City of Blue Lake Water and Wastewater Rate Study

Rural Community
Assistance Corporation

RCAC
www.rcac.org

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Drinking Water Analysis

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Wastewater Analysis

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Introduction

Introduction

Founded in 1978, RCAC provides training, technical and financial resources, and advocacy so rural communities can achieve their goals. Since 1978, our dedicated staff and active board, coupled with our key values: leadership, collaboration, commitment, quality, and integrity, have helped effect positive change in rural communities across the West.

RCAC's work includes environmental infrastructure (water, wastewater, and solid waste facilities); affordable housing development; economic and leadership development; and community development finance. These services are available to communities with populations of fewer than 50,000, other nonprofit groups, Tribal organizations, farmworkers, colonias and other specific populations. Headquartered in West Sacramento, California, RCAC's employees serve rural communities in 13 western states and the Pacific islands.

This rate analysis and recommendations was requested in response to increasing infrastructure needs, and noticeably insufficient revenue. The City has been borrowing money from its capital reserves for operations, and recognizes the need for ongoing fiscal sustainability

It is the responsibility of the City Council to manage the system in a financially sustainable manner. The findings and recommendations in this report are designed to support the council in making informed decisions on the proper fiscal management of the system. The council's responsibility is to provide safe drinking water, and wastewater collection and treatment to their customers and ensure the system complies with all federal and state regulations.

The following principles guide this rate study

- Compliance with State Regulations – specifically Proposition 218 when setting water rates.
- System Sustainability – The water systems long term viability to provide water and wastewater treatment both in the short and long term.
- Justifiability -Rates should be justified by the actual costs of running and operating the water and wastewater systems.

Disclaimer – The findings, recommendations, and conclusions contained in this financial analysis are based on financial information provided to RCAC by the City of Blue Lake. Although reasonable care was made to assure the reliability of this information, no warranty is expressed or implied as to the correctness, accuracy or completeness of the information contained herein. Any action taken based on such findings, recommendations, or conclusions is undertaken at the discretion of the City of Blue Lake. In no event will RCAC or its partners, employees, or agents, be liable for any decision made or action taken in reliance on the information contained in this analysis.

System Basic Statistics

Community

The City of Blue Lake is located along the Mad River approximately sixteen miles northeast of Eureka in Humboldt County. The population in 2020 was approximately 1,200 which is consistent from the population in 2010. The town was incorporated in 1910 as a lumber town. The City is managed by a City Council with regular meetings on the 4th Tuesday of each month.

Median Household income according to the 2020 census is $49,479 which qualifies Blue Lake as a disadvantaged community.

Drinking Water System

System Description

The water system within the City of Blue Lake is part of the Humboldt Bay Municipal Water District (HBMWD). All water is purchased directly from the HBMWD and distributed through the City's infrastructure to the customers. The system serves 629 residential metered customers, 15 metered agricultural customers, and 41 metered commercial customers, including the Blue Lake Casino and Hotel.

Current Water Rate Structure

The system currently uses an in-town rate and an out-of-town rate, with a base rate and an increasing tiered usage rate. As discussed below, an increased tiered usage block is discouraged.

Meter Size	Inside the City	Inside the City TRF	Current Combined Rate
5/8"	$27.48	$1.00	$28.48
3/4"	$27.48	$1.11	$28.59
1"	$45.48	$1.33	$46.81
1-1/2"	$91.48	$1.44	$92.92
2"	$146.41	$1.67	$148.08
3"	$320.57	$3.89	$324.46
4"	$576.86	$5.56	$582.42
6"	$1,282.02	$11.11	$1,293.13

Table 1: Current Inside the City Base Charges for Drinking Water

Meter Size	Outside the City	Outside the City TRF	Current Combined Rate
5/8"	$41.22	$1.50	$42.72
3/4"	$41.22	$1.67	$42.89
1"	$68.82	$2.00	$70.82
1-1/2"	$137.22	$2.17	$139.39
2"	$219.63	$2.51	$222.14
3"	$480.86	$5.84	$486.70
4"	$865.30	$8.33	$873.63
6"	$1,923.03	$16.67	$1,939.70

Table 2: Current Outside of City Base Charges for Drinking Water

Tier in CF	Inside of City	Outside of City
0-200	$1.87	$2.81
201-400	$1.97	$2.98
401-1,200	$2.10	$3.15
1,201+	$2.05	$3.05

Table 3:Current Drinking Water Usage Charges

Future population and usage projections

For the purposes of rate calculations, RCAC projected population growth and water conservation. The following factors were taken into account.

Growth of Consumption over Base year	Year 1	Year 2	Year 3	Year 4	Year 5
Conservation Factor	-2.0%	-3.0%	-4.5%	-4.5%	-4.5%
Community Growth Factor	0.0%	0.0%	0.0%	0.0%	0.0%
Total Consumption Adjustment	-2.0%	-3.0%	-4.5%	-4.5%	-4.5%

Table 4: Growth and Conservation Assumptions

Wastewater System

Wastewater System Description

The wastewater treatment system serves the City of Blue Lake, the nearby tribal casino, and some out-of-town customers. The system treats and discharges waste from these locations and does not require pre-treatment. The system serves approximately 1,200 users, including residential and industrial users. The twenty-three industrial users include the Blue Lake Rancheria Hotel and Casino, as well as a brewery.

Wastewater use statistics

For this study residential use was confirmed to meet industry standard. The average household uses .171 BOD per person, per day. In Blue Lake this equates to .407 BOD per household for day. The total BOD for industrial users is 90.75 pounds per day. The largest two users are the Blue Lake Rancheria and the Mad River Brewery.

Current wastewater rate structure

Current wastewater rates consist of base rate, capital reserve fund assessments, and for commercial and industrial customers a flow charge. Residential customers are charged a flat rate, plus one Capital Reserve Fund account. The capital reserve fund is $11.43 with a base rate of $38.46. This totals $49.89 per residential unit.

Industrial flow customers pay the same base rate of $38.46 plus anywhere from a single capital fund charge to 150 based on their outflow, and BOD (Biological Oxygen Demand) of the unit. There is also a per flow calculation using the BOD rating.

Inflow and Infiltration

The City has reported significant winter infiltration/inflow ("I & I") as a contribution to excessive wear and tear. The winter I & I is approximately six times that of the summer months. I & I is a significant factor in overtaxing the system.

Current Financial Condition and Analysis

Drinking Water

Current rate schedule

The City currently has three components to their drinking water rates. A base rate, a turbidity reduction fee, and an increasing tiered usage charge. Out-of-City customers are charged more for water in all three areas. The below tables indicate the current rate structure.

	Inside City		Outside City	
Meter Size	Base Rate	TRF Charge	Base Rate	TRF Charge
5/8"	$27.48	$1.00	$41.22	$1.50
3/4"	$27.48	$1.11	$41.22	$1.67
1"	$45.87	$1.33	$68.82	$2.00
1 – 1/2"	$91.48	$1.44	$137.22	$2.17
2"	$146.51	$1.67	$219.63	$2.51
3"	$320.57	$3.89	$480.86	$5.84
4"	$576.86	$5.56	$865.30	$8.33
6"	$1,282.02	$11.11	$1,923.03	$16.67

Table 5: Current Base and Turbidity Reduction Fees

Usage Tier	Inside City per 100 cf	Outside City per 100 cf
0-200	$1.87	$2.81
201-400	$1.97	$2.98
401-1,200	$2.10	$3.15
1,201+	$2.05	$3.05

Table 6: Current Usage Rate by Tier Per 100 cubic feet

Analysis of Current Rate Structure

California public entities must comply with Prop 13 and 218. Rates must be proportional to the service received. Two areas RCAC noted in this analysis which may present issues with these laws include:

- The use of Inside-the-City rates and Outside-the-City rates. The City of Blue Lake operates a gravity fed water system. The cost to provide water to those customers located outside of the City limits is not substantial enough to justify a higher rate. In order to comply with Proposition 218, the City must charge a proportionate rate for the user groups; this rate must be proportionate to the cost to provide the service.
- Tiered rates have proven challenging to justify under proportional use. The cost of producing 201 cubic feet of water is not materially different from producing 200 cubic feet.

The current rate structure's increasing tiered block is effective at promoting water conservation while maintaining consistent revenue. However, the increasing tiered block rate is not justifiable with the current financial data available. This rate structure has been successfully challenged in other systems and RCAC recommends charging a uniform block rate. A detailed explanation of these rate structures is included in Appendix E.

Current budget

The current and historical budgets for drinking water indicate a consistently increasing expense, and revenues insufficient to keep pace with these expenses. Coupled with rising costs, the budget needs to be evaluated.

Notable issues include a loss on turbidity reduction fees of almost $5,000 a year. This is an expense the City has not been able to fully recover from users. This is resulting in a large operations short fall. The monies to pay for these costs have been borrowed from capital reserves and need to be repaid.

The below budget summarizes revenue and expense by broad category. This reflects the assumption of a rate increase in November of 2023 with the currently approved budget. A complete budget is available in Appendix A. Due to a delay in the Prop 218 Process the necessary expense reductions will be made to balance the budget in FY23. Final 2022 revenues were not available at the time the study was completed; 2022 will need to be adjusted to reflect actuals.

EXPENSES AND SOURCES OF FUNDS	2020	2021	2022	2023
Total Operation and Maintenance Expenses:	254,923	254,287	482,767	561,582
Total General and Administrative Expenses:	100,918	103,301	94,908	121,044
TOTAL EXPENSES	355,841	357,588	577,675	682,626
TOTAL REVENUE	541,373	493,711	0	637,048
NET LOSS OR GAIN:	185,532	136,123	-577,675	-45,578
NET CASH FLOW (Contribution to Reserves)	185,532	136,123	-577,675	25,307

Table 7: Historic and Current Budget for Drinking Water

Current dedicated reserves

The system currently has established reserves in three major categories. None of the debt the system currently holds requires a debt reserve.

Reserve	Purpose	Balance	Reserve Target
Operations	Fund daily operations of the system between incurring expenses, and receiving revenue.	$73,411	$71,943
Emergency	Used to resolve unplanned and unexpected emergencies to the wastewater system	$11,884	$50,000
Capital Improvement	Long term reserves designated for capital improvement and replacement	$886,410	Determined by CIP

Table 8: Current Drinking Water Dedicated Reserves

Analysis of current financial condition

The current revenue will not cover operations beginning in FY23 and will continue to see a decline under the current annual inflation adjustments. If only the current inflation adjustment is made the following budget projections apply. The City will continue to borrow against reserves.

EXPENSES AND SOURCES OF FUNDS	2023	2024	2025	2026	2027
Total Operation & Maintenance Expenses:	524,831	550,930	576,070	599,819	624,636
Total General & Administrative Expenses:	95,753	86,277	88,151	80,649	79,106
TOTAL EXPENSES	620,584	637,207	664,221	680,467	703,742
TOTAL REVENUE	476,046	492,708	509,952	527,801	546,274
NET LOSS OR GAIN:	-144,538	-144,499	-154,269	-152,667	-157,468

Due to current economic conditions, it is advised that the Council and City staff continue to monitor inflation and interest rates and make regular decisions to adjust.

Wastewater

Current rate schedule

Current wastewater rates consist of three components. Residential customers are charged a flat rate, plus one Capital Reserve Fund account. The capital reserve fund is $11.43 with a base rate of $38.46; this totals $49.89 per residential unit.

Industrial flow customers pay the same base rate of $38.46 plus anywhere from a single capital fund charge to 150 based on their outflow, and BOD of the unit. There is also a per flow calculation using a BOD rating.

Customer Class	Base Rate	Capital Reserve Fee	Minimum Monthly Bill
Residential	$38.46	$11.43	$49.89
Industrial Flow	$38.46	$11.43	$49.89
Industrial Flow 8 SCR	$38.46	$91.44	$129.90
Industrial Flow 2 SCR	$38.46	$22.86	$61.32
Industrial Flow 24 SCR	$38.46	$274.32	$312.78
Industrial Flow 150 SCR	$38.46	$1,714.50	$1,752.96
Industrial Flow 5 SCR	$38.46	$57.15	$95.61
Industrial Flow 50 SCR	$38.46	$571.50	$609.96

Table 9: Current Wastewater Rates

Current budget

The following budget table shows a high-level summary of expenses and revenues over the past three years. This also includes the approved budget for FY23. The projected 2023 budget includes an assumption of new rates in November of 2022.

EXPENSES AND SOURCES OF FUNDS	2020	2021	2022
Total Operation and Maintenance Expenses:	$299,695	$318,604	$303,328
Total General and Administrative Expenses:	$209,872	$209,270	$211,565
TOTAL EXPENSES	$509,567	$527,874	$514,893
TOTAL REVENUE	$490,777	$403,321	$500,644
NET LOSS OR GAIN:	-$18,790	-$124,553	-$14,249
Transfers from outside (Capital Revenue)	91,014	30,338	144,861
NET CASH FLOW (Contribution to Reserves)	-$109,804	-$154,891	-$159,110

Table 10: Historic Actuals for Wastewater

The City does not currently budget for doubtful accounts but for the purposes of this study they were estimated below industry standards at 1/5 of 1% or 0.2% per year. This equates to approximately $1,100 a year and has minimal impact on rates.

Current Financial indicators

Financial solvency for wastewater systems is determined using key ratios. The current key indicating financial ratios are listed below.

- Current Ratio: The current ratio is a very quick calculation of how a system can repay its liabilities in the immediate future, typically, within the next year.
    - Blue Lake had a ratio of current assets/current ratio of over 3 in July of 2021, but this has changed and decreased over the past year.
- Days Cash on Hand: The operating reserve for Blue Lake is currently at a negative number. Which means the system has no ability to pay bills without borrowing funds.

The wastewater system holds no external debt, so there is no debt to be considered in these ratios.

Current dedicated reserves

The system holds the current balances in reserves

Reserve	Purpose	Balance	Reserve Target
Operations	Fund daily operations of the system between incurring expenses, and receiving revenue.	-$165,000	$44,383
Emergency	Used to resolve unplanned and unexpected emergencies to the wastewater system	$0.00	$50,000
Capital Improvement	Long term reserves designated for capital improvement and replacement	$1,458, 998	Continuous Contributions

Table 11:Reserve Balances and Purpose

The above-mentioned reserves indicate a negative balance in the operations account. This money was borrowed from the Capital Improvement Reserve bringing the functional balance of the capital improvement reserve to $1,293,998.

Analysis of current financial condition

Revenue is not sufficient to cover operations at this point. The continued increase in expense, and anticipated maintenance needs will continue to exacerbate the issues facing the system.

In the current wastewater calculations, the large industrial users are paying the bulk of the expenses. This is directly proportional to their usage and demand on the system.

Affordability is defined for the purpose of this study as the amount the average residential customer pays for wastewater. Based on a Median Household income of $49,479.00 the average residential customer pays 1.01% of their income in wastewater. Most funders consider this affordable.

Citywide Financial Policies

Financial policies currently under review include:

- Reserves policies. These policies indicate how reserve targets are established, who can access them, and for what purpose.
- Capital Improvement Funding Policy- Currently the CIP reserve policy is to collect and establish a set capital improvement fee each month. This has left the system shy of covering operations while building a large reserve with extremely limited use.
    - Clarity should be established regarding how this capital reserve can be used in extraordinary expenses, such as line breaks and replacements.

Future Financial condition and analysis

Drinking Water Future Financial Condition

Capital projects planned

The most urgent need for the water system is upgrading the old redwood tanks, which were installed in 1974. This will not be a fundable project in FY23, but grants and loans should be sought as soon as feasible. The needs of Blue Lake Drinking Water are detailed in Appendix C and the below table highlights the immediate needs.

Asset	Normal Estimated Life	Current Age	Planned Remaining Life	Estimated Remaining Life	Estimated Future Cost	Fund with Cash	Fund with Grant	Fund with Loan	Cash Required
400000-gal redwood tank	40	48	-8	1	269,431	10%	80%	10%	$26,943
Ford Ranger Unit 172	20	15	5	1	6,714	100%	0%	0%	$6,714
1991 Ford F600 dump truck	10	31	-21	2	10,201	100%	0%	0%	$10,201
1994 John Deere Loader	10	28	-18	2	13,418	100%	0%	0%	$13,418
500000-gal redwood tank	30	36	-6	3	730,623	10%	80%	10%	$73,062
1993 Ford Ranger Pickup	10	29	-19	3	5,441	100%	0%	0%	$5,441
3/4" services and boxes	50	48	2	5	95,121	10%	75%	15%	$9,512

Table 12:Capital Projects for Drinking Water

Suggested reserve funding

Based on the above descriptions, the reserve balances RCAC recommends, as well as repayment periods or make up periods are indicated below. The highest priority is on establishing an emergency reserve and restoring operating reserves.

Reserve	Current Balance	Suggested Balance	Make up Period	Annual Reserve
Operating	$73,411	$65,690	N/A	N/A
Emergency	$11,884	$50,000	5	$7,623

Table 13: Drinking Water Reserve Funding

Capital Reserves will be funded according to the capital improvement plan with average annual contributions over the next five years of $31,604.

For the purpose of reserve calculations, any expenses under $5,000 are not capitalized and will be paid for out of general operations.

Projected Revenue

For the purposes of rate calculations RCAC recommends only budgeting of consistent and reliable revenues. For this reason, RCAC has not budgeted late charges, insurance rebates, connection, and buy-

in fees, as well as interest earned. These revenues should be transferred to reserves or used to cover operational short falls if they arise but should not be counted on for a balanced budget.

Grant funding should be accounted for as funds are received per the instruction of the grantor.

Suggested rates

RCAC proposes removing the out-of-town classification and adjusting the increasing tiered usage charge in favor of a uniform block rate charge.

When taking only the breakdown between variable and fixed cost, RCAC calculates a theoretical base rate for Blue Lake for year one would be:

Meter Size	Number of Meters	AWWA Safe Max Operating Cap. (GPM)	Max System Demand (GPM)	% Max System Demand by Meter Size	Fixed Cost Allocated by Meter Size	Theoretical Base Rate by Meter Size per M
A	C	D	E= D * C	F= % of total	G= % * total	H=G/C/12
5/8"	615	20	12,300	74.86%	$496,899	$67.33
3/4"	38	30	1,140	6.94%	$46,054	$101.00
1"	17	50	850	5.17%	$34,339	$168.33
1.5"	2	100	200	1.22%	$8,080	$336.65
2"	7	160	1,120	6.82%	$45,246	$538.64
3"	1	320	320	1.95%	$12,927	$1,077.29
4"	1	500	500	3.04%	$20,199	$1,683.26

Table 14:Theoretical Base Rates

Recognizing the theoretical rates are unrealistic for the average Blue Lake customer, the proposed rates recover costs, but keep rates more manageable.

Meter Size	2023	2024	2025	2026	2027
5/8"	41.07	42.71	44.42	46.20	48.05
3/4"	61.61	64.07	66.63	69.30	72.07
1"	102.68	106.79	111.06	115.50	120.12
1-1/2"	205.36	213.57	222.12	231.00	240.24
2"	328.57	341.72	355.38	369.60	384.38
3"	657.15	683.43	710.77	739.20	768.77
4"	1,026.79	1,067.86	1,110.58	1,155.00	1,201.20

Table 15: Proposed Rates for FY23-FY27

A simplified usage rate which charges the same commodity charge for each cubic foot of water (rounded up to 100) sold is suggested below.

2023	2024	2025	2026	2027
$1.90	$2.00	$2.09	$2.20	$2.31

Table 16: Proposed Usage Rate Per 100cf

Impact of suggested rates on 5-year budget

If the above rates are adopted, the resulting budget will be balanced with annual reserve contributions.

	2023	2024	2025	2026	2027	5 Years
TOTAL EXPENSES	$612,453	$636,801	$669,057	$693,995	$718,977	$3,331,283
TOTAL REVENUE	$625,141	$647,800	$670,052	$696,855	$724,729	$3,364,576
NET LOSS OR GAIN: (Short/Over to Reserves)	$12,687	$11,000	$996	$2,859	$5,752	$33,293
NET CASH FLOW (Contribution to Reserves)	$53,178	$56,838	$50,259	$56,420	$59,312	$276,006

Table 17: Drinking Water Budget Projections

Impact of suggested rates on Customer bills

The average customer bill by meter size will increase according to the below table. These numbers include water used and consumed by customer.

Meter Size	Count	Current	Year 1	Year 2	Year 3	Year 4	Year 5
5/8"	615	$43.52	$55.71	$57.78	$59.85	$62.24	$64.73
3/4"	38	$56.85	$88.34	$91.59	$94.81	$98.60	$102.55
1"	17	$87.39	$140.80	$146.02	$151.23	$157.28	$163.58
1.5"	2	$263.71	$361.84	$374.65	$387.04	$402.53	$418.63
2"	7	$1,317.76	$1,392.54	$1,436.95	$1,476.81	$1,535.89	$1,597.32
3"	1	$347.67	$681.82	$708.83	$736.77	$766.24	$796.89
4"	1	$587.40	$1,036.41	$1,077.76	$1,120.71	$1,165.54	$1,212.16

Table 18: Average Customer Bill Based on Meter Size

Affordability

Water rate affordability is one way water rates are evaluated. The City of Blue Lake should target affordability of 1.25%-1.75%. This means the average bill as a percent of Median Household Income.

Wastewater System Future Financial Condition

Needed capital projects

The most immediate needs for the wastewater system include expanding capacity and relining the ponds. These large expenses will be paid largely through grants and some reserves. Although the system may need to consider loans, cash reserves would be sufficient for cash-based needs in the coming years. However, they would quickly be exhausted if additional revenue were not collected.

Asset	Normal Estimated Life	Current Age	Planned Remaining Life	Estimated Remaining Life	Estimated Future Cost	Fund with Cash	Fund with Grant	Fund with Loan	Cash Required
50KW generator w/trailer (1/2)	10	23	-13	1	$8,298	100%	0%	0%	$8,298
Chlorinating system	10	22	-12	1	$89,355	25%	0%	75%	$22,339
Pipeline camera	10	20	-10	1	$7,666	100%	0%	0%	$7,666
Pipeline camera (add-on)	10	20	-10	1	$2,481	100%	0%	0%	$2,481
Sewage channel grinder	10	18	-8	1	$109,541	15%	85%	0%	$16,431
Pump station	15	17	-2	1	$51,612	25%	0%	75%	$12,903
R158 Ford Ranger/unit 172 (1/2)	7	15	-8	1	$6,746	100%	0%	0%	$6,746
Collection pump	10	15	-5	1	$9,714	100%	0%	0%	$9,714
John Deere 54" Riding Lawnmower	5	10	-5	1	$14,926	100%	0%	0%	$14,926
Forklift	5	10	-5	1	$7,630	100%	0%	0%	$7,630
2012 Ford F150	5	10	-5	1	$24,514	25%	0%	75%	$6,128
4" Laterals	50	67	-17	2	$49,233	25%	75%	0%	$12,308
3' Manholes	50	66	-16	2	$45,568	25%	75%	0%	$11,392
Sewage pumping station	50	64	-14	2	$46,429	25%	75%	0%	$11,607
VC Pipe	50	63	-13	2	$19,925	25%	75%	0%	$4,981
VC Pipe	50	62	-12	2	$244,891	25%	75%	0%	$61,223
Aerator, 5 hp, Model FSS Endura, Aqua-Jet (3 of 3)	10	11	-1	2	$9,712	100%	0%	0%	$9,712
Aerator, 5 hp, Model FSS Endura, Aqua-Jet (2 of 3)	10	11	-1	2	$9,712	100%	0%	0%	$9,712
1991 Ford F600 dump truck (1/3)	10	31	-21	2	$10,300	100%	0%	0%	$10,300
1994 John Deere loader (1/3)	10	28	-18	2	$13,548	100%	0%	0%	$13,548
Control panel/upgrade	15	14	1	2	$35,570	25%	0%	75%	$8,892
Lift station wetwell	50	48	2	3	$74,426	25%	0%	75%	$18,607
Aerator, 5-hp, Model FSS Endura, Aqua-Jet (1 of 3)	10	11	-1	3	$10,100	100%	0%	0%	$10,100
WWTP baffle curtain	10	8	2	3	$17,077	100%	0%	0%	$17,077

1993 Ford Ranger pickup (1/2)	10	29	-19	3	$5,520	100%	0%	0%	$5,520
Ind Park lift station rehab	15	13	2	3	$39,260	25%	0%	75%	$9,815
Generator - Industrial Park	10	8	2	3	$25,946	25%	0%	75%	$6,487
Treatment plant - Rancheria Upgrades	10	7	3	4	$830,001	15%	85%	0%	$124,500
Sewer treatment plant	15	12	3	4	$12,403	100%	0%	0%	$12,403
Sewer treatment plant	15	17	-2	5	$46,140	25%	0%	75%	$11,535
Sludge Removal	15	12	3	5	$312,252	100%	0%	0%	$312,252
Radio-operated Alarm system unit (1 of 4)	5	11	-6	5	$3,089	100%	0%	0%	$3,089
Radio-operated Alarm system unit (1 of 4)	5	11	-6	5	$3,089	100%	0%	0%	$3,089

Table 19: Wastewater Capital Needs for 2023-2027

A complete Capital Improvement Plan for Wastewater is in Appendix D.

Suggested reserve funding

Based on the above descriptions, the reserve balances RCAC recommends, as well as repayment periods or make up periods are indicated below. The highest priority is on establishing an emergency reserve and restoring operating reserves.

Reserve	Current Balance	Suggested Balance	Make up Period	Annual Reserve
Operating	-$165,000	$44,383	3	$69,794
Emergency	$0.00	$50,000	5	$10,000

Table 20: Wastewater Reserve Funding

Capital Reserves will not be funded in years 1-3; this is to allow repayment of the operating reserve without increasing rates to an unsustainable level. If no rate increase is enacted, the system will be unable to pay back, or establish sufficient operating reserves to fund the day-to-day functions of the system.

For the purpose of reserve calculations, any expenses under $5,000 are not capitalized and will be paid for out of general operations.

Projected 5-year budget with No Change

The below table indicates what will happen if the system makes no change to rate structure, and no adjustment to rates. For this calculation, reserve contributions remained separate.

	2023	2024	2025	2026	2027	5 Years
Expenses	$492,044	$520,157	$549,172	$582,447	$611,978	$2,755,798
Revenue	$381,406	$392,154	$403,202	$414,930	$427,377	$2,019,069
Budget Shortfall	-$110,637	-$128,004	-$145,970	-$167,517	-$184,601	-$736,729

Operation Debt Incurred	-$100,637	-$118,004	-$135,970	-$157,517	-$174,601	-$686,729

Table 21: Budget with No Rate Adjustments

The above table shows that if no rate change is enacted the system will continue to lose money on operations and eventually exhaust all reserves through debt.

Methodology of setting rates

The generally accepted methodology for conducting cost-base water and wastewater rate studies relies on analyzing the system's revenue requirement, cost-of- service, and rate-design. Integral to this methodology are the following components:

Capital Improvement (CIP) Review

Capital expenditures are funds used by the utility to acquire or upgrade physical assets such as property, buildings, or equipment. Together with loan and grant proceeds, the purpose of this review is to ensure the utility is setting aside enough money on an annual basis to cover these anticipated capital needs. Sources of data for projecting capital costs are asset lists, and capital improvement plans provided by the system engineers and staff.

Shared assets are allocated to each department according to their approximate uses. These assets include, buildings, parking lots, vehicles, and office equipment shared by the entire City.

Budget

The objective of the budget is to ensure that the utility is generating adequate revenue to cover the anticipated costs as they occur. The basic components of the budget include combined cash balances, operating and non-operating revenue, operation and maintenance expense, capital costs, and reserves.

Assumptions

Expectations of expected revenue and expenses during the budget period are referred to as assumptions. Key assumptions impacting the utility's budget include inflation, anticipated sales and service needs, system and supplier performance, investment returns, and expected loan and grant contributions.

Sources supporting these assumptions include customer usage and account data including write-offs, historical expenses, strategic plans, demographic and economic trends, income surveys, water availability forecasts, and system experience.

Fixed vs Variable Expenses

Fixed expenses are costs that do not fluctuate with changes in sales volume or production. They include expenses such as insurance, dues and subscriptions, equipment leases, payments on loans, depreciation, management salaries, and advertising. In contrast, variable expenses respond directly to changes in volume or production. Good examples of variable charges include utility energy costs and consumable supplies. In practice, most utility charges contain both fixed and variable elements. A good example of this hybrid occurs with operator expenses, which as a result of increased activity, may increase due to overtime charges. In developing utility rates fixed expenses should be covered by fixed income (base charges) and variable expenses should be covered by variable income (usage charges). Therefore, fixed and variable costs need to be carefully examined in order to ensure fair rates.

Water Usage Forecast

For the purpose of rate studies, the water usage is predicted for future years. This impacts only drinking water for Blue Lake. The forecast factors in conservation, population changes and a decrease in water loss with system upgrades.

Suggested Wastewater Rates

Suggested wastewater rates would simplify classifications into Residential and Commercial/Industrial. All users would be charged a flat rate for 1 standard household based on industry standards for load. Industrial and commercial users would then pay additionally for the "quality of their waste" which is defined by biological oxygen demand.

The new base rate used to cover system operations will be $54.00 in FY23 and increase by 4.5% each subsequent year. The Capital Replacement Reserve Fee would be discontinued and integrated into the suggested rates.

	2023	2024	2025	2026	2027
Standard Base Rate	$54.00	$56.43	$58.97	$61.62	$64.39
Per BOD (industrial and commercial flow only)	$4.38	$4.57	$4.78	$4.99	$5.22

Table 22: Suggested Wastewater Rates FY23-FY27

A BOD charge of $4.38 per pound will be charged to industrial customers. This is measured using the below formula.

Calculation is:

- C = Charge in dollars that will appear on the customer's monthly bills.
- V = Wastewater effluent flow in cubic foot
- 62.41 = Pounds per cubic foot of water
- b = Unit charge in dollars per pound of BOD
- BOD = Oxygen Demand
- PPM = 0.0000623832

C=BOD x V x 62.41 x b x PPM (Part Per Million). BOD and V will be revised annually based on the previous 12 months' readings.

Impact of suggested wastewater rates on 5-year budget

The below highlights projected expenses and revenue. A complete budget is in Appendix B.

EXPENSES AND SOURCES OF FUNDS	2023	2024	2025	2026	2027
TOTAL EXPENSES	$561,838	$591,935	$636,272	$613,930	$664,432
TOTAL REVENUE	$562,473	$587,707	$614,074	$641,625	$670,412
NET LOSS OR GAIN:	$635	-$4,228	-$22,198	$27,695	$5,979
NET CASH FLOW (Contribution to Reserves)	$80,429	$75,567	$71,431	$61,284	$58,643

Table 23: Five Year Projected Wastewater Budget with Suggested Rates

Impact on Customer Bill

The switch from both a BOD load and flow meter means industrial and commercial will be charged based on Biological Oxygen Demand according to the following examples, which assume 1000 CF of use. Residential customers will only pay the standard fee.

	2023	2024	2025	2026	2027
Standard	$54.00	$56.43	$58.97	$61.62	$64.40
Industrial Flow 180 BOD	$275.35	$287.75	$300.69	$314.22	$328.37
Industrial Flow 740 BOD	$638.56	$667.29	$697.32	$728.70	$761.49
Industrial Flow 140 BOD	$233.34	$243.84	$254.81	$266.28	$278.26
Industrial Flow 960 BOD	$719.43	$751.80	$785.63	$820.99	$857.93
Industrial Flow 40 BOD	$117.13	$122.40	$127.91	$133.67	$139.68
Industrial Flow 2300 BOD	$964.07	$1,007.45	$1,052.79	$1,100.16	$1,149.67
Industrial Flow 1550 BOD	$861.45	$900.21	$940.72	$983.05	$1,027.29
Industrial Flow 600 BOD	$575.79	$601.70	$628.77	$657.07	$686.64

Table 24: 5 Year Rates by BOD:

Recommendations

Financial Policies

RCAC reviewed several financial policies, and based on changing rate structures, and ongoing financial sustainability, recommends the following:

- **Capital Improvement Reserve Policy** – This policy should be updated to indicate how funds are accessed, by who, and for what purpose.
- **Collections Policy** – Adopt a Collections Policy to ensure that customers are paying their bills on time in order to maximize cash flow.

Preparing for Rate Implementation

To prepare for the rate implementation RCAC recommends the following actions are taken:

Evaluate commercial and industrial users for Biological Oxygen Demand. Some current BOD estimates need to be re-evaluated to ensure they are being charged accordingly.

Appendices

A. Multi-Year Budget Drinking Water

B. Multi-Year Budget Wastewater

C. Capital Improvement Plan Drinking Water

D. Capital Improvement Plan Wastewater

E. Explanation of Different Rate Structures

Appendix A

Drinking Water Multi-Year Budget

Drinking Water Multi-Year Budget
City of Blue Lake

Date: 10/31/22 **Appendix A**
Inflation Factor (%): 4.00
Loan Interest Rate (%) 4.50

EXPENSES AND SOURCES OF FUNDS	2020	2021	2022	2023	2024	2025	2026	2027
OPERATIONS & MAINTENANCE EXPENSES								
Salaries, wages and benefits	229,456	209,069	213,075	234,383	253,133	268,321	281,737	295,824
Legal	700	4,033	4,033	4,194	4,362	4,537	4,718	4,907
Engineering	1,854	3,241		0	0	0	0	0
Planning	139	411		0	0	0	0	0
Audit	5,883	5,148	5,200	5,408	5,624	5,849	6,083	6,327
Fuels and lubricants	2,630	2,563	2,563	2,666	2,772	2,883	2,998	3,118
Department Supplies	7,489	5,172	5,172	5,379	5,594	5,818	6,051	6,293
Chemical supplies	0	122	122	127	132	137	143	148
Maintanence and repair equipment	937	1,197	1,197	1,245	1,295	1,346	1,400	1,456
Maintanence and repair facility	28,593	16,741	16,741	17,411	18,107	18,831	19,585	20,368
maintanence and repair- vehicles	871	487	487	506	527	548	570	593
equipment rental	0	715	715	744	773	804	836	870
Lab test	1,390	1,067	1,067	1,110	1,154	1,200	1,248	1,298
contractual services	13,517	18,305	18,305	19,037	19,799	20,591	21,414	22,271
McClure right of way	50	150	150	150	150	150	150	150
Other contracted services			13,680	14,227	14,796	15,388	16,004	16,644
water	170,230	177,400	192,000	200,000	207,667	215,974	224,613	233,597
gas and electric	20,642	17,535	17,535	18,938	20,453	22,089	23,856	25,765
Total Operation and Maintenance Expenses:	484,379	463,356	492,042	525,524	556,339	584,467	611,406	639,628

GENERAL & ADMINISTRATIVE EXPENSES	2020	2021	2021	2023	2024	2025	2026	2027
Operating Reserve Funding				0	0	0	0	0
Emergency Reserve Funding				7,623	7,623	7,623	7,623	7,623
Debt Reserve Funding				0	0	0	0	0
Replacement of Existing Capital Assets				32,868	38,215	41,640	45,937	45,937
Replacement of Funded Project Assets				0	0	0	0	0
Reserves for Additional Capital Assets				0	0	0	0	0
Debt Service				15,580	17,051	17,051	10,022	6,022
Insurance				13,962	0	0	0	0
advertising, printing and copying	356	57	57	59	62	64	67	69
telephone	3,699	4,175	4,175	4,342	4,516	4,696	4,884	5,080
alarm system	1,694	1,758	1,758	1,828	1,901	1,978	2,057	2,139
janitorial services	1,278	1,179	1,179	1,226	1,275	1,326	1,379	1,434
computers, software and office equipment	4,687	6,442	6,442	6,700	6,968	7,246	7,536	7,838
Postage	1,347	1,796	1,796	1,868	1,943	2,020	2,101	2,185
Fees	7,748	7,881	840	874	909	945	983	1,022
travel	305	167		0	0	0	0	0
property taxes	473	472		0	0	0	0	0
meetings, conferences, and trainings	637	169		0	0	0	0	0
Misc other expense	43	4		0	0	0	0	0
depreciation	37,679	43,423	43,423					

	city share of turbidy reduction facility debt	15,024	15,319	15,319					
	Laibility Claims	5,000	0	0					
	interest expense	0	1,844	1,844					
	Total General and Administrative Expenses:	80,276	85,766	77,373	86,930	80,462	84,590	82,589	79,349
TOTAL EXPENSES		564,655	549,122	569,415	612,453	636,801	669,057	693,995	718,977
SOURCE OF FUNDS / REVENUES RECEIVED									
	Sales Revenue (Base + Usage)	461,592	439,724	450,000	626,393	649,098	671,395	698,251	726,181
	New connections				0	0	0	0	0
	Interest income				0	0	0	0	0
	Uncollectable Receivables	-294	-540		-1,253	-1,298	-1,343	-1,397	-1,452
	Reconnect/Admin				0	0	0	0	0
	Fees Late/NSF				0	0	0	0	0
	Bulk Sales				0	0	0	0	0
	public works fees	472	140		0	0	0	0	0
	water sales				0	0	0	0	0
	water late charges	6,858	6,771		0	0	0	0	0
	insurance rebates	8,886	1,575		0	0	0	0	0
	misc other revenue	211	424		0	0	0	0	0
	Services to others	1,407	1,482		0	0	0	0	0
	admin fees	1,529	1,766		0	0	0	0	0
	water connection fee-interest earned	3,656	3,157		0	0	0	0	0
	water connection fee buy-in	0	0		0	0	0	0	0
	water capital reserve fund- interest earned	673	258		0	0	0	0	0
	TRF water fees	10,529	10,196		0	0	0	0	0
	Interest earned	25,447	20,861		0	0	0	0	0
	Misc Grants	207	263						
	Other Federal grants	19,906	7,094						
TOTAL REVENUE		541,373	493,711	450,000	625,141	647,800	670,052	696,855	724,729
	NET LOSS OR GAIN:	-23,282	-55,411	-119,415	12,687	11,000	996	2,859	5,752
	NET CASH FLOW (Contribution to Reserves)	-23,282	-55,411	-119,415	53,178	56,838	50,259	56,420	59,312
Affordability assuming MHI of $53929 for residential meters.					1.31%	1.36%	1.41%	1.46%	1.52%
Does the Budget Balance?					Yes	Yes	Yes	Yes	Yes
Positive Annual Cash Flow?					Yes	Yes	Yes	Yes	Yes

Appendix B

Wastewater Multi-Year Budget

Wastewater Multi-Year Budget
City of Blue Lake

Date: 10/31/22 **Appendix B**
Inflation Factor (%): 4.00
Loan Interest Rate (%) 4.50
System Number: 0

EXPENSES AND SOURCES OF FUNDS	2020	2021	2022	2023	2024	2025	2026	2027
OPERATIONS & MAINTENANCE EXPENSES								
Salaries, Wages & Benefits	235,011	253,098	238,798	286,559	303,753	321,978	341,296	361,774
Repairs and Maintenance	4,255	5,194	7,279	4,100	7,873	8,188	8,515	8,856
Supplies	11,232	12,698	12,066	15,604	13,051	13,573	14,116	14,680
Utilities	49,197	47,614	45,185	48,800	52,704	56,920	61,474	66,392
Total Operation and Maintenance Expenses:	299,695	318,604	303,328	355,063	377,380	400,658	425,401	451,702
GENERAL & ADMINISTRATIVE EXPENSES	2020	2021	2021	2023	2024	2025	2026	2027
Operating Reserve Funding				69,794	69,794	69,794	0	0
Emergency Reserve Funding				10,000	10,000	10,000	10,000	10,000
Debt Reserve Funding				0	0	0	0	0
Replacement of Existing Capital Assets				0	0	13,835	23,589	42,664
Replacement of Funded Project Assets				0	0	0	0	0
Reserves for Additional Capital Assets				0	0	0	0	0
Debt Service				0	16,262	18,746	26,771	26,771
Contracted Professional Services	14,744	27,979	46,815	46,815	50,635	52,661	54,767	56,958
Other Contracted Services	24,222	31,632	16,140	28,465	17,457	18,155	18,882	19,637
Insurance	7,983	10,002	10,940	15,534	11,833	12,306	12,798	13,310
Other Expenses	30,410	34,486	35,664	36,167	38,574	40,117	41,722	43,391
Depreciation	132,513	105,171	102,006					
Total General and Administrative Expenses:	209,872	209,270	211,565	206,775	214,555	235,614	188,529	212,730
TOTAL EXPENSES	509,567	527,874	514,893	561,838	591,935	636,272	613,930	664,432
SOURCE OF FUNDS / REVENUES RECEIVED								
Sales Revenue (Base + Usage)	382,263	362,612	341,036	548,232	572,903	598,683	625,624	653,777
New connections				0	0	0	0	0
Interest income	1,473	1,632	260	270	281	292	304	316
Uncollectable Receivables				-1,096	-1,146	-1,197	-1,251	-1,308
Reconnect/Admin				0	0	0	0	0
Fees Late/NSF				0	0	0	0	0
Bulk Sales				0	0	0	0	0
State Revenue			7,745	8,055	8,377	8,712	9,061	9,423
Other Revenue	16,027	8,739	6,742	7,012	7,292	7,584	7,887	8,203
Transfers from outside (Capital Revenue)	91,014	30,338	144,861					
TOTAL REVENUE	490,777	403,321	500,644	562,473	587,707	614,074	641,625	670,412
NET LOSS OR GAIN:	-18,790	-124,553	-14,249	635	-4,228	-22,198	27,695	5,979
NET CASH FLOW (Contribution to Reserves)	-18,790	-124,553	-14,249	80,429	75,567	71,431	61,284	58,643
Affordability assuming MHI of $53929 for residential meters.				1.20%	1.26%	1.31%	1.37%	1.43%
Does the Budget Balance?				Yes	No	No	Yes	Yes
Positive Annual Cash Flow?				Yes	Yes	Yes	Yes	Yes

Appendix C

Drinking Water Capital Replacement Program

Drinking Water Capital Replacement Program — **AWWA Cash-Needs Approach** — **Appendix C**

City of Blue Lake — Date: 10/31/22

Service Connections: 681

Quantity	Asset	Year Acquired	Unit Cost (Historic, Current or Future)	Cost Type (H, C, F)	% Belonging to Water	Estimated Historic Cost (Water only)	Normal Estimated Life	Current Age	Estimated Current Cost	Planned Remaining Life	Estimated Remaining Life	Estimated Future Cost	Fund with Cash	Fund with Grant	Fund with Loan	Existing Reserves	Annual Reserve Required
	Replacement of Existing Capital Assets																
1	400000 gal redwood tank	1974	96,000	H	100%	$96,000	40	48	260,320	-8	1	270,732	10%	80%	10%	30,542	-3,469
1	Ford Ranger Unit 172	2007	9,499	H	50%	$4,750	20	15	6,487	5	1	6,746	100%	0%	0%	7,611	-864
1	1991 Ford F600 dump truck	1991	10,000	H	50%	$5,000	10	31	9,523	-21	2	10,300	100%	0%	0%	11,173	-449
1	1994 John Deere Loader	1994	14,000	H	50%	$7,000	10	28	12,526	-18	2	13,548	100%	0%	0%	14,696	-591
1	500000 gal redwood tank	1986	311,850	H	100%	$311,850	30	36	658,980	-6	3	741,263	10%	80%	10%	77,315	-1,186
1	1993 Ford Ranger Pickup	1993	5,372	H	50%	$2,686	10	29	4,907	-19	3	5,520	100%	0%	0%	5,758	-88
179	3/4" services and boxes	1974	165	H	100%	$29,535	50	48	80,089	2	5	97,440	10%	75%	15%	9,396	50
1	Scada system	2009	6,597	H	100%	$6,597	20	13	8,643	7	10	12,794	10%	50%	40%	1,014	24
1	Scada system	2019	127,483	H	100%	$127,483	10	3	135,684	7	10	200,846	10%	75%	15%	15,919	372
1	SCADA system	2002	45,333	H	100%	$45,333	30	20	68,696	10	11	105,754	5%	90%	5%	4,030	102
1	Radio operated alarm	2011	2,020	H	50%	$1,010	20	11	1,269	9	12	2,032	10%	50%	40%	149	Not Cap.
2	Centrifugal pump	2012	13,822	H	100%	$27,644	20	10	34,030	10	12	54,483	100%	0%	0%	39,925	1,090
1	City hall roof	2004	4,943	H	100%	$4,943	30	18	7,185	12	20	15,744	100%	0%	0%	8,430	329
1	10" compound meter	1974	11,250	H	100%	$11,250	60	48	30,506	12	20	66,843	100%	0%	0%	35,791	1,397
111	1" services and boxes	1974	190	H	100%	$21,090	60	48	57,189	12	20	125,308	10%	50%	40%	6,710	262
25	8" gate valves	1974	6,250	H	100%	$156,250	60	48	423,697	12	20	928,373	10%	50%	40%	49,710	1,940
50	6" gate valves	1974	9,500	H	100%	$475,000	60	48	1,288,040	12	20	2,822,253	10%	50%	40%	151,119	5,897
19,981	6" AC pipe	1974	6	H	100%	$125,025	60	48	339,026	12	20	742,847	10%	50%	40%	39,776	1,552
17,397	8" AC pipe	1974	7	H	100%	$125,025	60	48	339,026	12	20	742,847	10%	50%	40%	39,776	1,552
6,100	10" AC line	1974	8	H	100%	$50,894	60	48	138,007	12	20	302,391	5%	80%	15%	8,096	316
1	Water district connection	1974	35,559	H	100%	$35,559	60	48	96,424	12	20	211,277	5%	50%	45%	5,656	221
1	ties, mains, laterals, equipment	1979	46,284	H	100%	$46,284	60	43	113,120	17	20	247,859	5%	75%	20%	6,636	259
500	8" water line	1980	30	H	100%	$15,000	60	42	35,906	18	20	78,675	10%	80%	10%	4,213	164
1	TACO MDL suction pump	2006	5,021	H	100%	$5,021	25	16	7,002	9	20	15,342	100%	0%	0%	8,215	321
1	Water Line RR and G	2006	2,517	H	100%	$2,517	25	16	3,510	9	20	7,691	10%	80%	10%	412	16
1	Acacia waterline extension	2007	9,766	H	100%	$9,766	25	15	13,338	10	20	29,226	10%	80%	10%	1,565	61
4,146	10" AC line	1986	7	H	100%	$29,400	60	36	62,126	24	30	201,500	5%	80%	15%	3,644	191
3	fire hydrants	1986	7,500	H	100%	$22,500	60	36	47,545	24	30	154,209	5%	80%	15%	2,789	146
1	Water Pump station	1986	27,000	H	100%	$27,000	60	36	57,055	24	30	185,051	5%	80%	15%	3,347	175
1	50KW Generator w/ trailer	1999	9,894	H	50%	$4,947	50	23	7,979	27	30	25,878	100%	0%	0%	9,361	490
1	Booster station	1974	1,206	H	100%	$1,206	80	48	3,270	32	35	12,905	10%	50%	40%	384	23
36	fire hydrants	1974	12,350	H	100%	$444,600	80	48	1,205,605	32	35	4,757,425	10%	50%	40%	141,447	8,430
1,512	6" line - BL blvd	1991	10	H	100%	$15,000	60	31	28,569	29	35	112,734	10%	80%	10%	3,352	200
1	4" water line - piersall, bl blvd	1991	6,560	H	100%	$6,560	60	31	12,494	29	35	49,302	10%	80%	10%	1,466	87
1	6" line and Hydrant - Shamrock	1991	9,465	H	100%	$9,465	60	31	18,027	29	35	71,135	10%	80%	10%	2,115	126
1	valve hatchery and taylor	1995	5,438	H	100%	$5,438	60	27	9,531	33	35	37,610	75%	25%	0%	8,387	500
1	Water line Greenhill rd	1995	18,982	H	100%	$18,982	60	27	33,269	33	35	131,282	5%	80%	15%	1,952	116
1	Rancheria extension	1993	26,719	H	100%	$26,719	60	29	48,817	31	38	216,687	5%	80%	15%	2,864	184
1	waterline buckley road	1994	17,517	H	100%	$17,517	60	28	31,346	32	40	150,492	5%	80%	15%	1,839	124
1,000	4" water line and pump	2001	29	H	100%	$29,251	60	21	45,257	39	40	217,278	5%	80%	15%	2,655	180
250	8" line chartin Rd	2002	68	H	100%	$17,025	50	20	25,799	30	40	123,861	5%	80%	15%	1,513	102
8	8" vales Monda way	2003	16,935	H	100%	$135,480	50	19	201,078	31	40	965,379	10%	50%	40%	23,591	1,596
1	Valve boxes/Pave trenches	2003	6,334	H	100%	$6,334	50	19	9,401	31	40	45,134	100%	0%	0%	11,029	746
1	4th st water line and valves	2008	28,719	H	100%	$28,719	50	14	38,418	36	40	184,443	10%	80%	10%	4,507	305
1	Blue Lake Blvd improvements	2002	38,341	H	100%	$38,341	60	20	58,100	40	41	290,098	10%	50%	40%	6,817	473
200	10' line blue lake blvd	2002	19,041	H	100%	$3,808,200	60	20	5,770,781	40	41	28,813,864	2%	50%	48%	135,411	9,396
	Subtotal Replacement of Existing Capital Assets					$6,441,196			11,887,595			44,604,403	5%	52%	43%	952,100	32,868
	Total Capital Reserves								11,887,595			44,604,403	5%	52%	43%	952,100	32,868

Appendix D

Wastewater Capital Replacement Program

Wastewater Capital Replacement Program
City of Blue Lake

AWWA Cash-Needs Approach

Appendix D

Date: 10/31/22
System Number: 0
Service Connections: 689

Quantity	Asset	Year Acquired	Unit Cost (Historic, Current or Future)	Cost Type (H, C, F)	% Belonging to Sewer	Estimated Historic Cost (Sewer only)	Normal Estimated Life	Current Age	Estimated Current Cost	Planned Remaining Life	Estimated Remaining Life	Estimated Future Cost	Fund with Cash	Fund with Grant	Fund with Loan	Existing Reserves	Annual Reserve Required
	Replacement of Existing Capital Assets																
1	50KW generator w/trailer (1/2)	1999	9,894	H	50%	$4,947	10	23	7,979	-13	1	8,298	100%	0%	0%	10,846	-2,548
1	Chlorinating system	2000	54,390	H	100%	$54,390	10	22	85,918	-12	1	89,355	25%	0%	75%	29,197	-6,859
1	Pipeline camera	2002	4,864	H	100%	$4,864	10	20	7,371	-10	1	7,666	100%	0%	0%	10,019	-2,354
1	Pipeline camera (add-on)	2002	1,574	H	100%	$1,574	10	20	2,385	-10	1	2,481	100%	0%	0%	3,242	Not Cap.
1	Sewage channel grinder	2004	72,457	H	100%	$72,457	10	18	105,328	-8	1	109,541	15%	85%	0%	21,476	-5,045
1	Pump station	2005	34,856	H	100%	$34,856	15	17	49,627	-2	1	51,612	25%	0%	75%	16,864	-3,962
1	R158 Ford Ranger/unit 172 (1/2)	2007	9,499	H	50%	$4,750	7	15	6,487	-8	1	6,746	100%	0%	0%	8,818	-2,071
1	Collection pump	2007	6,839	H	100%	$6,839	10	15	9,341	-5	1	9,714	100%	0%	0%	12,697	-2,983
1	John Deere 54" Riding Lawnmower	2012	11,659	H	100%	$11,659	5	10	14,352	-5	1	14,926	100%	0%	0%	19,509	-4,583
1	Forklift	2012	5,960	H	100%	$5,960	5	10	7,337	-5	1	7,630	100%	0%	0%	9,973	-2,343
1	2012 Ford F150	2012	19,148	H	100%	$19,148	5	10	23,571	-5	1	24,514	25%	0%	75%	8,010	-1,882
3,770	4" Laterals	1955	3	H	100%	$11,310	50	67	45,518	-17	2	49,233	25%	75%	0%	15,468	-1,595
64	3' Manholes	1956	167	H	100%	$10,688	50	66	42,130	-16	2	45,568	25%	75%	0%	14,317	-1,477
1	Sewage pumping station	1958	11,352	H	100%	$11,352	50	64	42,926	-14	2	46,429	25%	75%	0%	14,587	-1,505
1	VC Pipe	1959	4,974	H	100%	$4,974	50	63	18,422	-13	2	19,925	25%	75%	0%	6,260	-646
1	VC Pipe	1960	62,418	H	100%	$62,418	50	62	226,415	-12	2	244,891	25%	75%	0%	76,942	-7,936
1	Aerator, 5 hp, Model FSS Endura, Aqua-Jet (3 of 3)	2011	7,144	H	100%	$7,144	10	11	8,979	-1	2	9,712	100%	0%	0%	12,205	-1,259
1	Aerator, 5 hp, Model FSS Endura, Aqua-Jet (2 of 3)	2011	7,144	H	100%	$7,144	10	11	8,979	-1	2	9,712	100%	0%	0%	12,205	-1,259
1	1991 Ford F600 dump truck (1/3)	1991	10,000	H	50%	$5,000	10	31	9,523	-21	2	10,300	100%	0%	0%	12,945	-1,335
1	1994 John Deere loader (1/3)	1994	14000	H	50%	$7,000	10	28	12,526	-18	2	13,548	100%	0%	0%	17,027	-1,756
1	Control panel/upgrade	2008	24,584	H	100%	$24,584	15	14	32,886	1	2	35,570	25%	0%	75%	11,176	-1,153
1	Lift station wetwell	1974	24,400	H	100%	$24,400	50	48	66,165	2	3	74,426	25%	0%	75%	22,484	-1,324
1	Aerator, 5 hp, Model FSS Endura, Aqua-Jet (1 of 3)	2011	7,144	H	100%	$7,144	10	11	8,979	-1	3	10,100	100%	0%	0%	12,205	-718
1	WWTP baffle curtain	2014	12,856	H	100%	$12,856	10	8	15,181	2	3	17,077	100%	0%	0%	20,636	-1,215
1	1993 Ford Ranger pickup (1/2)	1993	5372	H	50%	$2,686	10	29	4,907	-19	3	5,520	100%	0%	0%	6,671	-393
1	Ind Park lift station rehab	2009	26,639	H	100%	$26,639	15	13	34,902	2	3	39,260	25%	0%	75%	11,861	-698
1	Generator - Industrial Park	2014	19,533	H	100%	$19,533	10	8	23,066	2	3	25,946	25%	0%	75%	7,838	-461
1	Treatment plant - Rancheria Upgrades	2015	613,430	H	100%	$613,430	10	7	709,488	3	4	830,001	15%	85%	0%	144,662	-5,273
1	Sewer treatment plant	2010	8,262	H	100%	$8,262	15	12	10,602	3	4	12,403	100%	0%	0%	14,412	-525
1	Sewer treatment plant	2005	26,636	H	100%	$26,636	15	17	37,923	-2	5	46,140	25%	0%	75%	12,887	-293
1	Sludge Removal	2010	200,000	H	100%	$200,000	15	12	256,649	3	5	312,252	100%	0%	0%	348,864	-7,944
1	Radio-operated Alarm system unit (1 of 4)	2011	2,020	H	100%	$2,020	5	11	2,539	-6	5	3,089	100%	0%	0%	3,451	Not Cap.
1	Radio-operated Alarm system unit (1 of 4)	2011	2,020	H	100%	$2,020	5	11	2,539	-6	5	3,089	100%	0%	0%	3,451	Not Cap.
1	Mains, laterals, equipment	1979	138,618	H	100%	$138,618	50	43	338,787	7	8	463,653	15%	85%	0%	69,077	-92
1	Railroad Ave main	2005	8,925	H	100%	$8,925	25	17	12,707	8	9	18,086	100%	0%	0%	17,273	51
1	Sewer treatment filter	2005	1,722	H	100%	$1,722	25	17	2,452	8	9	3,490	100%	0%	0%	3,333	Not Cap.
1	Lift station	2006	31,054	H	100%	$31,054	25	16	43,304	9	10	64,101	25%	0%	75%	14,716	95
1	Aerator, 5 hp, Model FSS Endura, Aqua-Jet - Add-on (2 of	2012	417	H	100%	$417	10	10	513	0	10	760	100%	0%	0%	698	Not Cap.
1	Aerator, 5 hp, Model FSS Endura, Aqua-Jet - Add-on (3 of	2012	417	H	100%	$417	10	10	513	0	10	760	100%	0%	0%	698	Not Cap.
1	Flow meters	2006	5,102	H	100%	$5,102	25	16	7,115	9	10	10,531	100%	0%	0%	9,671	63
1	WWTP	2007	21,848	H	100%	$21,848	25	15	29,840	10	11	45,937	25%	0%	75%	10,140	96
1	WWTP Hydro	2007	12,220	H	100%	$12,220	25	15	16,690	10	11	25,694	25%	0%	75%	5,672	54
1	Ind Park lift station	2007	6,492	H	100%	$6,492	25	15	8,867	10	11	13,650	100%	0%	0%	12,053	114
1	Waste water pumps	2008	5,764	H	100%	$5,764	25	14	7,711	11	12	12,345	100%	0%	0%	10,481	127
1,270	8" line	1986	20	H	100%	$25,400	50	36	53,674	14	15	96,663	25%	0%	75%	18,240	339
2	lift station pumps	1986	7,000	H	100%	$14,000	50	36	29,584	14	15	53,279	25%	75%	0%	10,053	187
2	lift station pumps	1986	7,000	H	100%	$14,000	50	36	29,584	14	15	53,279	25%	75%	0%	10,053	187
580	4" force main	1986	100	H	100%	$58,000	50	36	122,562	14	15	220,727	15%	85%	0%	24,990	465

Wastewater Capital Replacement Program
City of Blue Lake

AWWA Cash-Needs Approach

Appendix D

Date: 10/31/22
System Number: 0
Service Connections: 689

Quantity	Asset	Year Acquired	Unit Cost (Historic, Current or Future)	Cost Type (H, C, F)	% Belonging to Sewer	Estimated Historic Cost (Sewer only)	Normal Estimated Life	Current Age	Estimated Current Cost	Planned Remaining Life	Estimated Remaining Life	Estimated Future Cost	Fund with Cash	Fund with Grant	Fund with Loan	Existing Reserves	Annual Reserve Required
6	Manholes	1986	1,500	H	100%	$9,000	50	36	19,018	14	15	34,251	25%	0%	75%	6,463	120
1	Lift station #2	1986	8,000	H	100%	$8,000	50	36	16,905	14	15	30,445	25%	0%	75%	5,745	107
1	Lift station #3	1986	8,000	H	100%	$8,000	50	36	16,905	14	15	30,445	25%	0%	75%	5,745	107
1	150 GPM submersible pump	1998	5585	H	100%	$5,585	10	24	9,197	-14	15	16,563	100%	0%	0%	12,501	233
1	Taylor Way lift station	2015	81,808	H	100%	$81,808	25	7	94,618	18	19	199,347	15%	85%	0%	19,292	489
1	Sewer ponds	1955	72,000	C	100%	$17,369	50	67	72,000	-17	20	157,761	15%	85%	0%	14,681	394
1	Sewer ponds	1986	33,676	H	100%	$33,676	50	36	71,162	14	20	155,924	15%	85%	0%	14,510	389
942	6" line H St.	1991	15	H	100%	$14,130	50	31	26,912	19	20	58,967	25%	0%	75%	9,145	245
1	Sewer line-alley behind Shulers	1991	11,135	H	100%	$11,135	50	31	21,207	19	20	46,468	25%	0%	75%	7,207	193
1	Treatment plant project	1993	38,381	H	100%	$38,381	50	29	70,123	21	22	166,187	15%	85%	0%	14,298	425
1	Well conversion	1993	27,500	H	100%	$27,500	50	29	50,243	21	22	119,073	15%	85%	0%	10,244	304
1	Sewer line-Blue Lake Ave	1994	4,000	H	100%	$4,000	50	28	7,158	22	23	17,642	25%	0%	75%	2,432	76
1	Sewer line-Blue Lake Ave	1995	14,250	H	100%	$14,250	50	27	24,975	23	24	64,019	25%	0%	75%	8,487	276
1	Sewer line 2nd & 3rd alley	1995	19,826	H	100%	$19,826	50	27	34,748	23	24	89,070	25%	0%	75%	11,808	384
1	Sewer line-Railroad Ave	1996	16,090	H	100%	$16,090	50	26	27,620	24	25	73,631	25%	0%	75%	9,386	318
1	WWTP Rock Replacement Project	2021	44,861	H	100%	$44,861	25	1	45,803	24	25	122,104	15%	85%	0%	9,339	316
1	Binnie Sub main line	2001	6,179	H	100%	$6,179	50	21	9,560	29	30	31,007	25%	0%	75%	3,249	132
1	Lift station rehab	2001	8,926	H	100%	$8,926	50	21	13,810	29	30	44,792	25%	0%	75%	4,693	190
1	Skinner Store extension	2001	13,297	H	100%	$13,297	50	21	20,573	29	30	66,726	25%	0%	75%	6,991	284
2,800	8" force main & pump	2002	66	H	100%	$184,800	50	20	280,038	30	31	944,605	15%	85%	0%	57,099	2,395
1	Chartin Rd line paving	2002	6,143	H	100%	$6,143	50	20	9,309	30	31	31,400	25%	0%	75%	3,163	133
200	8" sewer line, 4 manholes	2002	203	H	100%	$40,508	50	20	61,384	30	31	207,057	15%	85%	0%	12,516	525
850	8" line-Railroad	2003	81	H	100%	$68,850	50	19	102,186	31	32	358,476	15%	85%	0%	20,835	903
1	Sewer treatment filter	2004	9,668	H	100%	$9,668	50	18	14,054	32	33	51,274	25%	0%	75%	4,776	214
1	Treatment plant headworks	2004	13,714	H	100%	$13,714	50	18	19,936	32	33	72,732	25%	0%	75%	6,775	303
1	Sewer treatment filter	2005	25,025	H	100%	$25,025	50	17	35,630	33	34	135,190	15%	85%	0%	7,265	335
	Total Capital Reserves								3,819,917			6,604,781	25%	60%	15%	1,458,998	-61,916

Appendix E Explanation of Rate Structures

Flat

Customers are charged a consistent flat rate regardless of water consumption. This rate model is ineffective at promoting conservation and leads to inequality in water pricing. The advantages are that it is simple to administer and provides consistent cash flow. An example of this mode is a water system that charges $80 per month for water, which is unmetered.

Uniform Block

This structure can either include a base rate or not, but typically includes a base rate. The base rate is the amount a customer pays for basic service and includes the water hook up. This fee is typically based on meter size and potential demand. The customer then pays a commodity charge per water used that is consistent. An example of this charge is $1.50 per 100 cubic feet of usage.

This system is more complex to administer but moves toward a more equitable distribution of water costs and works toward conservation. A customer will be paying more to consume more water under this structure. There is more seasonal variability in cash flow associated with this rate structure

Increasing Tiered Block

This structure is like a uniform block rate because it includes a base rate and a commodity charge. However, the usage is divided into blocks of usage. The charge for water increases, as use increases. The tiers are typically designed to promote conservation and responsible water use. This is the most equitable distribution of costs and the most effective for conservation with higher volumetric users paying the largest water bills. The cons of this rate structure include its complexity to administer, and its difficulty to justify under Prop 218 in California.