

**Appendix A to Chapter 111-User Charge System
Passed by Ordinance #841 on 12/17/18
OPTION #1 2018 - WITH RETIREMENT**

This appendix presents the methodology to be used in calculating user charge rates and illustrates the calculations followed in arriving at the first year's user charges. The unit costs established in this appendix are based on estimates of expenses. The actual expenses that occur may differ from these estimates and certainly they will change as time passes. Therefore, the unit cost must be reestablished whenever necessary to reflect actual expenses. Once the system is in use, the expenses can be determined from operating records and the unit costs can be adjusted based on these figures. By using the total water metered to customers as a bases for setting the rate, the cost of water loss is distributed even among users.

1. Expenses: The total annual expenses associated with the treatment works, as defined in article II, Section 8, are estimated as follows:

<u>Item</u>	<u>Annual Expense</u>
Billing and Collection	\$ 18,450.00
Administration	\$ 4,800.00
Power and utilities	\$ 57,300.00
Labor (including fringe benefits)	\$ 161,774.55
Supplies	\$ 15,500.00
Replacement Costs (see Appendix C)	\$ 149,915.70
Debt Service	\$ 234,100.00
Fuel & Mileage	\$ 9,000.00
Insurance	\$ 15,125.00
Water Audit	\$ 3,100.00
Engineering	\$ 2,000.00
Legal expenses	\$ 3,000.00
Equipment repair/replacement & system improvements	\$ 70,300.00
Maintenance	\$ 10,000.00
Other (misc.)	\$ 2,450.00
Contracted Services Expense	\$ 7,155.00
Dues & Training	\$ 1,360.00
Total Expenses	\$ 765,330.25

Revenues Received from Other Sources

Dedicated Pers. Prop. & Real Estate Tax Revenue	\$ 162,600.00
Other Revenue (all other misc)	\$ 25,000.00
Other Revenue (specify)	\$ -
Other Revenue (specify)	\$ -
Total Revenues from Other Sources:	\$ 187,600.00
Total Expenses to be Derived from User Charges:	\$ 577,730.25

2. Allocation of Expenses: The total operation and maintenance, including replacement expenses, is allocated in the following manner:

<u>Minimum</u>		<u>Volume</u>	
Billing and Collection	\$ 18,450.00	Power & utilities	\$ 57,300.00
Administration	\$ 4,800.00	Labor (including fringe benefits)	\$ 161,774.55
Debt Service* (net of other revenues)	\$ 46,500.00	Supplies	\$ 15,500.00
Replacement (see Appendix C)	\$ 149,915.70	Audit	\$ 3,100.00
		Fuel & Mileage	\$ 9,000.00
		Insurance	\$ 15,125.00
		Legal Expenses	\$ 3,000.00
		Engineering	\$ 2,000.00
	\$ -	Equipment Repair/replace	\$ 70,300.00
		Maintenance	\$ 10,000.00
		Other (misc.)	\$ 2,450.00
		Contracted Services Expense	\$ 7,155.00
		Dues & Training	\$ 1,360.00
Total	\$ 219,665.70	Total	\$ 358,064.55

* Note: The amount of debt service collected in the minimum bill is reduced by the revenues derived from the dedicated property & real estate taxes and other misc.

Model Drinking Water User Charge Methodology

3. Annual Metered Water, Billing and, Connection Information

Total water metered to customers	67,165,804 Gallons Per Year
Number of billing periods	12
Number of Service Connections	1,244

4. Volume Charge

$$\begin{aligned}
 \text{Volume Unit Charge} &= \frac{\text{Annual cost allocated to volume}}{\text{Total water metered to customers}} \\
 &= \frac{\$ 358,064.55}{67,165,804} \\
 &= \$ 0.005332 \text{ per gallon} \\
 &= \$ 3.500000 \text{ per 1000 gallons (rounded up)}
 \end{aligned}$$

5. Minimum Charge

$$\begin{aligned}
 \text{Minimum Charge} &= \text{Annual cost allocated to minimum/Number of service connections/Number of billing periods} \\
 &= \$ 23.00
 \end{aligned}$$

6. Example User Charge

Assume 5,000 gallons used.

$$\begin{aligned}
 \text{User Charge} &= \text{Minimum Charge} + [(Gallons Used/1,000) \times \text{Volume Charge per 1,000 gallons}] \\
 &= \$23.00 + [(5,000/1,000) \times \$3.50] \\
 &= \$ 40.50 \text{ per month}
 \end{aligned}$$

Are rates sufficient?

Annual revenues generated from Minimum Charge	=	Minimum Charge per billing period x Number of Billing Periods x Number of Connections
Annual revenues generated from Minimum Charge	=	\$23.00 x 12 x 1,244
Annual revenues generated from Minimum Charge	=	\$ 343,344.00
Annual revenues generated from Residential Unit Charge	=	Volume Charge x Total Annual Flow in 1000 gallons
Annual revenues generated from Residential Unit Charge	=	\$3.50 x 67,165,804/1000
Annual revenues generated from Residential Unit Charge	=	\$ 235,080.31
Total Annual Revenues	=	Annual revenues generated from Minimum Charge + Annual revenues generated from Residential Unit Charge
Total Annual Revenues	=	\$343,344.00 + \$235,080.31
Total Annual Revenues	=	\$ 578,424.31
Budget Surplus/(Deficit)	=	Total Annual Revenues - Total Expenses to be Derived From User Charges
Budget Surplus/(Deficit)	=	\$578,424.31 - \$577,730.25
Budget Surplus/(Deficit)	=	\$694.06

Water Repair & Replacement Schedule-Passed by Ordinance #841 on 12/17/18.

Appendix B to Chapter 111-User Charge System

Item	Amount
water 2018 ½ computer-Maintenance Dept.	\$1,335.00
water 2018 ½ replace computer/printer/monitor-City Hall	\$1,250.00
water 2018 ½ replace vactron	\$45,000.00
water 2018 replace chlorine injection	\$8,000.00
water 2018 replace electric controls etc.	\$14,180.00
water 2018 replace mains, valves, etc...	\$20,000.00
water 2018 well house valves and plumbing	\$30,000.00
water 2018 Winchester water loop	\$60,000.00
Total	<u>\$179,765.00</u>
water 2019 ½ computer-Maintenance Dept.	\$1,000.00
water 2019 ½ paint/repair building	\$12,500.00
water 2019 ½ replace computer/printer/monitor-City Hall	\$1,250.00
water 2019 ½ replace furnace	\$4,000.00
water 2018 ½ replace vactron	\$0.00
water 2019 1/3 replace mower	\$5,000.00
water 2019 1/3 replace tractor	\$20,000.00
water 2019 altitude valve at pressure vault	\$26,000.00
water 2019 generator adapters	\$6,000.00
water 2019 generator repairs	\$7,500.00
water 2019 paint chlorine contact tanks (2)	\$40,000.00
water 2019 paint water tower	\$250,000.00
water 2018 replace chlorine injection	\$0.00
water 2019 replace electric controls etc.	\$8,000.00
water 2019 replace filter media	\$10,000.00
water 2019 replace high service pump	\$10,000.00
water 2019 replace mains, valves, etc...	\$20,000.00
water 2018 well house valves and plumbing	\$0.00
water 2018 Winchester water loop	\$0.00
water 2019 replace well pump	\$40,000.00
Total	<u>\$461,250.00</u>
water 2020 generator repairs	\$10,000.00
water 2020 replace electric controls etc.	\$8,000.00
water 2020 replace mains, valves, etc...	\$20,000.00
water 2020 replace well pump	\$40,000.00
Total	<u>\$78,000.00</u>
water 2021 1/3 replace back hoe	\$35,000.00
water 2021 replace electric controls etc.	\$8,000.00
water 2021 replace mains, valves, etc...	\$20,000.00

Item	Amount
water 2021 replace utility truck	\$50,000.00
water 2021 replace well pump	\$40,000.00
Total	\$153,000.00

water 2022 ½ computer-Maintenance Dept.	\$1,000.00
water 2022 ½ replace computer/printer/monitor-City Hall	\$1,250.00
water 2022 ½ replace furnace	\$4,000.00
water 2022 ½ replace locator	\$5,000.00
water 2022 1/3 1 ton dump truck	\$25,000.00
water 2022 replace electric controls etc.	\$8,000.00
water 2022 replace mains, valves, etc...	\$20,000.00
Total	\$64,250.00

water 2023 1/3 replace mower	\$5,000.00
water 2023 replace electric controls etc.	\$8,000.00
water 2023 replace mains, valves, etc...	\$20,000.00
water 2023 well house valves and plumbing	\$30,000.00
Total	\$63,000.00

water 2024 generator repairs	\$7,500.00
water 2024 paint chlorine contact tanks (2)	\$40,000.00
water 2024 paint water tower	\$185,000.00
water 2024 replace chlorine injection	\$8,000.00
water 2024 replace electric controls etc.	\$8,000.00
water 2024 replace mains, valves, etc...	\$20,000.00
Total	\$268,500.00

water 2025 ½ computer-Maintenance Dept.	\$1,000.00
water 2025 ½ paint/repair building	\$12,500.00
water 2025 ½ replace computer/printer/monitor-City Hall	\$1,250.00
water 2025 1/3 replace Bobcat	\$20,000.00
water 2025 generator repairs	\$10,000.00
water 2025 replace electric controls etc.	\$8,000.00
water 2025 replace filter media	\$10,000.00
water 2025 replace high service pump	\$10,000.00
water 2025 replace mains, valves, etc...	\$20,000.00
Total	\$92,750.00

water 2026 ½ replace furnace	\$4,000.00
water 2026 replace electric controls etc.	\$8,000.00
water 2026 replace mains, valves, etc...	\$20,000.00
Total	\$32,000.00

Item	Amount
water 2027 1/2 replace locator	\$5,000.00
water 2027 1/3 replace mower	\$5,000.00
water 2027 altitude valve at pressure vault	\$26,000.00
water 2027 replace electric controls etc.	\$8,000.00
water 2027 replace mains, valves, etc...	\$20,000.00
water 2027 replace well pump	\$40,000.00
Total	<u>\$104,000.00</u>
water 2028 1/2 computer-Maintenance Dept.	\$1,000.00
water 2028 1/2 replace computer/printer/monitor-City Hall	\$1,250.00
water 2028 1/2 replace vactron	\$45,000.00
water 2028 replace electric controls etc.	\$8,000.00
water 2028 replace mains, valves, etc...	\$20,000.00
water 2028 replace well pump	\$40,000.00
water 2028 well house valves and plumbing	\$30,000.00
Total	<u>\$145,250.00</u>
water 2029 generator repairs	\$7,500.00
water 2029 paint chlorine contact tanks (2)	\$40,000.00
water 2029 paint water tower	\$140,000.00
water 2029 replace electric controls etc.	\$8,000.00
water 2029 replace mains, valves, etc...	\$20,000.00
water 2029 replace well pump	\$40,000.00
Total	<u>\$255,500.00</u>
water 2030 1/2 replace furnace	\$4,000.00
water 2030 generator repairs	\$10,000.00
water 2030 replace chlorine injection	\$8,000.00
water 2030 replace electric controls etc.	\$8,000.00
water 2030 replace mains, valves, etc...	\$20,000.00
water 2030 replace utility truck	\$50,000.00
Total	<u>\$100,000.00</u>
water 2031 1/2 computer-Maintenance Dept.	\$1,000.00
water 2031 1/2 replace computer/printer/monitor-City Hall	\$1,250.00
water 2031 1/3 replace mower	\$5,000.00
water 2031 1/3 replace tractor	\$20,000.00
water 2031 replace electric controls etc.	\$8,000.00
water 2031 replace high service pump	\$10,000.00
water 2031 replace mains, valves, etc...	\$20,000.00
Total	<u>\$65,250.00</u>

Item	Amount
water 2032 ½ replace locator	\$5,000.00
water 2032 1/3 replace back hoe	\$35,000.00
water 2032 replace electric controls etc.	\$8,000.00
water 2032 replace filter media	\$10,000.00
water 2032 replace mains, valves, etc...	\$20,000.00
Total	<u>\$78,000.00</u>
water 2033 replace electric controls etc.	\$8,000.00
water 2033 replace mains, valves, etc...	\$20,000.00
water 2033 well house valves and plumbing	\$30,000.00
Total	<u>\$58,000.00</u>
water 2034 ½ computer-Maintenance Dept.	\$1,000.00
water 2034 ½ replace computer/printer/monitor-City Hall	\$1,250.00
water 2034 ½ replace furnace	\$4,000.00
water 2034 generator repairs	\$7,500.00
water 2034 paint chlorine contact tanks (2)	\$40,000.00
water 2034 paint water tower	\$250,000.00
water 2034 replace electric controls etc.	\$8,000.00
water 2034 replace mains, valves, etc...	\$20,000.00
Total	<u>\$331,750.00</u>
water 2035 1/3 1 ton dump truck	\$25,000.00
water 2035 1/3 replace mower	\$5,000.00
water 2035 generator repairs	\$10,000.00
water 2035 replace electric controls etc.	\$8,000.00
water 2035 replace mains, valves, etc...	\$20,000.00
Total	<u>\$68,000.00</u>
water 2036 altitude valve at pressure vault	\$26,000.00
water 2036 replace chlorine injection	\$8,000.00
water 2036 replace electric controls etc.	\$8,000.00
water 2036 replace mains, valves, etc...	\$20,000.00
Total	<u>\$62,000.00</u>
water 2037 ½ computer-Maintenance Dept.	\$1,000.00
water 2037 ½ replace computer/printer/monitor-City Hall	\$1,250.00
water 2037 ½ replace locator	\$5,000.00
water 2037 replace electric controls etc.	\$8,000.00
water 2037 replace high service pump	\$10,000.00

Item	Amount
water 2037 replace mains, valves, etc...	\$20,000.00
Total	<u>\$45,250.00</u>

Grand Total \$2,705,515.00

**Appendix C to Chapter 111-User Charge System
Passed by Ordinance #842 on 12/17/18**

REPLACEMENT FUND ANNUAL ANNUITY

(from schedule provided by city on 8/7/18)

(A separate sheet showing what items are to be replaced, what year, and estimated replacement cost, should also be attached.)

Inflation **3.00%**
Interest **0.25%**
Initial Balance **\$580,878.02**

<u>Year</u>	<u>Estimated Replacement Costs</u>	<u>X</u>	<u>3.00% Compound Amount Factor (F/P)</u>	<u>=</u>	<u>Future Worth</u>	<u>X</u>	<u>Present Worth Factor (P/F)</u>	<u>=</u>	<u>Adjusted Present Worth</u>	<u>Interest on Fund Balance</u>	<u>Net Fund Balance</u>
	Initial Balance										<i>\$580,878.02</i>
1	\$179,765.00		1.030000		\$185,157.95		0.997506		\$184,696.21	1,452.20	\$547,087.97
2	\$461,250.00		1.060900		489,340.13		0.995019		\$486,902.57	1,367.72	\$209,031.27
3	\$78,000.00		1.092727		85,232.71		0.992537		\$84,596.64	522.58	\$274,236.84
4	\$153,000.00		1.125509		172,202.85		0.990062		\$170,491.53	685.59	\$252,635.28
5	\$64,250.00		1.159274		74,483.36		0.987593		\$73,559.26	631.59	\$328,699.21
6	\$63,000.00		1.194052		75,225.29		0.985130		\$74,106.72	821.75	\$404,211.37
7	\$268,500.00		1.229874		330,221.13		0.982674		\$324,499.62	1,010.53	\$224,916.47
8	\$92,750.00		1.266770		117,492.93		0.980223		\$115,169.28	562.29	\$257,901.53
9	\$32,000.00		1.304773		41,752.74		0.977779		\$40,824.94	644.75	\$366,709.24
10	\$104,000.00		1.343916		139,767.30		0.975340		\$136,320.69	916.77	\$377,774.41
11	\$145,250.00		1.384234		201,059.97		0.972908		\$195,612.87	944.44	\$327,574.58
12	\$255,500.00		1.425761		364,281.91		0.970482		\$353,528.98	818.94	\$114,027.31
13	\$100,000.00		1.468534		146,853.37		0.968062		\$142,163.13	285.07	\$117,374.71
14	\$65,250.00		1.512590		98,696.48		0.965648		\$95,306.02	293.44	\$168,887.37
15	\$78,000.00		1.557967		121,521.46		0.963239		\$117,054.27	422.22	\$197,703.83
16	\$58,000.00		1.604706		93,072.97		0.960837		\$89,427.99	494.26	\$255,040.82
17	\$331,750.00		1.652848		548,332.20		0.958441		\$525,544.23	637.60	<i>(\$142,738.08)</i>
18	\$68,000.00		1.702433		115,765.45		0.956051		\$110,677.69	(356.85)	<i>(\$108,944.68)</i>
19	\$62,000.00		1.753506		108,717.38		0.953667		\$103,680.17	(272.36)	<i>(\$68,018.72)</i>
20	<u>45,250.00</u>		1.806111		81,726.53		0.951289		\$77,745.53	(170.05)	\$0.40
	\$2,705,515.00								\$ 3,501,908.00		
					Less Initial Deposit						
					Capital Recovery Factor		X		0.051323		
					Annual Annuity				\$149,915.70		

