14,939
3"	320	12.80	39,479	10,800	28,679
4"	500	20.00	61,685	21,600	40,085
6"	1000	40.00	123,371	56,400	66,971
8"	1600	64.00	197,393	120,000	77,393

**Ken-Caryl Ranch Water & Sanitation District**  
**2018 Rate Study**

**Appendix A**  
**Water Utility Financial Plan**



Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Existing Rates

Volumetric Rates		2018
Single Family Residential - 3/4"	Minimum Charge (5,000 gal)	\$0.00
	5,001 to 16,000 gal	5.34
	16,001 to 27,000 gal	5.85
	27,001 to 38,000 gal	6.35
	Over 38,001 gal	6.86
Single Family Residential - 1"	Minimum Charge (5,000 gal)	\$0.00
	5,001 to 16,000 gal	5.34
	16,001 to 27,000 gal	5.85
	27,001 to 38,000 gal	6.35
	Over 38,001 gal	6.86
Multi-Family Residential	Minimum Charge (5,000 gal)	0.00
	5,001 to 10,000 gal	5.34
	Over 10,001 gal	5.85
Commercial - 3/4"	Minimum Charge (5,000 gal)	0.00
	5,001 to 22,000 gal	5.34
	Over 22,001 gal	5.85
Commercial - 1"	Minimum Charge (10,000 gal)	0.00
	10,001 to 41,000 gal	5.34
	Over 41,001 gal	5.85
Commercial - 1.5"	Minimum Charge (23,000 gal)	0.00
	23,001 to 94,000 gal	5.34
	Over 94,001 gal	5.85
Commercial - 2"	Minimum Charge (42,000 gal)	0.00
	42,001 to 169,000 gal	5.34
	Over 169,001 gal	5.85
Commercial - 3"	Minimum Charge (95,000 gal)	0.00
	95,001 to 382,000 gal	5.34
	Over 382,001 gal	5.85
Commercial - 4"	Minimum Charge (170,000 gal)	0.00
	170,001 to 681,000 gal	5.34
	Over 681,001 gal	5.85
Commercial - 6"	Minimum Charge (383,000 gal)	0.00
	383,001 to 1,534,000 gal	5.34
	Over 1,534,001 gal	5.85
Commercial - 8"	Minimum Charge (682,000 gal)	0.00
	682,001 to 2,729,000 gal	5.34
	Over 2,729,001 gal	5.85

Monthly Minium Charge	2018
Single Family Residential - 3/4"	\$26.70
Single Family Residential - 1"	26.70
Multi-Family Residential	26.70
Commercial - 3/4"	26.70
Commercial - 1"	48.93
Commercial - 1 1/2"	106.76
Commercial - 2"	191.28
Commercial - 3"	427.02
Commercial - 4"	760.62
Commercial - 6"	1,708.08
Commercial - 8"	

Monthly Private Fire Lines	2018
4" or less	\$26.70
6"	47.25
8"	83.30

System Development Charges	2018
Single Family Residential - 3/4"	\$2,500
Single Family - 1"	5,000
Multi-Family Residential (Per Unit)	2,500
Commercial - 3/4"	2,500
Commercial - 1"	5,000
Commercial - 1 1/2"	10,000
Commercial - 2"	20,000
Commercial - 3"	45,000
Commercial - 4"	90,000
Commercial - 6"	235,000
Commercial - 8"	500,000



Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Projected Average Consumption per Account Per Bill

Projected Average Consumption per Account per Bill (Kgal)															
Customer Class	Actual 2015	Actual 2016	Actual 2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Test Year 2019
Input for Change in Average Consumption Per Account per Bill >					0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0
Single Family Residential (3/4" & 1")	9.46	11.18	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10
Multi-Family Residential (per Unit)	2.26	2.68	2.54	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	3
Commercial - 3/4"	16.76	18.14	14.39	14.39	14.39	14.39	14.39	14.39	14.39	14.39	14.39	14.39	14.39	14.39	14
Commercial - 1"	39.63	44.11	37.77	37.77	37.77	37.77	37.77	37.77	37.77	37.77	37.77	37.77	37.77	37.77	38
Commercial - 1 1/2"	158.21	166.39	87.87	87.87	87.87	87.87	87.87	87.87	87.87	87.87	87.87	87.87	87.87	87.87	88
Commercial - 2"	390.04	390.07	85.93	85.93	85.93	85.93	85.93	85.93	85.93	85.93	85.93	85.93	85.93	85.93	86
Commercial - 3"	350.96	551.50	785.56	785.56	785.56	785.56	785.56	785.56	785.56	785.56	785.56	785.56	785.56	785.56	786
Commercial - 4"				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Commercial - 6"	0.00	108.00	1,513.25	1,513.25	1,513.25	1,513.25	1,513.25	1,513.25	1,513.25	1,513.25	1,513.25	1,513.25	1,513.25	1,513.25	1,513
Commercial - 8"				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Multi-Family - Irrigation	0.00	0.00	20.67	20.67	20.67	20.67	20.67	20.67	20.67	20.67	20.67	20.67	20.67	20.67	21
Commercial - Irrigation - 3/4"				9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	10
Commercial - Irrigation - 1"				31.13	31.13	31.13	31.13	31.13	31.13	31.13	31.13	31.13	31.13	31.13	31
Commercial - Irrigation - 1 1/2"				127.08	127.08	127.08	127.08	127.08	127.08	127.08	127.08	127.08	127.08	127.08	127
Commercial - Irrigation - 2"				261.58	261.58	261.58	261.58	261.58	261.58	261.58	261.58	261.58	261.58	261.58	262
Commercial - Irrigation - 3"															0
Commercial - Irrigation - 4"															0
Commercial - Irrigation - 6"															0
Commercial - Irrigation - 8"															0

Projected Aggregate Billed Consumption (Kgal)															
Customer Class	Actual 2015	Actual 2016	Actual 2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Test Year 2019
Single Family Residential (3/4" & 1")	371,112	444,599	415,591	415,713	415,836	415,958	416,081	416,203	416,325	416,448	416,570	416,692	416,815	416,937	415,836
Multi-Family Residential (per Unit)	33,404	39,592	37,470	37,904	37,904	37,904	37,904	37,904	37,904	37,904	37,904	37,904	37,904	37,904	37,904
Commercial - 3/4"	10,458	11,752	9,327	9,327	9,327	9,327	9,327	9,327	9,327	9,327	9,327	9,327	9,327	9,327	9,327
Commercial - 1"	27,107	32,285	30,817	30,817	30,817	30,817	30,817	30,817	30,817	30,817	30,817	30,817	30,817	30,817	30,817
Commercial - 1 1/2"	62,652	65,891	49,558	49,558	49,558	49,558	49,558	49,558	49,558	49,558	49,558	49,558	49,558	49,558	49,558
Commercial - 2"	46,805	60,851	28,873	28,873	28,873	28,873	28,873	28,873	28,873	28,873	28,873	28,873	28,873	28,873	28,873
Commercial - 3"	8,423	19,854	28,280	28,280	28,280	28,280	28,280	28,280	28,280	28,280	28,280	28,280	28,280	28,280	28,280
Commercial - 4"				0	0	0	0	0	0	0	0	0	0	0	0
Commercial - 6"	0	1,296	18,159	18,159	18,159	18,159	18,159	18,159	18,159	18,159	18,159	18,159	18,159	18,159	18,159
Commercial - 8"				0	0	0	0	0	0	0	0	0	0	0	0
Multi-Family - Irrigation			496	496	496	496	496	496	496	496	496	496	496	496	496
Commercial - Irrigation - 3/4"			1,142	1,142	1,142	1,142	1,142	1,142	1,142	1,142	1,142	1,142	1,142	1,142	1,142
Commercial - Irrigation - 1"			2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241
Commercial - Irrigation - 1 1/2"			18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300
Commercial - Irrigation - 2"			37,667	37,667	37,667	37,667	37,667	37,667	37,667	37,667	37,667	37,667	37,667	37,667	37,667
Commercial - Irrigation - 3"															0
Commercial - Irrigation - 4"															0
Commercial - Irrigation - 6"															0
Commercial - Irrigation - 8"															0
<b>Total</b>	<b>559,961</b>	<b>676,120</b>	<b>677,921</b>	<b>678,478</b>	<b>678,600</b>	<b>678,722</b>	<b>678,845</b>	<b>678,967</b>	<b>679,090</b>	<b>679,212</b>	<b>679,334</b>	<b>679,457</b>	<b>679,579</b>	<b>679,702</b>	<b>678,600</b>

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Historical Billed Consumption

Residential	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Avg Month	Max Month	Ratio MM to AM
2015				15,629	17,689	23,849	42,010	67,628	62,165	59,130	23,131	14,682	325,913	36,213	67,628	1.87
2016	16,395	13,397	15,407	19,439	17,624	48,805	65,115	84,681	62,239	53,960	28,438	19,099	444,599	37,050	84,681	2.29
2017	16,281	13,088	14,590	22,002	25,809	65,020	80,555	63,890	63,024	21,538	14,891	14,903	415,591	34,633	80,555	2.33
Total	32,676	26,485	29,997	57,070	61,122	137,674	187,680	216,199	187,428	134,628	66,460	48,684	1,186,103	98,842	216,199	2.19

Average Use/Month	16,338	13,243	14,999	19,023	20,374	45,891	62,560	72,066	62,476	44,876	22,153	16,228	395,368			
Number of Accounts	3,396	3,396	3,396	3,396	3,396	3,396	3,396	3,396	3,396	3,396	3,396	3,396	3,396			
Use Per Account	4.8	3.9	4.4	5.6	6.0	13.5	18.4	21.2	18.4	13.2	6.5	4.8	116.4			
AWC	5.0															

Multi-Family	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Avg Month	Max Month	Ratio MM to AM
2015				346	2,708	1,605	3,797	5,176	4,192	4,540	2,881	1,264	26,509	2,945	5,176	1.76
2016	2,921	1,207	2,767	1,375	2,547	4,500	4,112	7,570	4,328	4,188	2,650	1,427	39,592	3,299	7,570	2.29
2017	2,215	1,854	1,961	2,542	3,037	4,888	5,466	4,936	4,808	2,432	1,966	1,861	37,966	3,164	5,466	1.73
Total	5,136	3,061	4,728	4,263	8,292	10,993	13,375	17,682	13,328	11,160	7,497	4,552	104,067			

Average Use/Month	2,568	1,531	2,364	1,421	2,764	3,664	4,458	5,894	4,443	3,720	2,499	1,517	34,689			
Number of Accounts	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230	1,230			
Use Per Account	2.1	1.2	1.9	1.2	2.2	3.0	3.6	4.8	3.6	3.0	2.0	1.2	28.2			
AWC	1.6															

Commercial	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Avg Month	Max Month	Ratio MM to AM
2015				9,533	6	23,118	10	54,161	47	48,986	13	9,859	145,733	16,193	54,161	3.34
2016	4,838	4,838	5,307	5,307	20,344	20,344	35,204	35,204	23,631	23,631	6,643	6,643	191,929	15,994	35,204	2.20
2017	6,322	5,312	6,215	12,778	17,743	35,516	43,967	39,925	33,344	12,188	5,796	5,258	224,364	18,697	43,967	2.35
Total	11,160	10,150	11,522	27,618	38,093	78,978	79,181	129,290	57,022	84,805	12,452	21,760	562,026			

Average Use/Month	5,580	5,075	5,761	9,206	12,698	26,326	26,394	43,097	19,007	28,268	4,151	7,253	187,342			
Number of Accounts	201	201	201	201	201	201	201	201	201	201	201	201	201			
Use Per Account	27.8	25.2	28.7	45.8	63.2	131.0	131.3	214.4	94.6	140.6	20.6	36.1	932.0			
AWC	27.4															

Total System	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Avg Month	Max Month	Ratio MM to AM
2015	23,067	27,157	19,903	25,508	20,403	48,572	45,817	126,965	66,404	112,656	26,025	25,805	568,282	47,357	126,965	2.68
2016	24,154	19,442	23,481	26,121	40,515	73,649	104,431	127,455	90,198	81,779	37,731	27,169	676,120	56,343	127,455	2.26
2017	24,818	20,254	22,766	37,322	46,589	105,424	129,988	108,751	101,176	36,158	22,653	22,022	677,921	56,493	129,988	2.30
Total	72,039	66,853	66,150	88,951	107,507	227,645	280,236	363,171	257,778	230,593	86,409	74,996	1,922,323			

Average Use/Month	24,013	22,284	22,050	29,650	35,836	75,882	93,412	121,057	85,926	76,864	28,803	24,999	640,774			
Number of Accounts	4,869	4,869	4,869	4,869	4,869	4,869	4,869	4,869	4,869	4,869	4,869	4,869	4,869			
Use Per Account	4.9	4.6	4.5	6.1	7.4	15.6	19.2	24.9	17.6	15.8	5.9	5.1	131.6			
AWC	5.1															

Not Units



Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Projected Billed Consumption

Projected Billed Consumption By TIER (Kgal)															
Customer Class	TIER	Consumption by TIER	Actual 2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Test Year 2019
Commercial - Irrigation - 3/4"	Minimum Charge (5,000 gal)	11.8%	135	135	135	135	135	135	135	135	135	135	135	135	135
	5,001 to 22,000 gal	32.5%	371	371	371	371	371	371	371	371	371	371	371	371	371
	Over 22,001 gal	55.7%	636	636	636	636	636	636	636	636	636	636	636	636	636
	Total	100.0%	1,142	1,142	1,142	1,142	1,142	1,142	1,142	1,142	1,142	1,142	1,142	1,142	1,142
Commercial - Irrigation - 1"	Minimum Charge (10,000 gal)	15.6%	350	350	350	350	350	350	350	350	350	350	350	350	350
	10,001 to 41,000 gal	34.7%	778	778	778	778	778	778	778	778	778	778	778	778	778
	Over 41,001 gal	49.7%	1,114	1,114	1,114	1,114	1,114	1,114	1,114	1,114	1,114	1,114	1,114	1,114	1,114
	Total	100.0%	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241
Commercial - Irrigation - 1.5"	Minimum Charge (23,000 gal)	8.8%	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610
	23,001 to 94,000 gal	24.4%	4,465	4,465	4,465	4,465	4,465	4,465	4,465	4,465	4,465	4,465	4,465	4,465	4,465
	Over 94,001 gal	66.8%	12,224	12,224	12,224	12,224	12,224	12,224	12,224	12,224	12,224	12,224	12,224	12,224	12,224
	Total	100.0%	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300
Commercial - Irrigation - 2"	Minimum Charge (42,000 gal)	7.5%	2,825	2,825	2,825	2,825	2,825	2,825	2,825	2,825	2,825	2,825	2,825	2,825	2,825
	42,001 to 169,000 gal	20.2%	7,609	7,609	7,609	7,609	7,609	7,609	7,609	7,609	7,609	7,609	7,609	7,609	7,609
	Over 169,001 gal	72.3%	27,233	27,233	27,233	27,233	27,233	27,233	27,233	27,233	27,233	27,233	27,233	27,233	27,233
	Total	100.0%	37,667	37,667	37,667	37,667	37,667	37,667	37,667	37,667	37,667	37,667	37,667	37,667	37,667
Commercial - Irrigation - 3"	Minimum Charge (95,000 gal)	0.0%	0	0	0	0	0	0	0	0	0	0	0	0	0
	95,001 to 382,000 gal	0.0%	0	0	0	0	0	0	0	0	0	0	0	0	0
	Over 382,001 gal	0.0%	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0.0%	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial - Irrigation - 4"	Minimum Charge (170,000 gal)	0.0%	0	0	0	0	0	0	0	0	0	0	0	0	0
	170,001 to 681,000 gal	0.0%	0	0	0	0	0	0	0	0	0	0	0	0	0
	Over 681,001 gal	0.0%	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0.0%	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial - Irrigation - 6"	Minimum Charge (383,000 gal)	0.0%	0	0	0	0	0	0	0	0	0	0	0	0	0
	383,001 to 1,534,000 gal	0.0%	0	0	0	0	0	0	0	0	0	0	0	0	0
	Over 1,534,001 gal	0.0%	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0.0%	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial - Irrigation - 8"	Minimum Charge (682,000 gal)	0.0%	0	0	0	0	0	0	0	0	0	0	0	0	0
	682,001 to 2,729,000 gal	0.0%	0	0	0	0	0	0	0	0	0	0	0	0	0
	Over 2,729,001 gal	0.0%	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0.0%	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Irrigation			59,846	59,846	59,846	59,846	59,846	59,846	59,846	59,846	59,846	59,846	59,846	59,846	59,846
Total			677,921	678,478	678,600	678,722	678,845	678,967	679,090	679,212	679,334	679,457	679,579	679,702	678,600



Projected Volumetric Revenue by TIER															
Customer Class	TIER	Existing Rates	Actual 2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Test Year 2019
Commercial - 6"	Minimum Charge (383,000 gal)	\$0.00	20,497	20,497	20,497	20,497	20,497	20,497	20,497	20,497	20,497	20,497	20,497	20,497	20,497
	383,001 to 1,534,000 gal	5.34	49,085	49,085	49,085	49,085	49,085	49,085	49,085	49,085	49,085	49,085	49,085	49,085	49,085
	Over 1,534,001 gal	5.85	25,570	25,570	25,570	25,570	25,570	25,570	25,570	25,570	25,570	25,570	25,570	25,570	25,570
	Total		95,153	95,153	95,153	95,153	95,153	95,153	95,153	95,153	95,153	95,153	95,153	95,153	95,153
Commercial - 8"	Minimum Charge (682,000 gal)	\$0.00	0	0	0	0	0	0	0	0	0	0	0	0	0
	682,001 to 2,729,000 gal	5.34	0	0	0	0	0	0	0	0	0	0	0	0	0
	Over 2,729,001 gal	5.85	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total		0	0	0	0	0	0	0	0	0	0	0	0	0
Multi-Family Irrigation	Minimum Charge (5,000 gal)	\$0.00	641	641	641	641	641	641	641	641	641	641	641	641	641
	5,001 to 10,000 gal	5.34	241	241	241	241	241	241	241	241	241	241	241	241	241
	Over 10,001 gal	5.85	2,344	2,344	2,344	2,344	2,344	2,344	2,344	2,344	2,344	2,344	2,344	2,344	2,344
	Total		3,226	3,226	3,226	3,226	3,226	3,226	3,226	3,226	3,226	3,226	3,226	3,226	3,226
Commercial - Irrigation - 3/4"	Minimum Charge (5,000 gal)	\$0.00	3,204	3,204	3,204	3,204	3,204	3,204	3,204	3,204	3,204	3,204	3,204	3,204	3,204
	5,001 to 22,000 gal	5.34	1,982	1,982	1,982	1,982	1,982	1,982	1,982	1,982	1,982	1,982	1,982	1,982	
	Over 22,001 gal	5.85	3,721	3,721	3,721	3,721	3,721	3,721	3,721	3,721	3,721	3,721	3,721	3,721	
	Total		8,907	8,907	8,907	8,907	8,907	8,907	8,907	8,907	8,907	8,907	8,907	8,907	8,907
Commercial - Irrigation - 1"	Minimum Charge (10,000 gal)	\$0.00	3,523	3,523	3,523	3,523	3,523	3,523	3,523	3,523	3,523	3,523	3,523	3,523	3,523
	10,001 to 41,000 gal	5.34	4,153	4,153	4,153	4,153	4,153	4,153	4,153	4,153	4,153	4,153	4,153	4,153	
	Over 41,001 gal	5.85	6,516	6,516	6,516	6,516	6,516	6,516	6,516	6,516	6,516	6,516	6,516	6,516	
	Total		14,191	14,191	14,191	14,191	14,191	14,191	14,191	14,191	14,191	14,191	14,191	14,191	14,191
Commercial - Irrigation - 1.5"	Minimum Charge (23,000 gal)	\$0.00	15,373	15,373	15,373	15,373	15,373	15,373	15,373	15,373	15,373	15,373	15,373	15,373	15,373
	23,001 to 94,000 gal	5.34	23,844	23,844	23,844	23,844	23,844	23,844	23,844	23,844	23,844	23,844	23,844	23,844	
	Over 94,001 gal	5.85	71,513	71,513	71,513	71,513	71,513	71,513	71,513	71,513	71,513	71,513	71,513	71,513	
	Total		110,730	110,730	110,730	110,730	110,730	110,730	110,730	110,730	110,730	110,730	110,730	110,730	110,730
Commercial - Irrigation - 2"	Minimum Charge (42,000 gal)	\$0.00	27,544	27,544	27,544	27,544	27,544	27,544	27,544	27,544	27,544	27,544	27,544	27,544	27,544
	42,001 to 169,000 gal	5.34	40,631	40,631	40,631	40,631	40,631	40,631	40,631	40,631	40,631	40,631	40,631	40,631	
	Over 169,001 gal	5.85	159,314	159,314	159,314	159,314	159,314	159,314	159,314	159,314	159,314	159,314	159,314	159,314	
	Total		227,489	227,489	227,489	227,489	227,489	227,489	227,489	227,489	227,489	227,489	227,489	227,489	227,489
Commercial - Irrigation - 3"	Minimum Charge (95,000 gal)	\$0.00	0	0	0	0	0	0	0	0	0	0	0	0	0
	95,001 to 382,000 gal	5.34	0	0	0	0	0	0	0	0	0	0	0	0	0
	Over 382,001 gal	5.85	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total		0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial - Irrigation - 4"	Minimum Charge (170,000 gal)	\$0.00	0	0	0	0	0	0	0	0	0	0	0	0	0
	170,001 to 681,000 gal	5.34	0	0	0	0	0	0	0	0	0	0	0	0	0
	Over 681,001 gal	5.85	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total		0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial - Irrigation - 6"	Minimum Charge (383,000 gal)	\$0.00	0	0	0	0	0	0	0	0	0	0	0	0	0
	383,001 to 1,534,000 gal	5.34	0	0	0	0	0	0	0	0	0	0	0	0	0
	Over 1,534,001 gal	5.85	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total		0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial - Irrigation - 8"	Minimum Charge (682,000 gal)	\$0.00	0	0	0	0	0	0	0	0	0	0	0	0	0
	682,001 to 2,729,000 gal	5.34	0	0	0	0	0	0	0	0	0	0	0	0	0
	Over 2,729,001 gal	5.85	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total		0	0	0	0	0	0	0	0	0	0	0	0	0
Total			\$4,369,291	\$4,371,771	\$4,372,500	\$4,373,229	\$4,373,959	\$4,374,688	\$4,375,417	\$4,376,146	\$4,376,875	\$4,377,605	\$4,378,334	\$4,379,063	4,372,500

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Miscellaneous Revenue

Projected Miscellaneous Revenue														Test Year
Item	Existing Fee	Actual 2017	Budget 2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2019
<b>System Development Charges</b>														
Single Family Residential - 3/4"	\$2,500			\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	2,500
Multi-Family Residential (Per Unit)	5,000			0	0	0	0	0	0	0	0	0	0	0
Commercial - 3/4"	2,500			0	0	0	0	0	0	0	0	0	0	0
Commercial - 1"	2,500			0	0	0	0	0	0	0	0	0	0	0
Commercial - 1 1/2"	5,000			0	0	0	0	0	0	0	0	0	0	0
Commercial - 2"	10,000			0	0	0	0	0	0	0	0	0	0	0
Commercial - 3"	20,000			0	0	0	0	0	0	0	0	0	0	0
Commercial - 4"	45,000			0	0	0	0	0	0	0	0	0	0	0
Commercial - 6"	90,000			0	0	0	0	0	0	0	0	0	0	0
Commercial - 8"	235,000			0	0	0	0	0	0	0	0	0	0	0
<b>Total System Development Charges</b>		<b>33,732</b>	<b>2,000</b>	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
<b>Other Operating Revenue</b>														
Water Miscellaneous		<b>24,750</b>	<b>22,000</b>	22,660	23,340	24,040	24,761	25,504	26,269	27,057	27,869	28,705	29,566	22,660
Water Other		<b>0</b>												0
<b>Total Other Operating Revenue</b>		<b>24,750</b>	<b>22,000</b>	22,660	23,340	24,040	24,761	25,504	26,269	27,057	27,869	28,705	29,566	22,660







Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water CIP (from Master CIP Worksheet)

Project	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total	Test Year 2019
<b>Office Grounds</b>													0
Seal-Coat all asphalt and restripe	6,799	6,799	0	0	0	0	0	0	0	0	0	13,598	6,799
Drainage Ditch Improvements	20,397	20,397	0	0	0	0	0	0	0	0	0	40,795	20,397
<b>Office Equipment</b>													0
Replace the billing inserter machine	0	0	0	6,799	0	0	0	0	0	0	0	6,799	0
Replace Main Server	0	6,799	0	0	0	0	0	0	0	0	0	6,799	6,799
Replace Web Server	0	0	0	0	0	0	0	0	0	0	0	0	0
Replace Copier	0	0	0	6,799	0	0	0	0	0	0	0	6,799	0
New Postage Machine-Replaced in 2012	0	0	0	0	0	0	0	0	0	0	0	0	0
Upgrade Office Phone System	0	0	0	6,799	0	0	0	0	0	0	0	6,799	0
Replace Computers (1)	0	0	0	0	0	0	0	0	0	0	0	0	0
Replace Billing Printer	0	0	0	0	0	0	0	0	0	0	0	0	0
Replace Color Printer	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Water Distribution System</b>													0
Replace aging Valves	40,000	100,000	110,000	0	0	0	0	0	0	0	0	250,000	100,000
Clean 3 Reservoirs	0	20,000	0	0	0	0	0	0	0	0	0	20,000	20,000
Cast iron tapping saddle replacements	0	0	80,000	0	0	0	0	0	0	0	0	80,000	0
Test 25 of the oldest residential meters (2018)	10,000	0	10,000	0	0	0	0	0	0	0	0	20,000	0
Water storage tank #2 Mixing System	0	0	0	0	0	0	0	0	0	0	0	0	0
Install yard hydrant at te WHQ I Station	0	0	0	0	0	0	0	0	0	0	0	0	0
Install (4) 16-inch valves - Continental Rd. - Comp. 2011	0	0	0	0	0	0	0	0	0	0	0	0	0
Replace Fire Hydrants	100,000	210,000	0	0	0	0	0	0	0	0	0	310,000	210,000
Replace 4-inch water lines North Ranch Completed (2015)	0	0	0	0	0	0	0	0	0	0	0	0	0
7,000 LF of 12-inch (Master Plan of Works)	0	0	0	1,530,000	0	0	0	0	0	0	0	1,530,000	0
Replace Various Water Lines (B)	0	0	420,000	0	0	0	0	0	0	0	0	420,000	0
Replace Various Water Lines	0	0	0	220,000	640,000	0	0	0	0	0	0	860,000	0
Replace Various Water Lines (D)	0	0	0	0	0	0	0	0	0	650,000	0	650,000	0
Replace Various Water Lines	0	0	0	0	0	0	660,000	0	650,000	0	0	1,310,000	0
Replace Various Water Lines	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Storage Tank #2	0	0	0	0	0	0	0	0	2,910,000	0	3,090,000	6,000,000	0
Water Storage Tank #3	0	0	0	0	0	0	0	0	0	3,000,000	0	3,000,000	0
Water Leak Survey	0	20,000	0	0	0	0	0	0	0	0	0	20,000	20,000
Replace the 16-inch in Continental Divide Rd.	0	0	0	0	0	0	0	1,480,000	0	0	0	1,480,000	0
<b>Sewer Collection System</b>													0
Replace 700 Feet of Sewer Line	0	0	0	0	0	0	0	0	0	0	0	0	0
Install Covers Over Generators	0	0	0	0	0	0	0	0	0	0	0	0	0
New emergency generator - Wood Brothers (Completed 2016)	0	0	0	0	0	0	0	0	0	0	0	0	0
Massey Draw Rehab Completed (2015)	0	0	0	0	0	0	0	0	0	0	0	0	0
Platte Canyon Rehab D-Line completed in 2012	0	0	0	0	0	0	0	0	0	0	0	0	0
Platte Canyon Rehab A-Line completed in 2014	0	0	0	0	0	0	0	0	0	0	0	0	0
Manhole Rehabilitation - Infiltration	0	0	0	0	0	0	0	0	0	0	0	0	0
Massey Draw Contract "A"	0	0	0	0	0	0	0	0	0	0	0	0	0
Massey Draw Contract "B"	0	0	0	0	0	0	0	0	0	0	0	0	0
Massey Draw Contract "C"	0	0	0	0	0	0	0	0	0	0	0	0	0
Various North Ranch Sewer Lines	0	0	0	0	0	0	0	0	0	0	0	0	0
Various Sewer Lines - Plains	0	0	0	0	0	0	0	0	0	0	0	0	0
Various Sewer Lines - Contract #2	0	0	0	0	0	0	0	0	0	0	0	0	0
Various Sewer Lines - Contract #4	0	0	0	0	0	0	0	0	0	0	0	0	0
Replace 400 Linear Ft of Sewer Line in Continental Divide	0	0	0	0	0	0	0	0	0	0	0	0	0
Various Sewer Lines - Contract #13	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>392,782</b>	<b>633,385</b>	<b>1,365,487</b>	<b>2,703,081</b>	<b>1,456,000</b>	<b>817,598</b>	<b>721,192</b>	<b>2,224,598</b>	<b>3,560,000</b>	<b>3,660,000</b>	<b>3,151,192</b>	<b>20,685,317</b>	<b>633,385</b>

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water CIP (from Master CIP Worksheet)

Project	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total	Test Year 2019
<b>Annual Functionalized Water CIP</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>Total</b>	<b>Test Year 2019</b>
Treatment	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution	110,000	210,000	90,000	0	0	0	0	0	0	0	0	410,000	210,000
Transmission	70,000	170,000	550,000	1,780,000	640,000	0	660,000	1,480,000	650,000	650,000	0	6,650,000	170,000
Treated Water Storage	0	0	0	0	0	0	0	0	2,910,000	3,000,000	3,090,000	9,000,000	0
Pumps	70,000	80,000	20,000	0	0	90,000	0	0	0	10,000	0	270,000	80,000
Meters	0	51,000	603,500	773,500	816,000	714,000	0	731,000	0	0	0	3,689,000	51,000
Customer Service	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	142,782	122,385	101,987	149,581	0	13,598	61,192	13,598	0	0	61,192	666,317	122,385
<b>Total</b>	<b>392,782</b>	<b>633,385</b>	<b>1,365,487</b>	<b>2,703,081</b>	<b>1,456,000</b>	<b>817,598</b>	<b>721,192</b>	<b>2,224,598</b>	<b>3,560,000</b>	<b>3,660,000</b>	<b>3,151,192</b>	<b>20,685,317</b>	<b>633,385</b>

Cumulative Functionalized Water CIP	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total	Test Year 2019
Treatment	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution	110,000	320,000	410,000	410,000	410,000	410,000	410,000	410,000	410,000	410,000	410,000	410,000	320,000
Transmission	70,000	240,000	790,000	2,570,000	3,210,000	3,210,000	3,870,000	5,350,000	6,000,000	6,650,000	6,650,000	6,650,000	240,000
Treated Water Storage	0	0	0	0	0	0	0	0	2,910,000	5,910,000	9,000,000	9,000,000	0
Pumps	70,000	150,000	170,000	170,000	170,000	260,000	260,000	260,000	260,000	270,000	270,000	270,000	150,000
Meters	0	51,000	654,500	1,428,000	2,244,000	2,958,000	2,958,000	3,689,000	3,689,000	3,689,000	3,689,000	3,689,000	51,000
Customer Service	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	142,782	265,167	367,154	516,736	516,736	530,334	591,527	605,125	605,125	605,125	666,317	666,317	265,167
<b>Total</b>	<b>392,782</b>	<b>1,026,167</b>	<b>2,391,654</b>	<b>5,094,736</b>	<b>6,550,736</b>	<b>7,368,334</b>	<b>8,089,527</b>	<b>10,314,125</b>	<b>13,874,125</b>	<b>17,534,125</b>	<b>20,685,317</b>	<b>20,685,317</b>	<b>1,026,167</b>

Annual Functionalized Water CIP	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total	Test Year 2019
Distribution	\$110,000	\$110,000	\$50,000	\$0	\$0	\$0	\$60,000	\$0	\$0	\$0	\$0	\$330,000	\$110,000
Transmission	70,000	340,000	1,560,000	320,000	510,000	350,000	460,000	470,000	380,000	390,000	510,000	5,360,000	340,000
Treated Water Storage	0	0	0	0	0	0	0	240,000	0	0	0	240,000	0
Pumps	70,000	70,000	130,000	100,000	60,000	110,000	0	90,000	0	0	220,000	850,000	70,000
Meters	0	59,500	603,500	773,500	816,000	714,000	34,000	731,000	0	0	0	3,731,500	59,500
Administration	142,782	33,996	54,393	183,577	27,197	6,799	81,590	27,197	6,799	6,799	81,590	652,719	33,996
<b>Total</b>	<b>\$392,782</b>	<b>\$613,496</b>	<b>\$2,397,893</b>	<b>\$1,377,077</b>	<b>\$1,413,197</b>	<b>\$1,180,799</b>	<b>\$635,590</b>	<b>\$1,558,197</b>	<b>\$386,799</b>	<b>\$396,799</b>	<b>\$811,590</b>	<b>\$11,164,219</b>	<b>\$613,496</b>



Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Financial Plan

Item	% Increase	Month Effective	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Test Year 2019
<b>Rate Revenue at Existing Rates</b>			\$4,423,379	\$4,424,108	\$4,424,837	\$4,425,566	\$4,426,296	\$4,427,025	\$4,427,754	\$4,428,483	\$4,429,213	\$4,429,942	\$4,430,671	4,424,108
<b>Revenues from Rate Increases</b>														
2018	0.00%	12	0	0	0	0	0	0	0	0	0	0	0	0
2019	3.90%	10		143,784	172,569	172,597	172,626	172,654	172,682	172,711	172,739	172,768	172,796	143,784
2020	7.00%	12			321,818	321,871	321,924	321,978	322,031	322,084	322,137	322,190	322,243	0
2021	9.00%	12				442,803	442,876	442,949	443,022	443,095	443,168	443,241	443,314	0
2022	9.00%	12					482,735	482,814	482,894	482,974	483,053	483,133	483,212	0
2023	9.00%	12						526,268	526,354	526,441	526,528	526,615	526,701	0
2024	9.00%	12							573,726	573,821	573,915	574,010	574,104	0
2025	9.00%	12								625,465	625,568	625,671	625,774	0
2026	8.00%	12									606,106	606,205	606,305	0
2027	5.00%	12										409,189	409,256	0
2028	5.00%	12											429,719	0
<b>Total Water Rate Revenues</b>			4,423,379	4,567,891	4,919,224	5,362,838	5,846,457	6,373,688	6,948,464	7,575,073	8,182,426	8,592,962	9,024,095	4,567,891
<b>Miscellaneous Non-Rate Revenues</b>														
System Development Charges			2,000	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Water Miscellaneous			22,000	22,660	23,340	24,040	24,761	25,504	26,269	27,057	27,869	28,705	29,566	22,660
Water Other			0	0	0	0	0	0	0	0	0	0	0	0
Interest Income			81,720	78,950	72,449	58,129	46,480	47,839	56,967	63,637	60,745	54,117	52,047	78,950
<b>Total Miscellaneous Non-Rate Revenues</b>			105,720	104,110	98,289	84,669	73,741	75,843	85,736	93,194	91,114	85,322	84,113	104,110
<b>Total Revenues</b>			4,529,098	4,672,001	5,017,513	5,447,507	5,920,198	6,449,530	7,034,200	7,668,267	8,273,540	8,678,284	9,108,209	4,672,001
<b>Operating Expenses</b>														
Purchased Water			3,283,526	3,382,032	3,483,493	3,587,998	3,695,637	3,806,507	3,920,702	4,038,323	4,159,472	4,284,257	4,412,784	3,382,032
Operations & Maintenance - Water			346,757	357,160	367,874	378,911	390,278	401,986	414,046	426,467	439,261	452,439	466,012	357,160
General & Administrative - Water			611,924	630,282	649,190	668,666	688,726	709,388	730,669	752,589	775,167	798,422	822,375	630,282
Water/Sewer Acquisition, Repair and Reserve			57,750	59,483	61,267	63,105	64,998	66,948	68,957	71,025	73,156	75,351	77,611	59,483
<b>Total Operating Expenses</b>			4,299,957	4,428,956	4,561,824	4,698,679	4,839,640	4,984,829	5,134,374	5,288,405	5,447,057	5,610,469	5,778,783	4,428,956
<b>Capital Improvements</b>														
Treatment			0	0	0	0	0	0	0	0	0	0	0	0
Distribution			110,000	210,000	90,000	0	0	0	0	0	0	0	0	210,000
Transmission			70,000	170,000	550,000	1,780,000	640,000	0	660,000	1,480,000	650,000	650,000	0	170,000
Treated Water Storage			0	0	0	0	0	0	0	0	2,910,000	3,000,000	3,090,000	0
Pumps			70,000	80,000	20,000	0	0	90,000	0	0	0	10,000	0	80,000
Meters			0	51,000	603,500	773,500	816,000	714,000	0	731,000	0	0	0	51,000
Customer Service			0	0	0	0	0	0	0	0	0	0	0	0
Administration			142,782	122,385	101,987	149,581	0	13,598	61,192	13,598	0	0	61,192	122,385
<b>Total Water CIP</b>			392,782	633,385	1,365,487	2,703,081	1,456,000	817,598	721,192	2,224,598	3,560,000	3,660,000	3,151,192	633,385





**Ken-Caryl Ranch Water & Sanitation District**  
**2018 Rate Study**

**Appendix B**

**Water Utility Cost of Service Study**



Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water System Purchased Water Metrics

Purchased from Denver Water (Kgal)			Retail Billed Consumption Annual	Estimated Water Loss (Kgal)	Estimated Water Loss %
Year	Annual	Annual Average Day			
2015	701,657	1,922	649,071	52,586	7.49%
2016	787,590	2,158	765,582	22,008	2.79%
2017	767,617	2,103	775,797	(8,180)	-1.07%
Average	752,288	2,061	730,150	22,138	2.94%

System Coincident Max Month Purchases from Denver Water (Kgal)			
Year	Actual Month of Occurrence	Actual Max Month Purchases	Average Day in Max Month
2015	September	129,728	4,185
2016	August	139,484	4,499
2017	July	138,826	4,478
Average		136,013	4,388

System Coincident Max Day Purchases (Kgal)			
Year	Actual Day of Occurrence	Estimated Avg. Day in Max Month	Ratio of Max Day Purchases to Annual Avg. Day
2015	September X	4,185	2.18
2016	August X	4,499	2.09
2017	July X	4,478	2.13
Average		4,388	2.13

Estimated System Coincident Max Hour Purchases (Kgal)			
Year	Actual Date and Time of Max Hour	Estimated Max Hour Purchases	Ratio of Max Hour Purchases to Annual Avg. Day
		3.50	
2015	Unknown	6,728	3.50
2016	Unknown	7,552	3.50
2017	Unknown	7,361	3.50
Average		7,214	3.50

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water System Demand Ratios

Calculated Base / Max Day Allocations		Check on Base / Max Day Allocations	
System Max Day / Average Day Ratio	2.13	System Average Day	2,061
Base Allocation %	47.0%	System Max Day	4,388
Max Day Allocation %	53.0%	Base Allocation %	47.0%
Total Allocation %	100.0%	Max Day Allocation %	53.0%
		Total Allocation %	100.0%
Base / Max Hour Allocations		Check on Base / Max Hour Allocations	
System Max Hour to Average Day Ratio	3.50	System Average Day	2,061
Base Allocation %	28.6%	System Max Hour	7,214
Max Hour Allocation %	71.4%	Base Allocation %	28.6%
Total Allocation %	100.0%	Max Hour Allocation %	71.4%
		Total Allocation %	100.0%
Base / Max Day / Max Hour Allocation		Check on Base / Max Day / Max Hour Allocation	
System Max Hour X System Max Day	7.45	System Average Day	2,061
Base Allocation %	28.6%	System Max Day Less Average Day	2,326
Max Day Allocation %	32.3%	System Max Hour Less Max Day	2,826
Max Hour Allocation %	39.2%	Base Allocation %	28.6%
Total Allocation %	100.0%	Max Day Allocation %	32.3%
		Max Hour Allocation %	39.2%
		Total Allocation %	100.0%

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Peaking Factor Analysis

Peaking Factor Summary				
Class	Max Day			
	2015	2016	2017	Use This
Single Family Residential (3/4" & 1")			2.28	2.28
Multi-Family (Units)			1.68	1.68
Commercial			1.99	1.99
Multi-Family Irrigation			3.26	3.26
Commercial - Irrigation			3.18	3.18
Irrigation - Total			3.17	3.17

2017/2018 - Monthly Billing																		
Days in Month	31	28	31	30	31	30	31	31	30	31	30	31	2017 Metrics					
Class	Jan-18	Feb-18	Mar-18	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Max Month	Days in Max Month	Avg. Day in Max Month	Total Usage	Annual Avg. Day	Ratio of Avg. Day in Max Month to Annual Avg. Day
Single Family Residential (3/4" & 1")	16,281	13,088	14,590	22,002	25,809	65,020	80,555	63,890	63,024	21,538	14,891	14,903	80,555	31	2,599	415,591	1,139	2.28
Multi-Family (Units)	2,215	1,854	1,961	2,539	2,976	4,755	5,360	4,861	4,690	2,432	1,966	1,861	5,360	31	173	37,470	103	1.68
<b>Commercial</b>																		
Commercial - 3/4"	404	322	306	491	722	1,341	1,561	1,694	1,233	661	305	287	1,694	31	55	9,327	26	2.14
Commercial - 1"	1,021	766	885	1,766	2,489	4,611	5,785	5,708	4,614	1,720	709	743	5,785	31	187	30,817	84	2.21
Commercial - 1.5"	2,317	2,107	2,333	3,659	4,287	5,856	7,706	7,468	6,410	3,394	2,104	1,917	7,706	31	249	49,558	136	1.83
Commercial - 2"	1,339	1,104	1,236	1,918	2,688	3,235	4,794	4,594	3,688	2,195	1,004	1,078	4,794	31	155	28,873	79	1.95
Commercial - 3"	670	549	854	1,696	1,364	4,611	5,461	4,759	4,603	2,221	771	721	5,461	31	176	28,280	77	2.27
Commercial - 6"	571	464	600	1,675	2,335	2,369	2,644	2,406	1,993	1,687	903	512	2,644	31	85	18,159	50	1.71
<b>Total Commercial</b>	<b>6,322</b>	<b>5,312</b>	<b>6,214</b>	<b>11,205</b>	<b>13,885</b>	<b>22,023</b>	<b>27,951</b>	<b>26,629</b>	<b>22,541</b>	<b>11,878</b>	<b>5,796</b>	<b>5,258</b>	<b>27,951</b>	<b>31</b>	<b>902</b>	<b>165,014</b>	<b>452</b>	<b>1.99</b>
Multi-Family - Irrigation	0	0	0	3	61	133	106	75	118	0	0	0	133	30	4	496	1	3.26
<b>Commercial - Irrigation</b>																		
Commercial - Irrigation - 3/4"	0	0	0	3	146	271	275	239	206	2	0	0	275	31	9	1,142	3	2.84
Commercial - Irrigation - 1"	0	0	0	246	112	431	468	436	515	33	0	0	515	30	17	2,241	6	2.80
Commercial - Irrigation - 1.5"	0	0	0	629	1,214	3,917	5,021	4,029	3,276	214	0	0	5,021	31	162	18,300	50	3.23
Commercial - Irrigation - 2"	0	0	1	695	2,386	8,874	10,252	8,592	6,806	61	0	0	10,252	31	331	37,667	103	3.20
Commercial - Irrigation - 3"																		
Commercial - Irrigation - 6"																		
<b>Total Commercial - Irrigation</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1,573</b>	<b>3,858</b>	<b>13,493</b>	<b>16,016</b>	<b>13,296</b>	<b>10,803</b>	<b>310</b>	<b>0</b>	<b>0</b>	<b>16,016</b>	<b>31</b>	<b>517</b>	<b>59,350</b>	<b>163</b>	<b>3.18</b>
<b>Total Irrigation</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1,576</b>	<b>3,919</b>	<b>13,626</b>	<b>16,122</b>	<b>13,371</b>	<b>10,921</b>	<b>310</b>	<b>0</b>	<b>0</b>	<b>16,122</b>	<b>31</b>	<b>520</b>	<b>59,846</b>	<b>164</b>	<b>3.17</b>
<b>Total System</b>	<b>24,818</b>	<b>20,254</b>	<b>22,766</b>	<b>37,322</b>	<b>46,589</b>	<b>105,424</b>	<b>129,988</b>	<b>108,751</b>	<b>101,176</b>	<b>36,158</b>	<b>22,653</b>	<b>22,022</b>	<b>129,988</b>					

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Peaking Factor Analysis

Residential	Meter Size	Bills	Accounts	2018			2017									Total	
				January	February	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec		
3/4"		40,429	3,369	16,144	12,983	14,459	21,615	24,895	63,727	78,899	62,383	61,665	21,025	14,697	14,716	407,208	
1"		328	27	137	105	131	387	914	1,293	1,656	1,507	1,359	513	194	187	8,383	
1 1/2"		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2"		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3"		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6"		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>		<b>40,757</b>	<b>3,396</b>	<b>16,281</b>	<b>13,088</b>	<b>14,590</b>	<b>22,002</b>	<b>25,809</b>	<b>65,020</b>	<b>80,555</b>	<b>63,890</b>	<b>63,024</b>	<b>21,538</b>	<b>14,891</b>	<b>14,903</b>	<b>415,591</b>	
				3.9%	3.1%	3.5%	5.3%	6.2%	15.6%	19.4%	15.4%	15.2%	5.2%	3.6%	3.6%		
<b>Usage</b>																	
Single Family - 3/4"				January	February	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total	
Included In Min	5,000			13,217	11,610	12,302	14,144	14,585	16,460	16,545	16,514	16,504	14,059	12,530	12,600	171,070	41.2%
Tier 1	16,000			2,802	1,342	2,058	6,891	8,718	27,852	31,327	27,294	27,247	6,160	2,101	2,097	145,889	35.1%
Tier 2	27,000			178	88	119	629	1,390	11,952	16,700	11,433	10,993	804	142	101	54,529	13.1%
Tier 3	38,000			49	19	34	158	463	4,559	7,645	4,355	4,276	236	55	42	21,891	5.3%
All Over Tier 3	38,001			35	29	77	180	653	4,197	8,338	4,294	4,004	279	63	63	22,212	5.3%
<b>Total</b>				<b>16,281</b>	<b>13,088</b>	<b>14,590</b>	<b>22,002</b>	<b>25,809</b>	<b>65,020</b>	<b>80,555</b>	<b>63,890</b>	<b>63,024</b>	<b>21,538</b>	<b>14,891</b>	<b>14,903</b>	<b>415,591</b>	<b>100.0%</b>
<b>Percent Usage</b>																	
Single Family - 3/4"																Total	
Included In Min	5,000			81.2%	88.7%	84.3%	64.3%	56.5%	25.3%	20.5%	25.8%	26.2%	65.3%	84.1%	84.5%	41.2%	
Tier 1	16,000			17.2%	10.3%	14.1%	31.3%	33.8%	42.8%	38.9%	42.7%	43.2%	28.6%	14.1%	14.1%	35.1%	
Tier 2	27,000			1.1%	0.7%	0.8%	2.9%	5.4%	18.4%	20.7%	17.9%	17.4%	3.7%	1.0%	0.7%	13.1%	
Tier 3	38,000			0.3%	0.1%	0.2%	0.7%	1.8%	7.0%	9.5%	6.8%	6.8%	1.1%	0.4%	0.3%	5.3%	
All Over Tier 3	38,001			0.2%	0.2%	0.5%	0.8%	2.5%	6.5%	10.4%	6.7%	6.4%	1.3%	0.4%	0.4%	5.3%	
<b>Total</b>				<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	

Multi-Family - Non- Irrigation	Meter Size	Bills	Accounts	2018			2017									Total
				January	February	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	
3/4"				49	38	40	41	50	47	46	46	44	62	49	43	555
1"				22	17	23	26	23	20	23	28	24	27	20	20	273
1 1/2"				1,647	1,384	1,493	2,034	2,412	4,227	4,851	4,195	4,033	1,719	1,439	1,395	30,829
2"				401	338	320	352	408	371	356	419	403	406	368	322	4,464
3"				96	77	85	86	83	90	84	173	186	218	90	81	1,349
6"				0	0	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>				<b>2,215</b>	<b>1,854</b>	<b>1,961</b>	<b>2,539</b>	<b>2,976</b>	<b>4,755</b>	<b>5,360</b>	<b>4,861</b>	<b>4,690</b>	<b>2,432</b>	<b>1,966</b>	<b>1,861</b>	<b>37,470</b>

Multi-Family - Irrigation	Meter Size	Bills	Accounts	2018			2017									Total
				January	February	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	
3/4"				0	0	0	3	61	133	106	75	118	0	0	0	496
1"																0
1 1/2"																0
2"																0
3"																0
6"																0
<b>Total</b>				<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>61</b>	<b>133</b>	<b>106</b>	<b>75</b>	<b>118</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>496</b>

Commercial - Non Irrigation	Meter Size	Bills	Accounts	2018			2017									Total
				January	February	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	
3/4"				404	322	306	491	722	1,341	1,561	1,694	1,233	661	305	287	9,327
1"				1,021	766	885	1,766	2,489	4,611	5,785	5,708	4,614	1,720	709	743	30,817
1 1/2"				2,317	2,107	2,333	3,659	4,287	5,856	7,706	7,468	6,410	3,394	2,104	1,917	49,558
2"				1,339	1,104	1,236	1,918	2,688	3,235	4,794	4,594	3,688	2,195	1,004	1,078	28,873

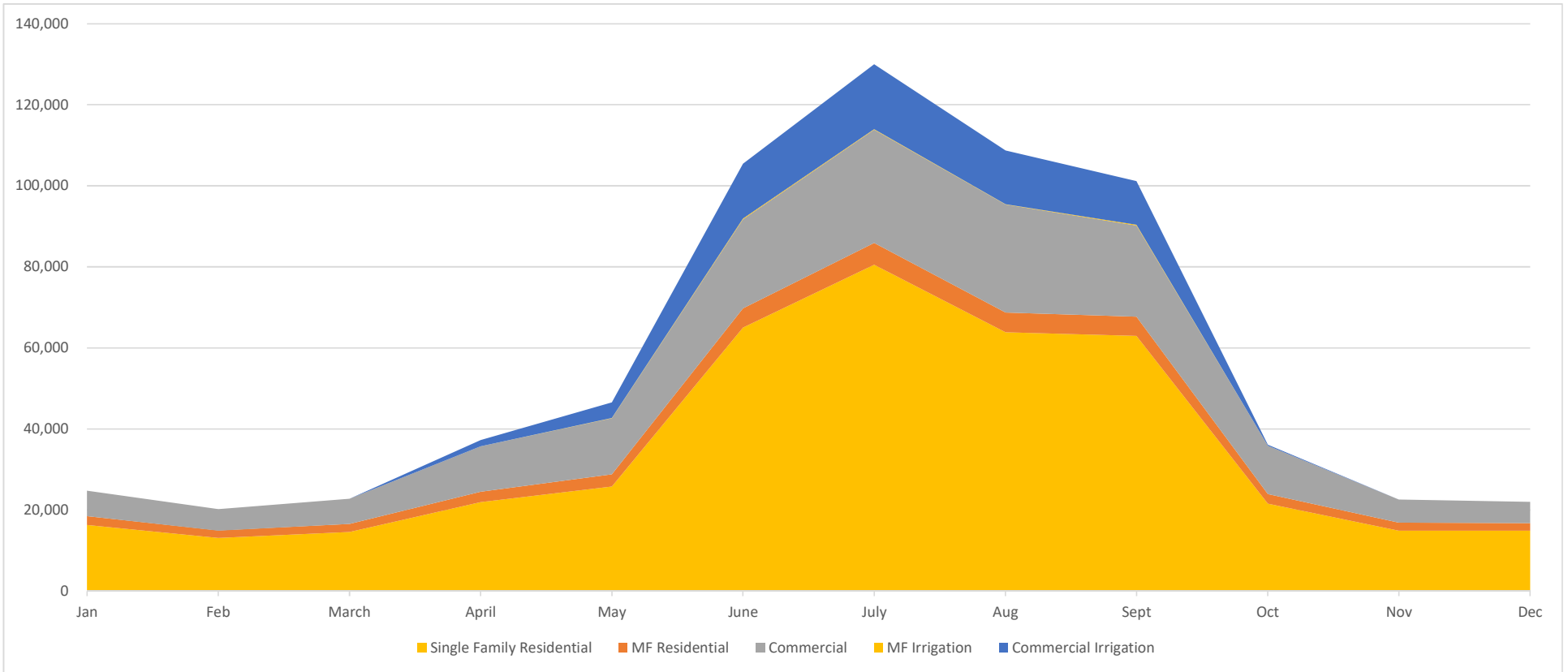
Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Peaking Factor Analysis

3"	670	549	854	1,696	1,364	4,611	5,461	4,759	4,603	2,221	771	721	28,280
6"	571	464	600	1,675	2,335	2,369	2,644	2,406	1,993	1,687	903	512	18,159
<b>Total</b>	<b>6,322</b>	<b>5,312</b>	<b>6,214</b>	<b>11,205</b>	<b>13,885</b>	<b>22,023</b>	<b>27,951</b>	<b>26,629</b>	<b>22,541</b>	<b>11,878</b>	<b>5,796</b>	<b>5,258</b>	<b>165,014</b>

Commercial - Irrigation			2018			2017									Total
Meter Size	Bills	Accounts	January	February	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	
3/4"			0	0	0	3	146	271	275	239	206	2	0	0	1,142
1"			0	0	0	246	112	431	468	436	515	33	0	0	2,241
1 1/2"			0	0	0	629	1,214	3,917	5,021	4,029	3,276	214	0	0	18,300
2"			0	0	1	695	2,386	8,874	10,252	8,592	6,806	61	0	0	37,667
3"															0
6"															0
<b>Total</b>			<b>0</b>	<b>0</b>	<b>1</b>	<b>1,573</b>	<b>3,858</b>	<b>13,493</b>	<b>16,016</b>	<b>13,296</b>	<b>10,803</b>	<b>310</b>	<b>0</b>	<b>0</b>	<b>59,350</b>

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Peaking Factor Analysis

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Single Family Residential	16,281	13,088	14,590	22,002	25,809	65,020	80,555	63,890	63,024	21,538	14,891	14,903
MF Residential	2,215	1,854	1,961	2,539	2,976	4,755	5,360	4,861	4,690	2,432	1,966	1,861
Commercial	6,322	5,312	6,214	11,205	13,885	22,023	27,951	26,629	22,541	11,878	5,796	5,258
MF Irrigation	0	0	0	3	61	133	106	75	118	0	0	0
Commercial Irrigation	0	0	1	1,573	3,858	13,493	16,016	13,296	10,803	310	0	0





Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Allocation of Capital Cost Revenue Requirement to Demand Parameters

Asset Function	Functionalized Revenue Requirement	Total	Volumetric			Customer Service		Private Fire		Public Fire
			Base	Max Day	Max Hour	Equivalent Meters	Bills	Equivalent Connections	Bills	
Water Treatment	\$0	100.0%	47.0%	53.0%						
Distribution	96,162	100.0%	28.6%	32.3%	39.2%					
Transmission	77,341	100.0%	47.0%	53.0%						
Treated Water Storage	11,278	100.0%	28.6%		71.4%					
Pumps	34,297	100.0%	28.6%	32.3%	39.2%					
Meters	8,208	100.0%				100.0%				
Customer Service	0	100.0%					100.0%			
Administration	15,758	100.0%	33.8%	36.6%	26.0%	3.6%	0.0%	0.0%	0.0%	0.0%
<b>Total</b>	<b>\$243,045</b>	<b>100.0%</b>	<b>33.8%</b>	<b>36.6%</b>	<b>26.0%</b>	<b>3.6%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>

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Asset Function	Functionalized Revenue Requirement	Total	Volumetric			Customer Service		Private Fire		Public Fire
			Base	Max Day	Max Hour	Equivalent Meters	Bills	Equivalent Connections	Bills	
Water Treatment	0.0%	\$0	\$0	\$0	\$0	\$0	\$0			
Distribution	39.6%	96,162	27,475	31,013	37,675	0	0			
Transmission	31.8%	77,341	36,332	41,010	0	0	0			
Treated Water Storage	4.6%	11,278	3,222	0	8,056	0	0			
Pumps	14.1%	34,297	9,799	11,061	13,437	0	0			
Meters	3.4%	8,208	0	0	0	8,208	0			
Customer Service	0.0%	0	0	0	0	0	0			
Administration	6.5%	15,758	5,327	5,760	4,102	569	0			
<b>Total</b>	<b>100.0%</b>	<b>\$243,045</b>	<b>\$82,155</b>	<b>\$88,843</b>	<b>\$63,270</b>	<b>\$8,777</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>



Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Allocation of Operating Expense Revenue Requirement to Functions

Operating Expense Cost Center	Revenue Requirement	Total % Allocation	Treatment	Distribution	Transmission	Treated Water Storage	Pumps	Meters	Customer Service	Administration
Purchased Water	\$3,382,032	100.0%	100.0%							
Operations & Maintenance - Water	357,160	100.0%		39.6%	31.8%	4.6%	14.1%	3.4%	0.0%	6.5%
General & Administrative - Water	630,282	100.0%							50.0%	50.0%
Water Acquisition, Repair and Reserve	59,483	100.0%		100.0%						
	\$4,428,956	100.0%	76.4%	4.5%	2.6%	0.4%	1.1%	0.3%	7.1%	7.6%
	\$0									

Operating Cost Cost Center	% of Total	Revenue Requirement	Treatment	Distribution	Transmission	Treated Water Storage	Pumps	Meters	Customer Service	Administration
Purchased Water	76.4%	\$3,382,032	\$3,382,032	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Operations & Maintenance - Water	8.1%	357,160	0	141,312	113,655	16,574	50,400	12,062	0	23,157
General & Administrative - Water	14.2%	630,282	0	0	0	0	0	0	315,141	315,141
Water Acquisition, Repair and Reserve	1.3%	59,483	0	59,483	0	0	0	0	0	0
	100.0%	\$4,428,956	\$3,382,032	\$200,795	\$113,655	\$16,574	\$50,400	\$12,062	\$315,141	\$338,298

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Allocation of Capital Cost Revenue Requirement to Demand Parameters

Asset Function	Functionalized Revenue Requirement	Total %	Volumetric			Customer Service		Private Fire		Public Fire
			Base	Max Day	Max Hour	Equivalent Meters	Bills	Equivalent Connections	Bills	
Water Treatment	\$3,382,032	100.0%	47.0%	53.0%	0.0%					
Distribution	\$200,795	100.0%	28.6%	32.3%	39.2%					
Transmission	\$113,655	100.0%	47.0%	53.0%	0.0%					
Treated Water Storage	\$16,574	100.0%	28.6%	0.0%	71.4%					
Pumps	\$50,400	100.0%	28.6%	32.3%	39.2%					
Meters	\$12,062	100.0%	0.0%	0.0%	0.0%	100.0%				
Customer Service	\$315,141	100.0%	0.0%	0.0%	0.0%		100.0%			
Administration	\$338,298	100.0%				50.0%	50.0%			
<b>Total</b>	<b>\$4,428,956</b>	<b>100.0%</b>	<b>38.8%</b>	<b>43.7%</b>	<b>2.5%</b>	<b>4.1%</b>	<b>10.9%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>

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Asset Function	Revenue Requirement Percentage	Revenue Requirement	Volumetric			Customer Service		Private Fire		Public Fire
			Base	Max Day	Max Hour	Equivalent Meters	Bills	Equivalent Connections	Bills	
Water Treatment	76.4%	\$3,382,032	\$1,588,734	\$1,793,297	\$0	\$0	\$0	\$0	\$0	\$0
Distribution	4.5%	\$200,795	57,370	64,757	78,668	0	0	0	0	0
Transmission	2.6%	\$113,655	53,390	60,265	0	0	0	0	0	0
Treated Water Storage	0.4%	\$16,574	4,735	0	11,838	0	0	0	0	0
Pumps	1.1%	\$50,400	14,400	16,254	19,746	0	0	0	0	0
Meters	0.3%	\$12,062	0	0	0	12,062	0	0	0	0
Customer Service	7.1%	\$315,141	0	0	0	0	315,141	0	0	0
Administration	7.6%	\$338,298	0	0	0	169,149	169,149	0	0	0
<b>Total O&amp;M Revenue Requirement</b>	<b>100.0%</b>	<b>\$4,428,956</b>	<b>\$1,718,630</b>	<b>\$1,934,573</b>	<b>\$110,252</b>	<b>\$181,211</b>	<b>\$484,290</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Allocation of Miscellaneous Non-Rate Revenues to Functions

Non-Rate Revenue Cost Centers	Revenue Requirement	Total % Allocation	Treatment	Distribution	Transmission	Treated Water Storage	Pumps	Meters	Customer Service	Administration
System Development Charges	\$2,500	100.0%	76.4%	4.5%	2.6%	0.4%	1.1%	0.3%	7.1%	7.6%
Water Miscellaneous	22,660	100.0%	76.4%	4.5%	2.6%	0.4%	1.1%	0.3%	7.1%	7.6%
Water Other	0	100.0%	0.0%	39.6%	31.8%	4.6%	14.1%	3.4%	0.0%	6.5%
Interest Income	78,950	100.0%	76.4%	4.5%	2.6%	0.4%	1.1%	0.3%	7.1%	7.6%
	\$104,110	100.0%	76.4%	4.5%	2.6%	0.4%	1.1%	0.3%	7.1%	7.6%

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Non-Rate Revenue Cost Centers	% of Total	Revenue Requirement	Treatment	Distribution	Transmission	Treated Water Storage	Pumps	Meters	Customer Service	Administration
Water Misc.	2.4%	\$2,500	\$1,909	\$113	\$64	\$9	\$28	\$7	\$178	\$191
Water Other	21.8%	22,660	17,304	1,027	581	85	258	62	1,612	1,731
Water Tap Fees	0.0%	0	0	0	0	0	0	0	0	0
Interest Income	75.8%	78,950	60,287	3,579	2,026	295	898	215	5,618	6,030
	100.0%	\$104,110	\$79,500	\$4,720	\$2,672	\$390	\$1,185	\$284	\$7,408	\$7,952

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Allocation of Miscellaneous Non-Rate Revenues to Demand Parameters

Functional Category	Functionalized Revenue Requirement	Total %	Volumetric			Customer Service		Private Fire		Public Fire
			Base	Max Day	Max Hour	Equivalent Meters	Bills	Equivalent Connections	Bills	
Treatment	\$79,500	100.0%	47.0%	53.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Distribution	4,720	100.0%	28.6%	32.3%	39.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Transmission	2,672	100.0%	47.0%	53.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Treated Water Storage	390	100.0%	28.6%	0.0%	71.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Pumps	1,185	100.0%	28.6%	32.3%	39.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Meters	284	100.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
Customer Service	7,408	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Administration	7,952	100.0%	0.0%	0.0%	0.0%	50.0%	50.0%	0.0%	0.0%	0.0%
Total O&M Revenue Requirement	\$104,110	100.0%	38.8%	43.7%	2.5%	4.1%	10.9%	0.0%	0.0%	0.0%

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Functional Category	Revenue Requirement Percentage	Revenue Requirement	Volumetric			Customer Service		Private Fire		Public Fire
			Base	Max Day	Max Hour	Equivalent Meters	Bills	Equivalent Connections	Bills	
Treatment	76.4%	\$79,500	\$37,346	\$42,154	\$0	\$0	\$0	\$0	\$0	\$0
Distribution	4.5%	4,720	1,349	1,522	1,849	0	0	0	0	0
Transmission	2.6%	2,672	1,255	1,417	0	0	0	0	0	0
Treated Water Storage	0.4%	390	111	0	278	0	0	0	0	0
Pumps	1.1%	1,185	338	382	464	0	0	0	0	0
Meters	0.3%	284	0	0	0	284	0	0	0	0
Customer Service	7.1%	7,408	0	0	0	0	7,408	0	0	0
Administration	7.6%	7,952	0	0	0	3,976	3,976	0	0	0
Total O&M Revenue Requirement	100.0%	\$104,110	\$40,399	\$45,475	\$2,592	\$4,260	\$11,384	\$0	\$0	\$0

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Test Year Units of Service

Customer Class	Forecast 2019 Billed	Estimated Lost Water	Base Demand	Base Avg. Day Demand	Max Day			Max Hour			Customer		Private Fire		Public Fire Hydrants	Allocation of Public Fire Hydrants Based on Equivalent Meters
					Peaking Factor	Total Capacity	Extra Capacity	Max Hour Peak	Total Capacity	Extra Capacity	Equivalent Meters	Bills	Equivalent Connections	Bills		
Single Family Residential (3/4" & 1")	415,836	12,237	428,073	1,173	2.28	2,677	1,504	2.28	2,677	0	3,371	40,752				507
Multi-Family Residential (Units)	37,904	1,115	39,020	107	1.68	180	73	1.68	180	0	429	14,760				64
Commercial - 3/4"	9,327	274	9,601	26	1.99	52	26	1.99	52	0	54	648				8
Commercial - 1"	30,817	907	31,724	87	1.99	173	86	1.99	173	0	99	816				15
Commercial - 1 1/2"	49,558	1,458	51,016	140	1.99	279	139	1.99	279	0	70	564				11
Commercial - 2"	28,873	850	29,723	81	1.99	162	81	1.99	162	0	102	336				15
Commercial - 3"	28,280	832	29,112	80	1.99	159	79	1.99	159	0	38	36				6
Commercial - 4"	0	0	0	0	1.99	0	0	1.99	0	0	0	0				0
Commercial - 6"	18,159	534	18,693	51	1.99	102	51	1.99	102	0	40	12				6
Commercial - 8"	0	0	0	0	1.99	0	0	1.99	0	0	0	0				0
Irrigation	59,846	1,761	61,607	169	3.17	535	367	3.17	535	0	122	504				
Private Fire						0	0		0	0			75	895		
Public Fire Protection				0		300	300		3,600	3,300						632
<b>Total</b>	<b>678,600</b>	<b>19,970</b>	<b>698,570</b>	<b>1,914</b>		<b>4,620</b>	<b>2,706</b>		<b>7,920</b>	<b>3,300</b>	<b>4,326</b>	<b>58,428</b>	<b>75</b>	<b>895</b>	<b>632</b>	<b>632</b>

Public Fire Flows				
	Fire #1	Fire #2	Fire #3	Total
Estimate of Max Day Fire Flows	Gallons	Gallons	Gallons	Gallons
Fire Flow per Minute	2,500	0	0	
Duration of Fire in Hours	2.00	0.00	0.00	
Duration of Fire in Minutes	120	0	0	
Total Max Day Fire Flow	300,000	0	0	300,000

Private Fire Flows - Not Used for Cost of Service				
	Fire #1	Fire #2	Fire #3	Total
Estimate of Max Day Fire Flow Volumes	Gallons	Gallons	Gallons	Gallons
Fire Flow per Minute	2,500	0	0	
Duration of Fire in Hours	0.00	0	0	
Duration of Fire in Minutes	0	0	0	
Total Max Day Fire Flow	0	0	0	0

Private Fire Flows - Not Used for Cost of Service				
	Fire #1	Fire #2	Fire #3	Total
Estimate of Max Day Fire Flow Volumes	Gallons	Gallons	Gallons	Gallons
Fire Flow per Minute	2,500	0	0	
Duration of Fire in Hours	0.00	0	0	
Duration of Fire in Minutes	0	0	0	
Total Max Day Fire Flow	0	0	0	0

Private Fire Flows - Not Used for Cost of Service				
	Fire #1	Fire #2	Fire #3	Total
Estimate of Max Hour Fire Flows	Gallons	Gallons	Gallons	Gallons
Fire Flow per Minute	2,500	0	0	
Duration of Fire Expressed on a 24-Hour Basis	0	0	0	
Total Max Hour Fire Flow	0	0	0	0

Monthly Private Fire Lit	2018	Accounts	Revenue
4" or less	\$26.70	65	\$20,826.00
6"	47.25	49	\$27,783.00
8"	83.30	3	\$2,998.80
<b>Total</b>		<b>117</b>	<b>\$51,607.80</b>

Private Fire Connections Inside District				
Connections	Count	Flow	Flow Equiv.	Equiv.
3/4"		25	0.03	0
1"		40	0.04	0
1 1/2"		50	0.05	0
2"		160	0.16	0
4"	65	320	0.32	21
6"	49	1000	1.00	49
8"	3	1600	1.60	5
10"		2300	2.30	0
<b>Total</b>	<b>117</b>			<b>75</b>

Private Fire Connections Outside District				
Connection	Count	Flow	Flow Equiv.	Equiv.
3/4"		25	0.03	0
1"		40	0.04	0
1 1/2"		50	0.05	0
2"		160	0.16	0
4"		320	0.32	0
6"		500	0.50	0
8"		1000	1.00	0
10"		1600	1.60	0
<b>Total</b>	<b>0</b>			<b>0</b>

Meter Flow Equivalencies - AWWA Manual M6 (2012 Edition)			
Meter Type	Meter	Flow Max Consistent	Flow Equivalency
Displacement	3/4"	25	1.00
Displacement	1"	40	1.60
Displacement	1 1/2"	50	2.00
Compound	2"	160	6.40
Compound	3"	320	12.80
Compound	4"	500	20.00
Compound	6"	1000	40.00
Compound	8"	1600	64.00
Compound	10"	2300	92.00
Class II Turbine	12"	5000	200.00

Private Fire Line Equivalencies		
Connection S	Flow	Equiv
3/4"	25	0.025
1"	40	0.040
1 1/2"	50	0.050
2"	160	0.160
3"	320	0.320
4"	500	0.500
6"	1000	1.000
8"	1600	1.600
10"	2300	2.300

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Test Year Units of Service - Private Fire Flow

Private Fire Flows - For Rate Design				
	Fire #1	Fire #2	Fire #3	Total
Estimate of Max Day Fire Flow Volumes	Gallons	Gallons	Gallons	Gallons
Fire Flow per Minute	1,000	0	0	
Duration of Fire in Hours	1.00	0	0	
Duration of Fire in Minutes	60	0	0	
Total Max Day Fire Flow	60,000	0	0	60,000
Estimate of Max Hour Fire Flows	Fire #1	Fire #2	Fire #3	Total
Fire Flow per Minute	1,000	0	0	
Duration of Fire Expressed on a 24-Hour Basis	1,440	0	0	
Total Max Hour Fire Flow	1,440,000	0	0	1,440,000

	Max Day	Max Day Extra Capacity	Max Hour	Max Hour Extra Capacity
Units of Service	60	0	1,440	1,380

	Max Day Extra Capacity	Max Hour Extra Capacity	Bills	Total
Unit Cost	\$730.86	\$51.80	\$8.09	
Units of Service	0	1,380	1,404	
Total Cost	\$0	\$71,480	\$11,364	\$82,844

Used  
 77,576



Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Cost of Service by Customer Class - Rate Design #2 (Monthly Fixed Charge - No RTS Adjustment)

Revenue Requirement by Customer Class Before Reallocation of Public Fire Protection Costs														
Customer Class	Total Revenue Requirement	Volumetric						Customer Service					Private Fire	
		Base	Max Day Extra Capacity	Max Hour Extra Capacity	Total Before RTS Adj.	RTS Adj. to Base	Total After RTS Adj.	Equiv. Mtrs.	Bills	Total Before RTS Adj.	RTS Adj.	Total After RTS Adj.	Equiv. Connections	Bills
Single Family Residential (3/4" & 1")	\$2,652,357	\$1,078,737	\$1,099,067	\$0	\$2,177,804	\$0	\$2,177,804	\$144,714	\$329,839	\$474,553	\$0	\$474,553	\$0	\$0
Multi-Family Residential (Units)	289,674	98,329	53,464	0	151,793	0	151,793	18,417	119,465	137,881	0	137,881	0	0
Commercial - 3/4"	50,876	24,196	19,118	0	43,313	0	43,313	2,318	5,245	7,563	0	7,563	0	0
Commercial - 1"	153,973	79,944	63,166	0	143,109	0	143,109	4,259	6,605	10,863	0	10,863	0	0
Commercial - 1 1/2"	237,710	128,561	101,579	0	230,140	0	230,140	3,005	4,565	7,570	0	7,570	0	0
Commercial - 2"	141,197	74,901	59,181	0	134,082	0	134,082	4,396	2,720	7,115	0	7,115	0	0
Commercial - 3"	133,268	73,362	57,966	0	131,328	0	131,328	1,648	291	1,940	0	1,940	0	0
Commercial - 4"	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial - 6"	86,142	47,107	37,221	0	84,328	0	84,328	1,717	97	1,814	0	1,814	0	0
Commercial - 8"	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrigation	432,505	155,249	267,922	0	423,171	0	423,171	5,255	4,079	9,334	0	9,334	0	0
Private Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Public Hydrants	390,190	0	219,259	170,931	390,190	0	390,190	0	0	0	0	0	0	0
<b>Total</b>	<b>\$4,567,891</b>	<b>\$1,760,386</b>	<b>\$1,977,941</b>	<b>\$170,931</b>	<b>\$3,909,258</b>	<b>\$0</b>	<b>\$3,909,258</b>	<b>\$185,728</b>	<b>\$472,906</b>	<b>\$658,634</b>	<b>\$0</b>	<b>\$658,634</b>	<b>\$0</b>	<b>\$0</b>
Check	\$0													

Revenue Requirement by Customer Class After Reallocation of Public Fire Protection Costs															
Customer Class	Total Revenue Requirement	Volumetric					Equiv. Mtrs. After RTS Adj. & Public Fire	Customer Service			Private Fire			Public Fire	Equiv. Mtrs. For Allocation of Public Fire
		Base After RTS Adj.	Max Day Extra Capacity	Max Hour Extra Capacity	Total Volumetric	Bills		Total Customer Service	Equiv. Connections	Bills	Total Private Fire				
Single Family Residential (3/4" & 1")	\$2,956,381	\$1,078,737	\$1,099,067	\$0	\$2,177,804	\$448,738	\$329,839	\$778,577	\$0	\$0	\$0	\$0	\$0	\$0	77.9%
Multi-Family Residential (Units)	328,365	98,329	53,464	0	151,793	57,107	119,465	176,572	0	0	0	0	0	0	9.9%
Commercial - 3/4"	55,746	24,196	19,118	0	43,313	7,188	5,245	12,433	0	0	0	0	0	0	1.2%
Commercial - 1"	162,919	79,944	63,166	0	143,109	13,205	6,605	19,810	0	0	0	0	0	0	2.3%
Commercial - 1 1/2"	244,023	128,561	101,579	0	230,140	9,318	4,565	13,883	0	0	0	0	0	0	1.6%
Commercial - 2"	150,433	74,901	59,181	0	134,082	13,631	2,720	16,351	0	0	0	0	0	0	2.4%
Commercial - 3"	136,731	73,362	57,966	0	131,328	5,112	291	5,403	0	0	0	0	0	0	0.9%
Commercial - 4"	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Commercial - 6"	89,749	47,107	37,221	0	84,328	5,325	97	5,422	0	0	0	0	0	0	0.9%
Commercial - 8"	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Irrigation	443,544	155,249	267,922	0	423,171	16,294	4,079	20,373	0	0	0	0	0	0	2.8%
Private Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100.0%
<b>Total</b>	<b>\$4,567,891</b>	<b>\$1,760,386</b>	<b>\$1,758,682</b>	<b>\$0</b>	<b>\$3,519,068</b>	<b>\$575,918</b>	<b>\$472,906</b>	<b>\$1,048,824</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	
Check	\$0														

Comparison of Test Year Revenue at Existing Rates vs. COS				
Customer Class	Test Year 2019 Revenue at Existing Rates	Test Year 2019 Cost of Service	\$ Change	% Change
Single Family Residential (3/4" & 1")	\$2,477,952	\$2,956,381	478,430	19.3%
Multi-Family Residential (Units)	546,866	328,365	(218,501)	-40.0%
Commercial - 3/4"	58,751	55,746	(3,005)	-5.1%
Commercial - 1"	184,373	162,919	(21,454)	-11.6%
Commercial - 1 1/2"	297,798	244,023	(53,775)	-18.1%
Commercial - 2"	189,122	150,433	(38,689)	-20.5%
Commercial - 3"	157,942	136,731	(21,210)	-13.4%
Commercial - 4"	0	0	0	0%
Commercial - 6"	95,153	89,749	(5,403)	-5.7%
Commercial - 8"	0	0	0	0%
Irrigation	364,544	443,544	78,999	21.7%
Private Fire	0	0	0	0%
<b>Total</b>	<b>\$4,372,500</b>	<b>\$4,567,891</b>	<b>\$195,391</b>	<b>4.5%</b>
Check	\$0			

Comparison of Test Year Revenue at Existing Rates vs. COS						
Customer Class	Test Year 2019 Revenue at Existing Rates	Test Year 2019 Cost of Service Before Private Fire	Test Year 2019 Private Fire Adjustment	Test Year 2019 Cost of Service	\$ Change	% Change
Single Family Residential (3/4" & 1")	\$2,477,952	\$2,956,381	\$60,445	\$2,895,937	417,985	16.9%
Multi-Family Residential (Units)	546,866	328,365	7,692	320,673	(226,193)	-41.4%
Commercial	983,139	839,602	7,244	832,358	(150,781)	-15.3%
Irrigation	364,544	443,544	2,195	441,349	76,805	21.1%
Private Fire	\$51,608			\$77,576	25,968	50.3%
<b>Total</b>	<b>\$4,424,108</b>	<b>\$4,567,891</b>		<b>\$4,567,891</b>	<b>143,784</b>	<b>3.3%</b>



**Ken-Caryl Ranch Water & Sanitation District**  
**2018 Rate Study**

**Appendix C**  
**Water Utility Rate Design**

Service Charge Rate Design													
COS Component	Revenue Requirement	Units of Service		Annual Unit Cost of Service	Meter Size	Flow Rate Equivalencies	Monthly Capacity Charge	Monthly Billing Component	Monthly RTS Component	Calculated Monthly Charge	Existing Fixed Charge	Difference	% Difference
Meters	\$575,918	4,326	Equivalent Meters	\$133.12	3/4"	1.00	\$11.09	\$8.09	\$0.00	\$19.19	\$26.70	(\$7.51)	39%
Billing and Collection	472,906	58,428	Bills	8.09	1"	1.60	17.75	8.09	0.00	25.84	48.93	(23.09)	89%
Readiness to Serve Adjustment	0	4,326	Equivalent Meters	0.00	1 1/2"	2.00	22.19	8.09	0.00	30.28	106.76	(76.48)	253%
					2"	6.40	71.00	8.09	0.00	79.09	191.28	(112.19)	142%
					3"	12.80	141.99	8.09	0.00	150.09	427.02	(276.93)	185%
Total COS	<i>Check</i> \$1,048,824 \$0				4"	20.00	221.86	8.09	0.00	229.96	760.62	(530.66)	231%
					6"	40.00	443.72	8.09	0.00	451.82	1,708.08	(1,256.26)	278%
					8"	64.00	709.96	8.09	0.00	718.05	0.00	718.05	-100%

Single Family Residential											
Meter Size	Accounts	Calculated Monthly Charge	Forecast Fixed Revenue Recovery	Forecast Total Revenue Req.	Net Volumetric Revenue Req.						
3/4"	3,371	\$19.19	\$776,274								
1"	27	25.84	8,372								
1-1/2"		30.28	0								
2"		79.09	0								
3"		150.09	0								
4"		229.96	0								
6"		451.82	0								
Total	3,398		\$784,646	\$2,895,937	\$2,111,290						
Block	Proposed Blocks	Billed Usage	Distribution of Usage	Paste Steepness from Below	Calculated Rates	Forecast Revenue	Revenue Distribution	Calculated Rates	Existing Rates	Change \$	Change %
Block 1	1-10,000 gal	171,324	41.2%	1.00	\$2.12	\$363,208	17.2%	\$2.12	\$0.00	\$2.12	0.0%
Block 2	10,000-16,000 gal	145,958	35.1%	2.74	5.81	848,018	40.1%	5.81	5.34	0.47	8.8%
Block 3	17,000-27,000 gal	54,474	13.1%	3.81	8.08	440,154	20.8%	8.08	5.85	2.23	38.1%
Block 4	28,000 to 38,000 gal	22,039	5.3%	4.65	9.85	217,087	10.3%	9.85	6.35	3.50	55.1%
Block 5	Over 38,001 gal	22,039	5.3%	5.31	11.26	248,162	11.7%	11.26	6.86	4.40	64.1%
		415,836	100.0%	Average	\$5.09	\$2,116,629	100.0%				
					<i>check</i>	\$5,338					

Volumetric Revenue Requirement									
Cost Component	Block 1	Block 2	Block 3	Block 4	Block 5	Total	Total Costs	Percent of Total	Billed Consum.
Base	23%	53%	25%	0%	0%	100%	\$1,614,988	76.3%	317,283
Maximum Day	0%	0%	5%	50%	45%	100%	389,460	18.4%	76,514
Maximum Hour	0%	0%	15%	20%	65%	100%	112,181	5.3%	22,039
Total Cost	\$363,372	\$847,869	\$440,047	\$217,166	\$248,175	\$2,116,629	\$2,116,629		415,836
Total Percentage	17.17%	40.06%	20.79%	10.26%	11.73%	88.28%			

Tier	Consumption	Calculated Rate	Steepness
Tier 1	171,324	\$2.12	1.00
Tier 2	145,958	\$5.81	2.74
Tier 3	54,474	\$8.08	3.81
Tier 4	22,039	\$9.85	4.65
Tier 5	22,039	\$11.26	5.31
Total	415,836		

Multi-Family Residential (Per Account)											
Meter Size	Accounts	Calculated Monthly Charge	Forecast Fixed Revenue Recovery	Forecast Total Revenue Req.	Net Volumetric Revenue Req.						
3/4"	233	\$19.19	\$53,655								
1"	45	25.84	13,954								
1-1/2"	30	30.28	10,901								
2"	8	79.09	7,593								
3"	1	150.09	1,801								
4"	0	229.96	0								
6"	0	451.82	0								
Total	317		\$87,903	\$320,673	\$232,769						
Consumption Block	Proposed Blocks	Billed Usage	Distribution of Usage	Proposed Steepness	Calculated Rates	Forecast Revenue	Revenue Distribution	Calculated Rates	Existing Rates	Change \$	Change %
Block 1	All	37,904	100.0%	1.00	\$6.15	\$233,112	100.0%	\$6.15	\$0.00	\$6.15	0.0%
Block 2											
Block 3											
Block 4											
Block 5											
		37,904	100.0%		\$6.15	\$233,112	100.0%				
					<i>Check</i>	\$343					

Commercial (All Meter Sizes)											
Meter Size	Accounts	Calculated Monthly Charge	Forecast Fixed Revenue Recovery	Forecast Total Revenue Req.	Net Volumetric Revenue Req.						
3/4"	54	\$19.19	\$12,435								
1"	68	25.84	21,085								
1-1/2"	47	30.28	17,078								
2"	28	79.09	26,574								
3"	3	150.09	5,403								
4"	0	229.96	0								
6"	1	451.82	5,422								
<b>Total</b>	<b>201</b>		<b>\$87,998</b>	<b>\$832,358</b>	<b>\$744,360</b>	<b>\$5.04</b>					
Consumption Block	Proposed Blocks	Billed Usage	Distribution of Usage	Proposed Steepness	Calculated Rates	Forecast Revenue	Revenue Distribution	Calculated Rates	Existing Rates	Change \$	Change %
Block 1	All Usage	165,014	100.0%	1.00	\$4.52	\$745,863	100.2%	\$4.52	\$0.00	\$4.52	0.0%
Block 2									\$5.34		
Block 3									\$5.85		
Block 4											
Block 5											
		165,014	100.0%		\$4.51	\$744,360	100.2%				
					<b>Check</b>	<b>\$0</b>					

Irrigation											
Meter Size	Accounts	Calculated Monthly Charge	Forecast Fixed Revenue Recovery	Forecast Total Revenue Req.	Net Volumetric Revenue Req.						
3/4"	12	\$19.19	\$2,763								
1"	6	25.84	1,860								
1-1/2"	12	30.28	4,360								
2"	12	79.09	11,389								
3"	0	150.09	0								
4"	0	229.96	0								
6"	0	451.82	0								
<b>Total</b>	<b>42</b>		<b>\$20,373</b>	<b>\$441,349</b>	<b>\$420,976</b>	<b>\$7.37</b>					
Consumption Block	Proposed Blocks	Billed Usage	Distribution of Usage	Proposed Steepness	Calculated Rates	Forecast Revenue	Revenue Distribution	Calculated Rates	Existing Rates	Change \$	Change %
Block 1	All Usage	59,846	100.0%	1.00	\$7.04	\$421,316	56.6%	\$7.04	\$5.34	\$1.70	31.8%
Block 2									\$5.85		
Block 3									\$0.00		
Block 4											
Block 5											
		59,846	100.0%		\$7.03	\$420,976	56.6%				
					<b>Check</b>	<b>\$0</b>					

Private Fire Lines									
Fire Line Size	Accounts	Fire Line Flow Rate Equivalencies	Equivalents	Calculated Monthly Charge	Forecast Total Revenue Req.	Existing Monthly Charge	Change \$	Change %	
0.75	0	0.47	0	\$0.36	\$0	\$26.70	(\$26.34)	-98.7%	
1.00	0	1.00	0	0.75	0	26.70	(25.95)	-97.2%	
1.50	0	2.90	0	2.18	0	26.70	(24.52)	-91.8%	
2.00	0	6.19	0	4.65	0	26.70	(22.05)	-82.6%	
3.00	0	17.98	0	13.49	0	26.70	(13.21)	-49.5%	
4.00	65	38.32	2,491	28.74	22,417	26.70	2.04	7.6%	
6.00	49	111.31	5,454	83.49	49,092	47.25	36.24	76.7%	
8.00	3	237.21	712	177.91	6,405	83.30	94.61	113.6%	
10.00	0	426.58	0	319.94	0		319.94	0.0%	
<b>Total</b>	<b>117</b>		<b>8,657</b>		<b>\$77,576</b>				

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Water Revenue Proof - Rate Design #2 (Monthly Fixed Charge with No RTS Adjustment)

Monthly Fixed Charge										
Meter Size	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
3/4"	\$19.19	\$20.53	\$22.38	\$24.40	\$26.59	\$28.98	\$31.59	\$34.12	\$35.83	\$37.62
1"	25.84	27.65	30.14	32.85	35.81	39.03	42.54	45.94	48.24	50.65
1.5"	30.28	32.40	35.32	38.49	41.96	45.73	49.85	53.84	56.53	59.36
2"	79.09	84.63	92.24	100.54	109.59	119.46	130.21	140.62	147.66	155.04
3"	150.09	160.60	175.05	190.80	207.98	226.69	247.10	266.87	280.21	294.22
4"	229.96	246.06	268.20	292.34	318.65	347.33	378.59	408.88	429.32	450.79
6"	451.82	483.45	526.96	574.38	626.08	682.43	743.84	803.35	843.52	885.69
8"	718.05	768.31	837.46	912.83	994.99	1,084.54	1,182.15	1,276.72	1,340.55	1,407.58
Fire Line Charges										
4"	28.74	30.75	33.52	36.54	39.82	43.41	47.32	51.10	53.66	56.34
6"	83.49	89.33	97.37	106.14	115.69	126.10	137.45	148.45	155.87	163.66
8"	177.91	190.36	207.50	226.17	246.53	268.71	292.90	316.33	332.15	348.75

Volume Rate (\$/kgal)										
Customer Class	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Single Family Residential										
1-5,000 gal	\$2.12	\$2.27	\$2.47	\$2.70	\$2.94	\$3.20	\$3.49	\$3.77	\$3.96	\$4.16
5,000-16,000 gal	5.81	6.22	6.78	7.39	8.05	8.78	9.57	10.33	10.85	11.39
17,000-27,000 gal	8.08	8.65	9.42	10.27	11.20	12.20	13.30	14.37	15.08	15.84
28,000 to 38,000 gal	9.85	10.54	11.49	12.52	13.65	14.88	16.22	17.51	18.39	19.31
Over 38,001 gal	11.26	12.05	13.13	14.31	15.60	17.01	18.54	20.02	21.02	22.07
Multi Family Residential										
6.15	\$6.58	\$7.17	\$7.82	\$8.52	\$9.29	\$10.12	\$10.93	\$11.48	\$12.06	\$12.06
6.15	6.58	7.17	7.82	8.52	9.29	10.12	10.93	11.48	11.48	12.06
6.15	6.58	7.17	7.82	8.52	9.29	10.12	10.93	11.48	11.48	12.06
Commercial										
4.52	\$4.84	\$5.27	\$5.75	\$6.26	\$6.83	\$7.44	\$8.04	\$8.44	\$8.86	\$8.86
4.52	4.84	5.27	5.75	6.26	6.83	7.44	8.04	8.44	8.44	8.86
Irrigation Only										
57.04	\$7.53	\$8.21	\$8.95	\$9.76	\$10.63	\$11.59	\$12.52	\$13.14	\$13.80	\$13.80

Projected Service Charge Revenue											
Customer Class	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Test Year 2019
Single Family Residential (3/4" & 1")	\$782,491	\$837,512	\$913,157	\$995,634	\$1,085,560	\$1,183,608	\$1,290,512	\$1,394,162	\$1,464,300	\$1,537,967	\$782,491
Multi-Family Residential (Units)	87,903	94,057	102,522	111,749	121,806	132,769	144,718	156,295	164,110	172,315	87,903
Commercial - 3/4"	12,435	13,306	14,503	15,808	17,231	18,782	20,472	22,110	23,216	24,376	12,435
Commercial - 1"	21,085	22,561	24,592	26,805	29,218	31,847	34,714	37,491	39,365	41,333	21,085
Commercial - 1 1/2"	17,078	18,273	19,918	21,711	23,665	25,794	28,116	30,365	31,883	33,478	17,078
Commercial - 2"	26,574	28,434	30,994	33,783	36,823	40,138	43,750	47,250	49,612	52,093	26,574
Commercial - 3"	5,403	5,781	6,302	6,869	7,487	8,161	8,896	9,607	10,088	10,592	5,403
Commercial - 4"	0	0	0	0	0	0	0	0	0	0	0
Commercial - 6"	5,422	5,801	6,323	6,893	7,513	8,189	8,926	9,640	10,122	10,628	5,422
Commercial - 8"	0	0	0	0	0	0	0	0	0	0	0
Commercial - Irrigation - 3/4"	2,303	2,464	2,686	2,927	3,191	3,478	3,791	4,094	4,299	4,514	2,303
Commercial - Irrigation - 1"	1,860	1,991	2,170	2,365	2,578	2,810	3,063	3,308	3,473	3,647	1,860
Commercial - Irrigation - 1 1/2"	4,360	4,666	5,085	5,543	6,042	6,586	7,179	7,753	8,140	8,547	4,360
Commercial - Irrigation - 2"	11,389	12,186	13,283	14,478	15,781	17,202	18,750	20,250	21,262	22,326	11,389
Commercial - Irrigation - 3"	0	0	0	0	0	0	0	0	0	0	0
Commercial - Irrigation - 4"	0	0	0	0	0	0	0	0	0	0	0
Commercial - Irrigation - 6"	0	0	0	0	0	0	0	0	0	0	0
Commercial - Irrigation - 8"	0	0	0	0	0	0	0	0	0	0	0
Multi-Family - Irrigation - 3/4"	461	493	537	585	638	696	758	819	860	903	461
Multi-Family - Irrigation - 1"	0	0	0	0	0	0	0	0	0	0	0
Multi-Family - Irrigation - 1 1/2"	0	0	0	0	0	0	0	0	0	0	0
Multi-Family - Irrigation - 2"	0	0	0	0	0	0	0	0	0	0	0
Multi-Family - Irrigation - 3"	0	0	0	0	0	0	0	0	0	0	0
Multi-Family - Irrigation - 4"	0	0	0	0	0	0	0	0	0	0	0
Multi-Family - Irrigation - 6"	0	0	0	0	0	0	0	0	0	0	0
Multi-Family - Irrigation - 8"	0	0	0	0	0	0	0	0	0	0	0
Fire Line - 4"	22,417	23,986	26,145	28,498	31,063	33,859	36,906	39,859	41,851	43,944	22,417
Fire Line - 6"	49,092	52,529	57,256	62,409	68,026	74,148	80,822	87,287	91,652	96,234	49,092
Fire Line - 8"	6,405	6,853	7,470	8,142	8,875	9,674	10,544	11,388	11,957	12,555	6,405
<b>Total Minimum Charge Revenue</b>	<b>\$1,056,680</b>	<b>\$1,130,894</b>	<b>\$1,232,943</b>	<b>\$1,344,200</b>	<b>\$1,465,498</b>	<b>\$1,597,740</b>	<b>\$1,741,916</b>	<b>\$1,881,679</b>	<b>\$1,976,192</b>	<b>\$2,075,453</b>	<b>\$1,056,680</b>
		7.02%	9.02%	9.02%	9.02%	9.02%	9.02%	8.02%	5.02%	5.02%	



Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Existing and Proposed Sewer Rates

<b>2018</b>
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<b>Monthly Minimum Charge</b>		
Single Family Residential	\$28.52	
Multi-Family Residential (per unit)	28.52	
Commercial	28.52	

<b>Volumetric Rates (Per 1,000 gallons per month)</b>		
Commercial (Above AWC)	\$3.75	

<b>System Development Charges</b>		
Single Family Residential	\$600	
Multi-Family Residential (Per Unit)	600	
Commercial - 3/4"	600	
Commercial - 1"	1,200	
Commercial - 1 1/2"	2,400	
Commercial - 2"	4,800	
Commercial - 3"	10,800	
Commercial - 4"	21,600	
Commercial - 6"	56,400	
Commercial - 8"	120,000	

<b>2019</b>
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<b>Monthly Meter Charge (All Customers)</b>		
Single Family Residential	\$29.38	
Multi-Family Residential (per unit)	29.38	
Commercial	29.38	

<b>Volumetric Rates (Per 1,000 gallons per month)</b>		
Commercial (Above AWC)	\$3.86	

<b>System Development Charges</b>		
3/4"	\$3,084	
1"	4,935	
1 1/2"	6,169	
2"	19,739	
3"	39,479	
4"	61,685	
6"	123,371	
8"	197,393	
Multi-Family Residential (Per Unit)	3,084	

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Existing and Proposed Water Rates

**2018**

**Monthly Minium Charge**

Single Family Residential - 3/4"	\$26.70
Single Family Residential - 1"	26.70
Multi-Family Residential	26.70
Commercial - 3/4"	26.70
Commercial - 1"	48.93
Commercial - 1 1/2"	106.76
Commercial - 2"	191.28
Commercial - 3"	427.02
Commercial - 4"	760.62
Commercial - 6"	1,708.08
Commercial - 8"	

**Volumetric Rates (Per 1,000 gallons per month)**

Single Family Residential - 3/4"	
Minimum Charge (5,000 gal)	\$0.00
5,001 to 16,000 gal	5.34
16,001 to 27,000 gal	5.85
27,001 to 38,000 gal	6.35
Over 38,001 gal	6.86
Single Family Residential - 1"	
Minimum Charge (5,000 gal)	\$0.00
5,001 to 16,000 gal	5.34
16,001 to 27,000 gal	5.85
27,001 to 38,000 gal	6.35
Over 38,001 gal	6.86
Multi-Family Residential	
Minimum Charge (5,000 gal)	\$0.00
5,001 to 10,000 gal	5.34
Over 10,001 gal	5.85

**2019**

**Monthly Meter Charge (All Customers)**

3/4"	\$19.19
1"	25.84
1 1/2"	30.28
2"	79.09
3"	150.09
4"	229.96
6"	451.82
8"	718.05

**Volumetric Rates (Per 1,000 gallons per month)**

Single Family Residential (All Meter Sizes)	
1-5,000 gal	\$2.12
5,001-16,000 gal	5.81
16,001-27,000 gal	8.08
27,001 to 38,000 gal	9.85
Over 38,001 gal	11.26
Multi-Family Residential	
All Consumpton	\$6.15

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Existing and Proposed Water Rates

<b>2018</b>
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Commercial - 3/4"		
Minimum Charge (5,000 gal)	\$0.00	
5,001 to 22,000 gal	5.34	
Over 22,001 gal	5.85	
Commercial - 1"		
Minimum Charge (10,000 gal)	\$0.00	
10,001 to 41,000 gal	5.34	
Over 41,001 gal	5.85	
Commercial - 1.5"		
Minimum Charge (23,000 gal)	\$0.00	
23,001 to 94,000 gal	5.34	
Over 94,001 gal	5.85	
Commercial - 2"		
Minimum Charge (42,000 gal)	\$0.00	
42,001 to 169,000 gal	5.34	
Over 169,001 gal	5.85	
Commercial - 3"		
Minimum Charge (95,000 gal)	\$0.00	
95,001 to 382,000 gal	5.34	
Over 382,001 gal	5.85	
Commercial - 4"		
Minimum Charge (170,000 gal)	\$0.00	
170,001 to 681,000 gal	5.34	
Over 681,001 gal	5.85	
Commercial - 6"		
Minimum Charge (383,000 gal)	\$0.00	
383,001 to 1,534,000 gal	5.34	
Over 1,534,001 gal	5.85	
Commercial - 8"		
Minimum Charge (682,000 gal)	\$0.00	
682,001 to 2,729,000 gal	5.34	
Over 2,729,001 gal	5.85	

<b>2019</b>
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Commercial (All Meter Sizes)		
All Consumption	\$4.52	
Irrigation (All Meter Sizes)		
All Consumption	\$7.04	



Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Existing and Proposed Water Rates

**2018**

<b>Monthly Private Fire Lines</b>		
4" or less		\$26.70
6"		47.25
8"		83.30
<b>System Development Charges</b>		
Single Family Residential - 3/4"		\$2,500
Single Family - 1"		5,000
Multi-Family Residential (Per Unit)		2,500
Commercial - 3/4"		2,500
Commercial - 1"		5,000
Commercial - 1 1/2"		10,000
Commercial - 2"		20,000
Commercial - 3"		45,000
Commercial - 4"		90,000
Commercial - 6"		235,000
Commercial - 8"		500,000

**2019**

<b>Monthly Private Fire Lines</b>		
4" or less		\$28.74
6"		83.49
8"		177.91
<b>System Development Charges</b>		
3/4"		\$3,312
1"		5,300
1 1/2"		6,625
2"		21,199
3"		42,397
4"		66,246
6"		132,492
8"		211,987
Multi-Family Residential (Per Unit)		3,312

**Ken-Caryl Ranch Water & Sanitation District**  
**2018 Rate Study**

**Appendix D**  
**Sewer Utility Financial Plan**



Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Sewer Existing Rates

Monthly Minium Charge	2018
Single Family Residential	\$28.52
Multi-Family Residential (per unit)	28.52
Commercial	28.52

Volumetric Rates	2018
Commercial - AWC	\$3.75

System Development Charges	2018
Single Family Residential	\$600
Multi-Family Residential (Per Unit)	600
Commercial - 3/4"	600
Commercial - 1"	1,200
Commercial - 1 1/2"	2,400
Commercial - 2"	4,800
Commercial - 3"	10,800
Commercial - 4"	21,600
Commercial - 6"	56,400
Commercial - 8"	120,000







Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Sewer Miscellaneous Revenue

Projected Miscellaneous Revenue														
	Existing Fee	Actual 2017	Budget 2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Test Year 2019
<b>System Development Charges</b>														
Single Family Residential - 3/4"	\$600			\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600
Multi-Family Residential (Per Unit)	600			0	0	0	0	0	0	0	0	0	0	0
Commercial - 3/4"	600			0	0	0	0	0	0	0	0	0	0	0
Commercial - 1"	1,200			0	0	0	0	0	0	0	0	0	0	0
Commercial - 1 1/2"	2,400			0	0	0	0	0	0	0	0	0	0	0
Commercial - 2"	4,800			0	0	0	0	0	0	0	0	0	0	0
Commercial - 3"	10,800			0	0	0	0	0	0	0	0	0	0	0
Commercial - 4"	21,600			0	0	0	0	0	0	0	0	0	0	0
Commercial - 6"	56,400			0	0	0	0	0	0	0	0	0	0	0
Commercial - 8"	120,000			0	0	0	0	0	0	0	0	0	0	0
<b>Total System Development Charges</b>		<b>4,800</b>	<b>1,000</b>	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600
<b>Other Operating Revenue</b>														
Sewer Miscellaneous		<b>20,250</b>	<b>18,000</b>	18,540	19,096	19,669	20,259	20,867	21,493	22,138	22,802	23,486	24,190	18,540
Sewer Other		<b>0</b>	<b>0</b>	0	0	0	0	0	0	0	0	0	0	0
<b>Total Other Operating Revenue</b>		<b>20,250</b>	<b>18,000</b>	18,540	19,096	19,669	20,259	20,867	21,493	22,138	22,802	23,486	24,190	18,540



Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Sewer Operating Expenses

Operating Expense Item	Actual 2017	Budget 2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Test Year 2019
Sewage Treatment	\$1,211,354	\$1,211,354	\$1,235,581	\$1,260,293	\$1,285,499	\$1,311,209	\$1,337,433	\$1,364,181	\$1,391,465	\$1,419,294	\$1,447,680	\$1,476,634	\$1,235,581
Operations & Maintenance - Sewer	115,552	163,243	168,140	173,185	178,380	183,731	189,243	194,921	200,768	206,791	212,995	219,385	168,140
General & Administrative - Sewer	224,496	288,076	296,718	305,620	314,788	324,232	333,959	343,978	354,297	364,926	375,874	387,150	296,718
Water/Sewer Acquisition, Repair and Reserve	44,100	47,250	59,483	61,267	63,105	64,998	66,948	68,957	71,025	73,156	75,351	77,611	59,483
<b>Total Operating Expenses</b>	<b>\$1,595,502</b>	<b>\$1,709,923</b>	<b>\$1,759,922</b>	<b>\$1,800,364</b>	<b>\$1,841,772</b>	<b>\$1,884,170</b>	<b>\$1,927,583</b>	<b>\$1,972,036</b>	<b>\$2,017,556</b>	<b>\$2,064,168</b>	<b>\$2,111,900</b>	<b>\$2,160,780</b>	<b>\$1,759,922</b>



Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Sewer CIP (from Master CIP Worksheet)

Project	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total	Test Year 2019
<b>Water Distribution System</b>													
Replace aging Valves	0	0	0	0	0	0	0	0	0	0	0	0	0
Clean 3 Reservoirs	0	0	0	0	0	0	0	0	0	0	0	0	0
Cast iron tapping saddle replacements	0	0	0	0	0	0	0	0	0	0	0	0	0
Test 25 of the oldest residential meters (2018)	0	0	0	0	0	0	0	0	0	0	0	0	0
Water storage tank #2 Mixing System	0	0	0	0	0	0	0	0	0	0	0	0	0
Install yard hydrant at te WHQ L Station	0	0	0	0	0	0	0	0	0	0	0	0	0
Install (4) 16-inch valves - Continental Rd. - Comp. 2011	0	0	0	0	0	0	0	0	0	0	0	0	0
Replace Fire Hydrants	0	0	0	0	0	0	0	0	0	0	0	0	0
Replace 4-inch water lines North Ranch Competed (2015)	0	0	0	0	0	0	0	0	0	0	0	0	0
7,000 LF of 12-inch (Master Plan of Works)	0	0	0	0	0	0	0	0	0	0	0	0	0
Replace Various Water Lines (B)	0	0	0	0	0	0	0	0	0	0	0	0	0
Replace Various Water Lines	0	0	0	0	0	0	0	0	0	0	0	0	0
Replace Various Water Lines (D)	0	0	0	0	0	0	0	0	0	0	0	0	0
Replace Various Water Lines	0	0	0	0	0	0	0	0	0	0	0	0	0
Replace Various Water Lines	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Storage Tank #2	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Storage Tank #3	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Leak Survey	0	0	0	0	0	0	0	0	0	0	0	0	0
Replace the 16-inch in Continental Divide Rd.	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Sewer Collection System</b>													
Replace 700 Feet of Sewer Line	200,000	0	0	0	0	0	0	0	0	0	0	200,000	0
Install Covers Over Generators	0	20,000	0	0	0	0	0	0	0	0	0	20,000	20,000
New emergency generator - Wood Brothers (Completed 2016)	0	0	0	0	0	0	0	0	0	0	0	0	0
Massey Draw Rehab Completed (2015)	0	0	0	0	0	0	0	0	0	0	0	0	0
Platte Canyon Rehab D-Line completed in 2012	0	0	0	0	0	0	0	0	0	0	0	0	0
Platte Canyon Rehab A-Line completed in 2014	0	0	0	0	0	0	0	0	0	0	0	0	0
Manhole Rehabilitation - Infiltration	100,000	0	110,000	0	0	0	0	0	0	0	0	210,000	0
Massey Draw Contract "A"	0	0	0	0	0	0	0	0	0	0	540,000	540,000	0
Massey Draw Contract "B"	0	0	0	0	0	0	0	0	0	0	850,000	850,000	0
Massey Draw Contract "C"	0	0	0	0	0	0	0	1,840,000	0	0	0	1,840,000	0
Various North Ranch Sewer Lines	0	0	0	0	0	0	480,000	0	0	0	0	480,000	0
Various Sewer Lines - Plains	0	0	0	0	0	1,100,000	0	0	0	0	0	1,100,000	0
Various Sewer Lines - Contract #2	0	0	0	0	1,040,000	0	0	0	0	0	0	1,040,000	0
Various Sewer Lines - Contract #4	0	0	0	0	0	900,000	0	0	0	0	0	900,000	0
Replace 400 Linear Ft of Sewer Line in Continental Divide	0	0	0	0	0	0	0	0	0	0	0	0	0
Various Sewer Lines - Contract #13	0	0	0	0	0	0	580,000	0	0	0	0	580,000	0
<b>Total</b>	<b>477,218</b>	<b>276,615</b>	<b>294,513</b>	<b>246,919</b>	<b>1,214,000</b>	<b>2,132,402</b>	<b>1,088,808</b>	<b>1,975,402</b>	<b>0</b>	<b>0</b>	<b>1,418,808</b>	<b>9,124,683</b>	<b>276,615</b>

Annual Functionalized Sewer CIP	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total	Test Year 2019
Administration	67,218	57,615	48,013	70,419	0	6,402	28,808	6,402	0	0	28,808	313,683	57,615
Pumps	0	0	0	0	0	0	0	0	0	0	0	0	0
Lift Station	110,000	210,000	30,000	40,000	30,000	0	0	0	0	0	0	420,000	210,000
Meters	0	9,000	106,500	136,500	144,000	126,000	0	129,000	0	0	0	651,000	9,000
Transmission	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution	0	0	0	0	0	0	0	0	0	0	0	0	0
Treated Water Storage	0	0	0	0	0	0	0	0	0	0	0	0	0
Collection	300,000	0	110,000	0	0	0	480,000	1,840,000	0	0	1,390,000	4,120,000	0
Interceptor	0	0	0	0	1,040,000	2,000,000	580,000	0	0	0	0	3,620,000	0
<b>Total</b>	<b>477,218</b>	<b>276,615</b>	<b>294,513</b>	<b>246,919</b>	<b>1,214,000</b>	<b>2,132,402</b>	<b>1,088,808</b>	<b>1,975,402</b>	<b>0</b>	<b>0</b>	<b>1,418,808</b>	<b>9,124,683</b>	<b>276,615</b>

Cumulative Functionalized Water CIP	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total	Test Year 2019
Administration	67,218	124,833	172,846	243,264	243,264	249,666	278,473	284,875	284,875	284,875	313,683	313,683	124,833
Pumps	0	0	0	0	0	0	0	0	0	0	0	0	0
Lift Station	110,000	320,000	350,000	390,000	420,000	420,000	420,000	420,000	420,000	420,000	420,000	420,000	320,000
Meters	0	9,000	115,500	252,000	396,000	522,000	522,000	651,000	651,000	651,000	651,000	651,000	9,000
Transmission	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution	0	0	0	0	0	0	0	0	0	0	0	0	0
Treated Water Storage	0	0	0	0	0	0	0	0	0	0	0	0	0
Collection	300,000	300,000	410,000	410,000	410,000	410,000	890,000	2,730,000	2,730,000	2,730,000	4,120,000	4,120,000	300,000
Interceptor	0	0	0	0	1,040,000	3,040,000	3,620,000	3,620,000	3,620,000	3,620,000	3,620,000	3,620,000	0
<b>Total</b>	<b>477,218</b>	<b>753,833</b>	<b>1,048,346</b>	<b>1,295,264</b>	<b>2,509,264</b>	<b>4,641,666</b>	<b>5,730,473</b>	<b>7,705,875</b>	<b>7,705,875</b>	<b>7,705,875</b>	<b>9,124,683</b>	<b>9,124,683</b>	<b>753,833</b>

Annual Functionalized Sewer CIP	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total	Test Year 2019
Administration	67,218	16,004	25,607	86,423	12,803	3,201	38,410	12,803	3,201	3,201	38,410	307,281	16,004
Lift Station	110,000	110,000	0	30,000	0	110,000	0	40,000	0	40,000	100,000	540,000	110,000
Meters	0	10,500	106,500	136,500	144,000	126,000	6,000	129,000	0	0	0	658,500	10,500
Collection	300,000	0	110,000	0	0	60,000	0	0	0	0	130,000	600,000	0
Interceptor	0	410,000	370,000	270,000	390,000	290,000	360,000	370,000	510,000	390,000	400,000	3,760,000	410,000
<b>Total</b>	<b>477,218</b>	<b>546,504</b>	<b>612,107</b>	<b>522,923</b>	<b>546,803</b>	<b>589,201</b>	<b>404,410</b>	<b>551,803</b>	<b>513,201</b>	<b>433,201</b>	<b>668,410</b>	<b>5,865,781</b>	<b>546,504</b>



Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Sewer Financial Plan

Item	% Increase	Month Effective	Budget 2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Test Year 2019
<b>Sewer User Charges at Existing Rates</b>			\$2,084,250	\$2,084,592	\$2,084,934	\$2,085,276	\$2,085,619	\$2,085,961	\$2,086,303	\$2,086,645	\$2,086,988	\$2,087,330	\$2,087,672	\$2,084,592
<b>Revenues from Rate Increases</b>														
2018	0.0%	12	0	0	0	0	0	0	0	0	0	0	0	0
2019	3.0%	10		52,115	62,548	62,558	62,569	62,579	62,589	62,599	62,610	62,620	62,630	52,115
2020	3.0%	12			64,424	64,435	64,446	64,456	64,467	64,477	64,488	64,498	64,509	0
2021	3.0%	12				66,368	66,379	66,390	66,401	66,412	66,423	66,433	66,444	0
2022	5.0%	12					113,951	113,969	113,988	114,007	114,025	114,044	114,063	0
2023	6.0%	12						143,601	143,625	143,648	143,672	143,696	143,719	0
2024	6.0%	12							152,242	152,267	152,292	152,317	152,342	0
2025	7.0%	12								188,304	188,335	188,366	188,397	0
2026	7.0%	12									201,518	201,551	201,584	0
2027	3.0%	12										92,426	92,441	0
2028	3.0%	12											95,214	0
<b>Total Sewer Rate Revenues</b>			2,084,250	2,136,707	2,211,907	2,278,638	2,392,962	2,536,956	2,689,615	2,878,360	3,080,350	3,173,281	3,269,016	2,136,707
<b>Miscellaneous Non-Rate Revenue</b>														
System Development Charges			1,000	600	600	600	600	600	600	600	600	600	600	600
Other Operating Income			18,000	18,540	19,096	19,669	20,259	20,867	21,493	22,138	22,802	23,486	24,190	18,540
Other Income			0	0	0	0	0	0	0	0	0	0	0	0
Interest Income			28,156	28,354	29,547	31,253	28,610	17,189	7,295	0	0	8,112	11,731	28,354
<b>Total Miscellaneous Non-Rate Revenue</b>			47,156	47,494	49,244	51,522	49,469	38,656	29,388	22,738	23,402	32,198	36,522	47,494
<b>Total Revenue</b>			2,131,406	2,184,201	2,261,150	2,330,159	2,442,431	2,575,612	2,719,003	2,901,098	3,103,752	3,205,480	3,305,537	2,184,201
<b>Operating Expenses</b>														
Sewage Treatment			1,211,354	1,235,581	1,260,293	1,285,499	1,311,209	1,337,433	1,364,181	1,391,465	1,419,294	1,447,680	1,476,634	1,235,581
Operations & Maintenance - Sewer			163,243	168,140	173,185	178,380	183,731	189,243	194,921	200,768	206,791	212,995	219,385	168,140
General & Administrative - Sewer			288,076	296,718	305,620	314,788	324,232	333,959	343,978	354,297	364,926	375,874	387,150	296,718
Water/Sewer Acquisition, Repair and Reserve			47,250	59,483	61,267	63,105	64,998	66,948	68,957	71,025	73,156	75,351	77,611	59,483
<b>Total Operating Expenses</b>			1,709,923	1,759,922	1,800,364	1,841,772	1,884,170	1,927,583	1,972,036	2,017,556	2,064,168	2,111,900	2,160,780	1,759,922
<b>Capital Improvements</b>														
Administration			67,218	57,615	48,013	70,419	0	6,402	28,808	6,402	0	0	28,808	57,615
Pumps			0	0	0	0	0	0	0	0	0	0	0	0
Lift Station			110,000	210,000	30,000	40,000	30,000	0	0	0	0	0	0	210,000
Meters			0	9,000	106,500	136,500	144,000	126,000	0	129,000	0	0	0	9,000
Transmission			0	0	0	0	0	0	0	0	0	0	0	0
Distribution			0	0	0	0	0	0	0	0	0	0	0	0
Treated Water Storage			0	0	0	0	0	0	0	0	0	0	0	0
Collection			300,000	0	110,000	0	0	0	480,000	1,840,000	0	0	1,390,000	0
Interceptor			0	0	0	0	1,040,000	2,000,000	580,000	0	0	0	0	0
<b>Total Sewer CIP</b>			477,218	276,615	294,513	246,919	1,214,000	2,132,402	1,088,808	1,975,402	0	0	1,418,808	276,615
<b>Debt Service</b>														
Revenue Bonds Existing			0	0	0	0	0	0	0	0	0	0	0	0
Revenue Bonds Proposed			0	0	0	0	0	0	0	0	0	0	0	0
State Revolving Loan Existing			0	0	0	0	0	0	0	0	0	0	0	0
State Revolving Loan Proposed			0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Debt Service</b>			0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Expenditures</b>			2,187,141	2,036,537	2,094,877	2,088,691	3,098,170	4,059,985	3,060,844	3,992,957	2,064,168	2,111,900	3,579,587	2,036,537
<b>Net Operating Surplus / (Deficit)</b>			(55,735)	147,663	166,274	241,469	(655,739)	(1,484,372)	(341,841)	(1,091,859)	1,039,585	1,093,580	(274,050)	147,663





Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Sewer Revenue Proof for Rate Design #1 - ATB

Monthly Minimum Charge											
Meter Size	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Single Family Residential	\$28.52	\$29.38	\$30.26	\$31.16	\$32.72	\$34.69	\$36.77	\$39.34	\$42.09	\$43.36	\$44.66
Multi-Family Residential (per Unit)	28.52	29.38	30.26	31.16	32.72	34.69	36.77	39.34	42.09	43.36	44.66
Commercial	28.52	29.38	30.26	31.16	32.72	34.69	36.77	39.34	42.09	43.36	44.66

Volume Rate (\$/kgal)											
Customer Class	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Single Family Residential	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Multi-Family Residential (per Unit)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Commercial - Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Commercial - Above Min	3.75	3.86	3.98	4.10	4.30	4.56	4.83	5.17	5.53	5.70	5.87
Commercial - Actual Usage											

Projected Number of Accounts (Units for MF)												
Customer Class	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Single Family Residential	3,987	3,988	3,989	3,990	3,991	3,992	3,993	3,994	3,995	3,996	3,997	3,988
Multi-Family Residential (Units)	1,204	1,204	1,204	1,204	1,204	1,204	1,204	1,204	1,204	1,204	1,204	1,204
Commercial - Min	89	89	89	89	89	89	89	89	89	89	89	89
Commercial - Above Min	81	81	81	81	81	81	81	81	81	81	81	81
Commercial - Actual Usage	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>5,361</b>	<b>5,362</b>	<b>5,363</b>	<b>5,364</b>	<b>5,365</b>	<b>5,366</b>	<b>5,367</b>	<b>5,368</b>	<b>5,369</b>	<b>5,370</b>	<b>5,371</b>	<b>5,362</b>

Projected Revenue Monthly Minimum Charge												
Customer Class	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Single Family Residential		\$1,364,853	\$1,406,151	\$1,448,699	\$1,492,534	\$1,567,553	\$1,662,023	\$1,762,185	\$1,886,010	\$2,018,536	\$2,079,612	\$2,137,178
Multi-Family Residential (Units)		412,057	424,419	437,151	450,266	472,779	501,146	531,215	568,400	608,188	626,433	645,226
Commercial - Min		30,459	31,373	32,314	33,284	34,948	37,045	39,268	42,016	44,957	46,306	47,695
Commercial - Above Min		0	0	0	0	0	0	0	0	0	0	0
Commercial - Actual Usage		0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>\$1,807,369</b>	<b>\$1,861,943</b>	<b>\$1,918,164</b>	<b>\$1,976,083</b>	<b>\$2,075,280</b>	<b>\$2,200,213</b>	<b>\$2,332,667</b>	<b>\$2,496,426</b>	<b>\$2,671,681</b>	<b>\$2,752,352</b>	<b>\$2,830,099</b>

Projected Total Volume Usage (kgal)												
Customer Class	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Single Family Residential		1	1	1	1	1	1	1	1	1	1	1
Multi-Family Residential (Units)		1	1	1	1	1	1	1	1	1	1	1
Commercial - Min		1	1	1	1	1	1	1	1	1	1	1
Commercial - Above Min		73,926	73,926	73,926	73,926	73,926	73,926	73,926	73,926	73,926	73,926	73,926
Commercial - Actual Usage		0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>73,929</b>	<b>73,929</b>	<b>73,929</b>	<b>73,929</b>	<b>73,929</b>	<b>73,929</b>	<b>73,929</b>	<b>73,929</b>	<b>73,929</b>	<b>73,929</b>	<b>73,929</b>

Projected Total Volume Revenue												
Customer Class	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Single Family Residential		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Multi-Family Residential (Units)		0	0	0	0	0	0	0	0	0	0	0
Commercial - Min		0	0	0	0	0	0	0	0	0	0	0
Commercial - Above Min		277,223	285,539	294,105	302,929	318,075	337,159	357,389	382,406	409,175	421,450	434,093
Commercial - Actual Usage		0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>\$277,223</b>	<b>\$285,539</b>	<b>\$294,105</b>	<b>\$302,929</b>	<b>\$318,075</b>	<b>\$337,159</b>	<b>\$357,389</b>	<b>\$382,406</b>	<b>\$409,175</b>	<b>\$421,450</b>	<b>\$434,093</b>



Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Existing and Proposed Sewer Rates

<b>2018</b>
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<b>Monthly Minimum Charge</b>		
Single Family Residential	\$28.52	
Multi-Family Residential (per unit)	28.52	
Commercial	28.52	

<b>Volumetric Rates (Per 1,000 gallons per month)</b>		
Commercial (Above AWC)	\$3.75	

<b>System Development Charges</b>		
Single Family Residential	\$600	
Multi-Family Residential (Per Unit)	600	
Commercial - 3/4"	600	
Commercial - 1"	1,200	
Commercial - 1 1/2"	2,400	
Commercial - 2"	4,800	
Commercial - 3"	10,800	
Commercial - 4"	21,600	
Commercial - 6"	56,400	
Commercial - 8"	120,000	

<b>2019</b>
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<b>Monthly Meter Charge (All Customers)</b>		
Single Family Residential	\$29.38	
Multi-Family Residential (per unit)	29.38	
Commercial	29.38	

<b>Volumetric Rates (Per 1,000 gallons per month)</b>		
Commercial (Above AWC)	\$3.86	

<b>System Development Charges</b>		
3/4"	\$3,084	
1"	4,935	
1 1/2"	6,169	
2"	19,739	
3"	39,479	
4"	61,685	
6"	123,371	
8"	197,393	
Multi-Family Residential (Per Unit)	3,084	

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Existing and Proposed Water Rates

**2018**

**Monthly Minium Charge**

Single Family Residential - 3/4"	\$26.70
Single Family Residential - 1"	26.70
Multi-Family Residential	26.70
Commercial - 3/4"	26.70
Commercial - 1"	48.93
Commercial - 1 1/2"	106.76
Commercial - 2"	191.28
Commercial - 3"	427.02
Commercial - 4"	760.62
Commercial - 6"	1,708.08
Commercial - 8"	

**Volumetric Rates (Per 1,000 gallons per month)**

Single Family Residential - 3/4"	
Minimum Charge (5,000 gal)	\$0.00
5,001 to 16,000 gal	5.34
16,001 to 27,000 gal	5.85
27,001 to 38,000 gal	6.35
Over 38,001 gal	6.86
Single Family Residential - 1"	
Minimum Charge (5,000 gal)	\$0.00
5,001 to 16,000 gal	5.34
16,001 to 27,000 gal	5.85
27,001 to 38,000 gal	6.35
Over 38,001 gal	6.86
Multi-Family Residential	
Minimum Charge (5,000 gal)	\$0.00
5,001 to 10,000 gal	5.34
Over 10,001 gal	5.85

**2019**

**Monthly Meter Charge (All Customers)**

3/4"	\$19.19
1"	25.84
1 1/2"	30.28
2"	79.09
3"	150.09
4"	229.96
6"	451.82
8"	718.05

**Volumetric Rates (Per 1,000 gallons per month)**

Single Family Residential (All Meter Sizes)	
1-5,000 gal	\$2.12
5,001-16,000 gal	5.81
16,001-27,000 gal	8.08
27,001 to 38,000 gal	9.85
Over 38,001 gal	11.26
Multi-Family Residential	
All Consumpton	\$6.15

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Existing and Proposed Water Rates

<b>2018</b>
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Commercial - 3/4"		
Minimum Charge (5,000 gal)	\$0.00	
5,001 to 22,000 gal	5.34	
Over 22,001 gal	5.85	
Commercial - 1"		
Minimum Charge (10,000 gal)	\$0.00	
10,001 to 41,000 gal	5.34	
Over 41,001 gal	5.85	
Commercial - 1.5"		
Minimum Charge (23,000 gal)	\$0.00	
23,001 to 94,000 gal	5.34	
Over 94,001 gal	5.85	
Commercial - 2"		
Minimum Charge (42,000 gal)	\$0.00	
42,001 to 169,000 gal	5.34	
Over 169,001 gal	5.85	
Commercial - 3"		
Minimum Charge (95,000 gal)	\$0.00	
95,001 to 382,000 gal	5.34	
Over 382,001 gal	5.85	
Commercial - 4"		
Minimum Charge (170,000 gal)	\$0.00	
170,001 to 681,000 gal	5.34	
Over 681,001 gal	5.85	
Commercial - 6"		
Minimum Charge (383,000 gal)	\$0.00	
383,001 to 1,534,000 gal	5.34	
Over 1,534,001 gal	5.85	
Commercial - 8"		
Minimum Charge (682,000 gal)	\$0.00	
682,001 to 2,729,000 gal	5.34	
Over 2,729,001 gal	5.85	

<b>2019</b>
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Commercial (All Meter Sizes)		
All Consumption	\$4.52	
Irrigation (All Meter Sizes)		
All Consumption	\$7.04	

Ken-Caryl Water and Sanitation District  
 2018 Water and Sewer Rate Study  
 Existing and Proposed Water Rates

**2018**

<b>Monthly Private Fire Lines</b>		
4" or less		\$26.70
6"		47.25
8"		83.30
<b>System Development Charges</b>		
Single Family Residential - 3/4"		\$2,500
Single Family - 1"		5,000
Multi-Family Residential (Per Unit)		2,500
Commercial - 3/4"		2,500
Commercial - 1"		5,000
Commercial - 1 1/2"		10,000
Commercial - 2"		20,000
Commercial - 3"		45,000
Commercial - 4"		90,000
Commercial - 6"		235,000
Commercial - 8"		500,000

**2019**

<b>Monthly Private Fire Lines</b>		
4" or less		\$28.74
6"		83.49
8"		177.91
<b>System Development Charges</b>		
3/4"		\$3,312
1"		5,300
1 1/2"		6,625
2"		21,199
3"		42,397
4"		66,246
6"		132,492
8"		211,987
Multi-Family Residential (Per Unit)		3,312