HANSFORD
ECONOMIC CONSULTING

City of Livingston

Water, Wastewater and Solid Waste Rate Study

FINAL DRAFT

November 14, 2019

HEC No. 190294

The following report was prepared by Hansford Economic Consulting LLC.

The analyses and findings contained within this report are based on primary data provided by the City of Livingston, as well as additional secondary sources of data available as of the date of this report. Updates to information used in this report could change or invalidate the findings contained herein. While it is believed that the primary and secondary sources of information are accurate, this is not guaranteed.

Every reasonable effort has been made in order that the data contained in this study reflect the most accurate and timely information possible. No responsibility is assumed for inaccuracies in reporting by the client, its consultants and representatives, or any other data source used in the preparation of this study. No warranty or representation is made that any of the projected values or results contained in this study will actually be achieved. There will usually be differences between forecasted or projected results and actual results due to changes in events and circumstances.

Changes in economic and social conditions due to events including, but not limited to, major recessions, droughts, major environmental problems or disasters that would negatively affect operations, expenses and revenues may affect the result of the findings in this study. In addition, other factors not considered in the study may influence actual results. Any applications for financing, or bond sales analyses, should re-evaluate the financial health and projection of revenues and expenses at the time of the application or preparation for bond sale.

TABLE OF CONTENTS

LIST OF TABLES

PAGE

SECTION 1 – SUMMARY OF FINDINGS

SECTION 2 - WATER RATE STUDY TABLES

SECTION 3 - WASTEWATER RATE STUDY TABLES

LIST OF FIGURES PAGE

Section 1: INTRODUCTION AND SUMMARY OF FINDINGS

1.1 PURPOSE OF THE STUDY

The City of Livingston (City) provides three utility services to the residents and businesses of the City; water, wastewater, and solid waste. The purpose of this Utilities Rate Study (Study) is to determine the level of funding required over the next five years to adequately fund each of the utility systems and to determine a schedule of monthly property-related fees to support that level of funding.

This report provides an explanation and justification of the calculated utility rates for the next five years and it documents adherence to the law regarding setting of rates by a municipality. Per California Constitution Article 13D, these types of utility rates shall not be extended, imposed, or increased by any agency unless it meets all of the following requirements:

(1) Revenues derived from the fee or charge shall not exceed the funds required to provide the property related service.

(2) Revenues derived from the fee or charge shall not be used for any purpose other than that for which the fee or charge was imposed.

(3) The amount of a fee or charge imposed upon any parcel or person as an incident of property ownership shall not exceed the proportional cost of the service attributable to the parcel.

(4) No fee or charge may be imposed for a service unless that service is actually used by, or immediately available to, the owner of the property in question. Fees or charges based on potential or future use of a service are not permitted.

(5) No fee or charge may be imposed for general governmental services including, but not limited to, police, fire, ambulance or library, services, where the service is available to the public at large in substantially the same manner as it is to property owners.

The utility financial models presented in this Study project revenues and expenses and calculate rates for the next five years through fiscal year ending 2025.

1.2 BACKGROUND

The City last conducted utility rate studies in the 2014 to 2016 time period. New solid waste rates were adopted in spring 2013, and new water and wastewater rates were adopted in spring 2014. A utility systems rate study is necessary at this time to a) ensure revenue sufficiency of the utility systems for the next five years, and b) demonstrate the City's ability to repay State loans for funding of the water system.

Rate studies are typically conducted every three to five years to ensure revenue sufficiency. A cost of service analysis, which not only allows for revenue sufficiency, but also examines whether

customers are paying for their share of system costs and adjusts rates and customer classifications to achieve equity to the maximum extent practicable, is advisable whenever there has been a shift in the economic base of the community, and whenever proportional cost of service is in question. As part of the regular periodic review of the rates, best practices include maintaining financially self-sustaining utilities, setting policies or guidelines on an appropriate reserve levels, including depreciation in the rates, and continual customer outreach to educate on the value of the City services provided.

This Study incorporates all three major elements of cost-based rate making; revenue requirement analysis, cost of service analysis, and rate-design analysis. In determining appropriate rate structures for Livingston that would meet the requirements of Proposition 218, the following key objectives were considered:

- Rates must be capable of generating sufficient revenues to meet all annual financial obligations of the utility enterprise funds;
- Changes to the rate structures must be administratively feasible (compatible with the existing billing system and straightforward to explain to customers);
- The rate structures should be as reflective of local customer use of the services as possible; and
- Revised rates must be supportive of City goals, including meeting target reserve levels and keeping within affordability guidelines.

This report presents the result of the analysis and rate structures that best meets these objectives under current and projected conditions.

1.3 RATE SETTING PRINCIPLES AND REPORT ORGANIZATION

This report was prepared using the principles established by the American Water Works Association, the Water Environment Federation, and Government Finance Officers Association.

The American Water Works Association "Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices M1 (the "M1 Manual") establishes commonly accepted professional standards for cost of service studies. This manual is referenced in the water rate study.

The wastewater rate study uses the functional cost allocation methodology to determine rates[1], as presented in Water Environment Federation Manual of Practice No. 27 and guidelines prepared by the California State Water Resources Control Board for State Revolving Fund financing.

The Government Finance Officers Association publishes guidelines on sufficient cash balances for enterprise funds. Minimum cash balance targets for each utility fund in this Study are based on the GFOA guidelines.

[1] Chapter 6, pages 110-120, Financing and Charges for Wastewater Systems, Manual of Practice No. 27.

The Study is presented in four sections.

Following this introduction and summary of findings, Section 2 provides the water rate study. Section 3 provides the wastewater rate study, and Section 4 provides the solid waste rate study. For each utility study, the analysis begins with a description of the utility fund and its customers, followed by calculation of the revenue requirement, detailed calculations of the utility rates, projected cash flow and bill impacts to customers.

Appendix A includes support tables for the water rate study.
Appendix B includes support tables for the wastewater rate study.
Appendix C includes support tables for the solid waste rate study.

1.4 WATER RATE STUDY FINDINGS

Water rate study summary and key findings are summarized here:

- The City provides water supply, treatment, and distribution to the residents and businesses of Livingston. Monthly water rates pay for 93% of the annual costs of the water fund.

- The water fund has had net positive revenues for the last three years. The last water rate study included several capital improvement project costs that have not yet been incurred; therefore, revenues have deliberately been significantly greater than expenses. In the next five-year period cash reserves will be used to pay for capital improvement projects.

- The vast majority of the water system customer base is single family residential (93%); however, this customer category only uses 28% of the water. In contrast, the industrial customer category uses 62% of the water but holds less than 1% of the customer accounts. Although the residential customers use significantly more water during the peak summer months than winter months, their use is more than doubled by industrial use throughout the year. Industrial use is very steady month-to-month which makes the City less vulnerable to swings in revenues due to summer use; however, the City's largest industrial user, Foster Farms, is responsible for about 65% of the annual water fund revenue stream.

- The functional allocation of costs in the cost of service analysis determines that 45% of the costs should be collected in base "fixed" monthly charges; however, the rate study calculates fees based on 35% of costs collected in base monthly charges. In the 2014 water rate study it was determined that 35% was the most appropriate percentage to use because such a large amount of use of the system is from industrial users. The industrial customers do not have many water meters; therefore, capacity of the system, as measured by instantaneous flow through water meters, is much less significant in determining use of the system than it is for most water systems. Note, the functional allocation provides a guideline, not a rule, for allocating costs between base monthly charges and variable use charges.

- There are no proposed changes to the water rate structure except however that the methodology to calculate the construction water variable use rate (which is not a property-related service, and which fee is not included in the public hearing process) has been revised. The change in methodology increases the construction water rate proportionately more than the property-related fees.

- Due to updated pricing provided by the City's water meter supplier, the monthly meter fee for 10" meters is reduced. All other monthly meter fees increase.

- Cash reserves are projected to be drawn on heavily in fiscal years 2020 through 2022 and again in 2024 to fund the planned Capital Improvement Projects (CIP).

- A higher than minimum cash balance at the end of five years would be prudent for the water fund because of the multiple number of CIP project planned in the next five years. Cash reserves can be used, if necessary, to pay for project cost overruns; it can also be used to pay off State loans early and complete other system rehabilitation projects not currently in the CIP.

- The calculated January 2020 water rates result in an increase of $3.34 per month during winter months for residential customers, and about $4.00 per month during summer months. The impact to Foster Farms of the January 2020 rate increase is approximately $66,000 (a 2.8% increase).

The updated water rate schedule is provided in **Table A** on the following page.

Table A
Projected Five-Year Water Rate Schedule

Charges	Current	Jan-20	Jan-21	Jan-22	Jan-23	Jan-24	Jan-25
Base Charge	Inside City *						
1" and smaller	$25.13	$28.31	$29.32	$30.37	$31.46	$32.59	$33.77
1.5"	$50.27	$56.62	$58.65	$60.75	$62.93	$65.19	$67.53
2"	$80.43	$90.59	$93.83	$97.20	$100.68	$104.30	$108.05
3"	$175.94	$198.17	$205.26	$212.62	$220.24	$228.15	$236.36
4"	$301.61	$339.72	$351.88	$364.48	$377.56	$391.12	$405.18
6"	$628.35	$707.74	$733.07	$759.34	$786.58	$814.83	$844.13
8"	$1,206.43	$1,358.87	$1,407.50	$1,457.93	$1,510.24	$1,564.48	$1,620.73
10"	$1,910.18	$2,151.54	$2,228.54	$2,308.40	$2,391.21	$2,477.09	$2,566.16
Meter Fee							
1" and smaller	$3.05	$3.21	$3.31	$3.41	$3.51	$3.62	$3.72
1.5"	$11.11	$7.57	$7.80	$8.04	$8.28	$8.52	$8.78
2"	$12.13	$14.46	$14.90	$15.35	$15.81	$16.28	$16.77
3"	$25.74	$18.05	$18.59	$19.15	$19.72	$20.31	$20.92
4"	$40.61	$42.72	$44.01	$45.33	$46.69	$48.09	$49.53
6"	$56.33	$73.83	$76.04	$78.32	$80.67	$83.09	$85.59
8"	$89.50	$120.38	$123.99	$127.71	$131.54	$135.49	$139.55
10"	$204.51	$155.35	$160.01	$164.81	$169.76	$174.85	$180.10
Service Charge Monthly Water Allowance							
Attached Residential (per Unit)	10,000	gallons					
Detached Residential (per Unit)	25,000	gallons					
Non-Residential (per Meter)	35,000	gallons					
Consumption Charge per 1,000 gallons of water in excess of allowance each month							
All Customers	$1.57	$1.61	$1.68	$1.75	$1.82	$1.89	$1.97
Construction Water	$1.17	$1.75	$1.82	$1.89	$1.97	$2.05	$2.13

Source: City of Livingston and 2019 HEC rate study. sched

* Water rate schedules 1.5x outside City limits.

1.5 WASTEWATER RATE STUDY FINDINGS

Wastewater rate study summary and key findings are summarized here:

- The City provides wastewater collection, treatment, and disposal services to the residents and businesses of Livingston. Monthly wastewater rates pay for 95% of the annual costs of the wastewater fund.

- The wastewater fund is currently covering all expenses and debt service coverage requirements of existing bond covenants. The wastewater fund has adequate cash reserves.

- Wastewater fee collections need to increase beginning January 2020 to pay for increased operating expenses, equipment and vehicle purchases, and the planned wastewater CIP.

- The cost of service study demonstrates a shift in the customer base. Since 2014, the City has experienced growth, particularly in the non-residential customer categories (hotels, gas stations, and other businesses).

- The shift in the customer base, as well as updated cost allocation factors used in the rate calculations, results in calculated fees that are slightly lower than current fees for variable charges for light industrial customers. To smooth out the difference between current and January 2021 rates, the rate study takes the midpoint for light industrial variable rate, and for the residential, light industrial and commercial base rates which would otherwise experience a greater jump between 2020 and 2021.

The updated wastewater rate schedule is provided in **Table B** below.

Table B
Calculated Five-Year Wastewater Rate Schedule

Customer Category	Billing Basis	Current	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
		Rates Effective --->	*Jan. 2020*	*Jan. 2021*	*Jan. 2022*	*Jan. 2023*	*Jan. 2024*	*Jan. 2025*
Residential	per unit	**$43.84**	**$45.93**	**$48.02**	**$50.35**	**$52.26**	**$55.28**	**$58.46**
Non-Residential								
Churches/Temples/Comm. Ctrs.	per account	$42.28	$46.61	$50.22	$52.66	$54.66	$57.81	$61.14
Schools (with cafeteria)	per student	$1.46	$1.69	$1.82	$1.90	$1.98	$2.09	$2.21
Hotel/Motel	per room	$17.22	$21.77	$23.46	$24.60	$25.53	$27.01	$28.56
Light Industrial (Base)	per account	$43.84	$45.93	$48.02	$50.35	$52.26	$55.28	$58.46
Commercial (Base)	per account	$43.84	$45.93	$48.02	$50.35	$52.26	$55.28	$58.46
Variable Charges for Non-Residential Only								
Light Industrial [1]	per gallon	$0.010417	$0.010781	$0.011145	$0.011686	$0.012129	$0.012829	$0.013567
Commercial [2]	per gallon	$0.003837	$0.006541	$0.007049	$0.007391	$0.007671	$0.008114	$0.008580

Source: 2019 HEC rate study. summ

[1] Charge applied to the first 95% of total water use per month.
[2] Charge applied to the first 70% of total water use per month.

1.6 SOLID WASTE RATE STUDY FINDINGS

Solid waste study summary and key findings are summarized here:

- Solid waste rates pay for garbage pickup and disposal by Gilton Waste Management (hereafter "Gilton"). About 80% of annual sanitation fund expenses pay for services provided by Gilton. The remaining annual expenses pay for City-provided sanitation services, including street sweeping.

- The current solid waste rates cover the Gilton rates and more than cover current City operating and capital replacement and upgrade costs. As a result, the sanitation fund has sufficient cash balance such that a rate increase is not needed immediately.

- Because the current solid waste rates more than cover annual costs, the calculated rates are lower for fiscal year 2019/20; however, it is not advisable to decrease rates. Decreasing rates can lead to insufficiency of revenues in the five-year period which can lead to large rate increases in the future.

- The calculated solid waste rates do not increase January 2020 but they do increase each January thereafter. It is projected that the increased rates will continue to cover the Gilton rates and cover the City's operating costs.

- A new service is included in the rate schedule for organics bins. The organics bins will be provided by Gilton to commercial and multi-family customers primarily for food waste services, which is a requirement of Senate Bill (SB) 1383.

- Included in the cost projection is $100,000 per year in 2019 dollars to pay for the anticipated costs of implementing SB 1383. Anticipated costs include legal, education, outreach, enforcement and inspection costs. It is likely that the City will need to hire a recycling coordinator.

The updated solid waste rate schedule is provided in **Table C** on the next page.

Table C
Calculated Five-Year Solid Waste Rate Schedule

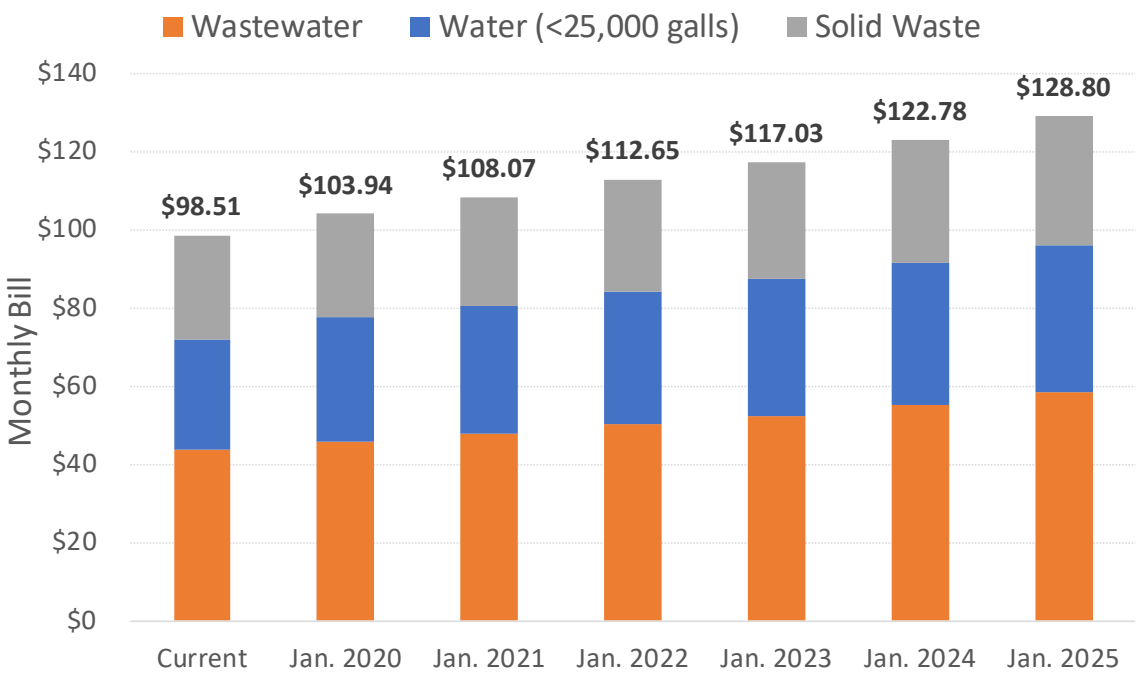
Service Type	Current	Fiscal Year Ending					
		2020	2021	2022	2023	2024	2025
New Rates Effective --->		*Jan. 2020*	*Jan. 2021*	*Jan. 2022*	*Jan. 2023*	*Jan. 2024*	*Jan. 2025*
Rate Increase --->		*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
Rates do not include charges for special services that are scheduled between the customer and provider such as off schedule pick up, container maintenance, and delivery charges.							
SINGLE FAMILY RESIDENTIAL				***Once per week pickup***			
96 gal. cart	$25.16	$23.25	$24.41	$25.63	$26.91	$28.26	$29.67
Add'l cart	$5.97	$6.14	$6.44	$6.77	$7.10	$7.46	$7.83
96 gal. cart greenwaste	$1.33	$1.23	$1.29	$1.35	$1.42	$1.49	$1.57
Add'l greenwaste cart	$5.97	$6.14	$6.44	$6.77	$7.10	$7.46	$7.83
MULTI-FAMILY & COMMERCIAL				***Once per week pickup***			
1 cubic yard container	$47.36	$43.77	$45.96	$48.26	$50.67	$53.21	$55.87
2 cubic yards container	$94.41	$87.25	$91.61	$96.19	$101.00	$106.05	$111.35
3 cubic yards container	$139.86	$129.26	$135.72	$142.51	$149.63	$157.12	$164.97
4 cubic yards container	$179.04	$165.45	$173.72	$182.41	$191.53	$201.11	$211.16
6 cubic yards container	$251.71	$232.62	$244.25	$256.47	$269.29	$282.75	$296.89
Organics Bin (New)		$65.99	$69.29	$72.75	$76.39	$80.21	$84.22
Recycle Bins							
4 & 6 cubic yard containers	$71.41	$65.99	$69.29	$72.75	$76.39	$80.21	$84.22
Commercial Compacting							
3 cubic yards container	n/a	$449.50	$471.97	$495.57	$520.35	$546.36	$573.68
4 cubic yards container	n/a	$570.15	$598.66	$628.59	$660.02	$693.02	$727.67
MULTI-FAMILY & COMMERCIAL				***Twice per week pickup***			
1 cubic yard container	$93.90	$103.52	$108.70	$114.14	$119.84	$125.83	$132.13
2 cubic yards container	$187.14	$206.32	$216.64	$227.47	$238.84	$250.79	$263.32
3 cubic yards container	$264.56	$291.68	$306.26	$321.57	$337.65	$354.54	$372.26
4 cubic yards container	$348.86	$384.62	$403.85	$424.04	$445.24	$467.51	$490.88
6 cubic yards container	$490.40	$540.67	$567.70	$596.08	$625.89	$657.18	$690.04
Organic Bins (New)	n/a	$131.97	$138.57	$145.50	$152.77	$160.41	$168.43
Recycle Bins							
4 & 6 cubic yard containers	n/a	$131.97	$138.57	$145.50	$152.77	$160.41	$168.43
Commercial Compacting							
3 cubic yards container	n/a	$866.26	$909.58	$955.06	$1,002.81	$1,052.95	$1,105.60
4 cubic yards container	n/a	$1,091.41	$1,145.98	$1,203.28	$1,263.45	$1,326.62	$1,392.95
MULTI-FAMILY & COMMERCIAL				***Three times per week pickup***			
1 cubic yard container	n/a	$147.32	$154.69	$162.42	$170.54	$179.07	$188.02
2 cubic yards container	n/a	$296.27	$311.08	$326.64	$342.97	$360.12	$378.12
3 cubic yards container	$398.63	$439.49	$461.46	$484.54	$508.76	$534.20	$560.91
4 cubic yards container	$545.64	$601.57	$631.65	$663.23	$696.39	$731.21	$767.77
6 cubic yards container	$750.40	$827.32	$868.68	$912.12	$957.72	$1,005.61	$1,055.89
Recycle Bins							
4 & 6 cubic yard containers	n/a	$263.97	$277.17	$291.03	$305.58	$320.86	$336.90
Commercial Compacting							
3 cubic yards container	n/a	$1,734.27	$1,820.99	$1,912.04	$2,007.64	$2,108.02	$2,213.42
4 cubic yards container	n/a	$2,312.35	$2,427.96	$2,549.36	$2,676.83	$2,810.67	$2,951.20

Source: City of Livingston and HEC. sum

1.7 COMBINED UTILITIES BILL IMPACTS

Livingston residents receive monthly utility bills that include water, wastewater, and solid waste service costs; therefore, it is important to look at the combined impact on customer bills. **Figure A** below shows the total monthly bill impact to a typical home in Livingston using less than 25,000 gallons. In total, monthly bills would increase 5.5% January 2020, and between 4.0% and 5.0% each year for the following five January adjustments.

Figure A
Combined Utility Bill Impact for a Typical Home



Bill impacts to other customer categories are addressed in each study.

Section 2: WATER RATE STUDY

2.1 THE WATER FUND AND ITS CUSTOMERS

The City's water enterprise fund accounts for the revenues and expenses associated with provision of water service. An enterprise fund is a fund that is intended to recover its costs through user fees and charges for a specific service. Money collected for an enterprise fund cannot be spent on other services. Generally accepted accounting principles (GAAP) require state and local government to use the enterprise fund type to account for "business type activities". As a business type fund, enterprise funds must be self-sufficient. Enterprise funds also provide the repayment capacity for, and make debt service payments on, any debt incurred for capital projects; therefore, any water enterprise fund bond-funded projects do not diminish the City's general fund debt capacity.

It is important for enterprise funds to be self-sufficient, without subsidies from other funds, including the City's General Fund. General Fund cash should be used to protect against factors that could limit the City's ability to provide critical services. Decreasing General Fund reserves could leave the City financially vulnerable, reducing funds necessary to recover from a natural disaster, for example.

Table 1 shows historical revenues and expenses for the water operating fund for fiscal years 2017 through 2019. Net revenues have been positive each year. The last water rate study included several capital improvement project costs that have not yet been incurred; therefore, revenues have deliberately been significantly greater than expenses. In the next five-year period cash reserves will be used to pay for capital improvement projects.

Table 1
Water Fund Historical Revenues and Expenses

Revenues and Expenses	Fiscal Year Ending		
	2017 actual	**2018** actual	**2019** actual
Revenue	$3,484,226	$3,736,933	$3,873,948
Expense	$1,868,403	$1,952,499	$2,662,009
Net Income	**$1,615,824**	**$1,784,434**	**$1,211,939**
less Transfers Out	$0	$1,773,333	$0
Net Revenue after Transfers	**$1,615,824**	**$11,102**	**$1,211,939**

Source: City of Livingston financials provided September 2019. net

Appendix A Tables A-1 and **A-2** show the details of historical water fund revenues and expenses.

2.1.1. Revenues

Water system operations are funded through monthly rates, meter installation fees, interest income, utility penalties, and other small miscellaneous revenues. In some years, the City receives intergovernmental revenues for special regional projects.

Rate revenue is generated by application of the water rate schedule shown in **Table 2** below. Under the current rate schedule all customers pay fixed monthly charges (which include a service charge and meter replacement fee) by meter size, and a use charge according to the quantity of water used each month. Water is measured in thousands of gallons. All customers pay the same rate for every unit of water consumed above their base allowance. The monthly base allowance varies by customer category.

Table 2
Current Water Rates Schedule

Charges	**2019 (Current) Water Rates**	
	Inside City *	
Fixed Mothly Charges	Base Charge	Meter Fee
1" and smaller	$25.13	$3.05
1.5"	$50.27	$11.11
2"	$80.43	$12.13
3"	$175.94	$25.74
4"	$301.61	$40.61
6"	$628.35	$56.33
8"	$1,206.43	$89.50
10"	$1,910.18	$204.51
Service Charge Monthly Water Allowance		
Attached Residential (per Unit)	10,000	gallons
Detached Residential (per Unit)	25,000	gallons
Non-Residential (per Meter)	35,000	gallons
Construction	0	gallons
Consumption Charge per 1,000 gallons of water in excess of allowance each month		
All Customers except Construction	$1.57	
Construction	$1.17	

curr

* Water rate schedules 1.5x outside City limits.

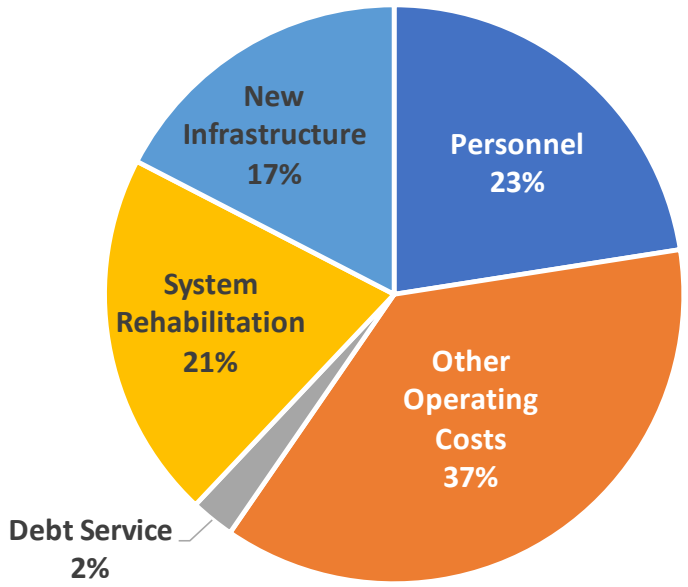
2.1.2. Expenses

Annual operating costs include all water system operating expenses, capital outlay, and debt service. Expenditures were grouped into five categories:

- Personnel (Payroll and Benefits)
- System Rehabilitation
- Debt Service
- New Infrastructure Projects
- Other Operating Costs

Personnel and other operating costs comprised the largest cost items in fiscal year ending 2019, which is the base year for the study. Fiscal year 2019 costs are illustrated in **Figure 1.**

Figure 1
Historical Water Fund Operating Expenses



2.1.3. Customer Base

Per the California Department of Finance, Livingston has a population of approximately 14,800, and it has sustained an annual average population increase of 1.8% since 2000. Population growth is shown in **Figure 2** on the next page.

The City serves water to about 3,100 households and 200 non-residential establishments, including large customers such as Foster Farms, and several irrigation-only customers. A pie chart illustrating the customer base is provided in **Figure 3** on the next page. As the pie chart shows, the City's water customers are primarily (93%) single family residential.

Figure 2
Population Growth

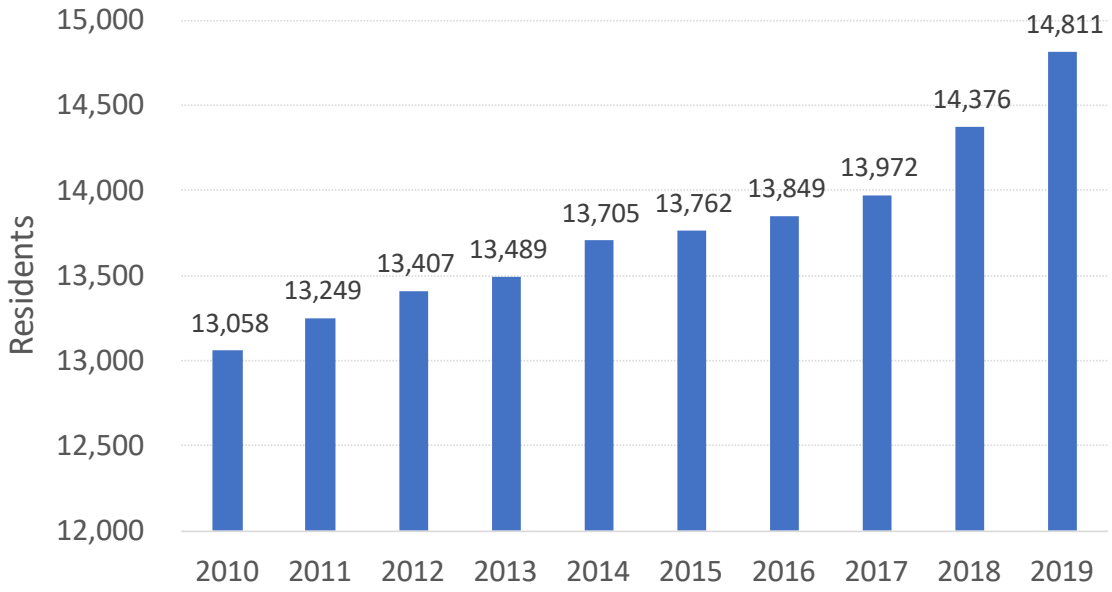
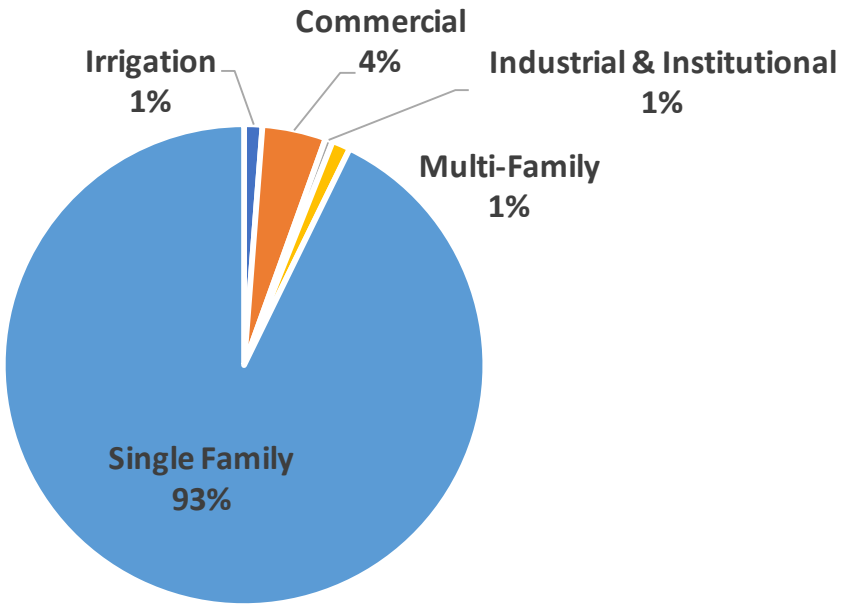


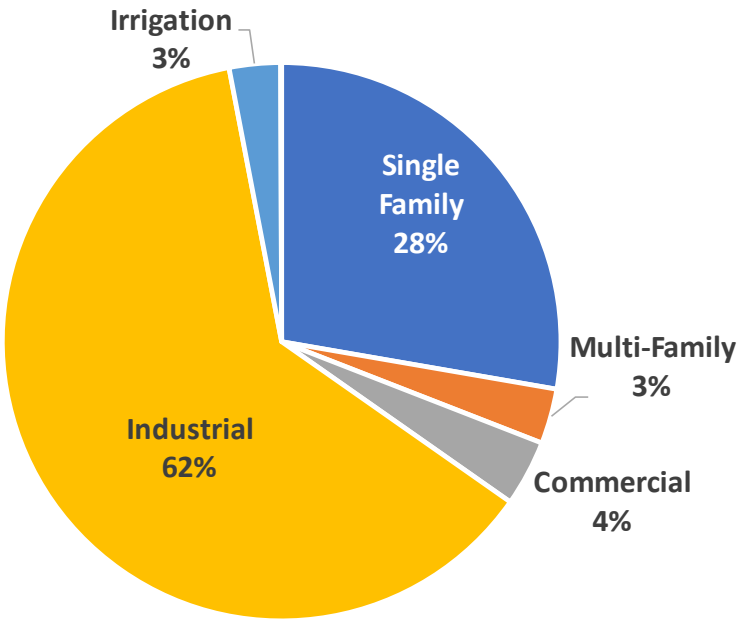
Figure 3
Customer Base



2.1.4. Water Consumption and Production

Figure 4 shows total water consumption by customer category. Although single family residential makes up 93% of the customer base, this group uses 28% of annual water consumption. Industrial customers, which make up less than 1% of the customer base, use 62% of total water consumed.

Figure 4
Water Consumption by Customer Category

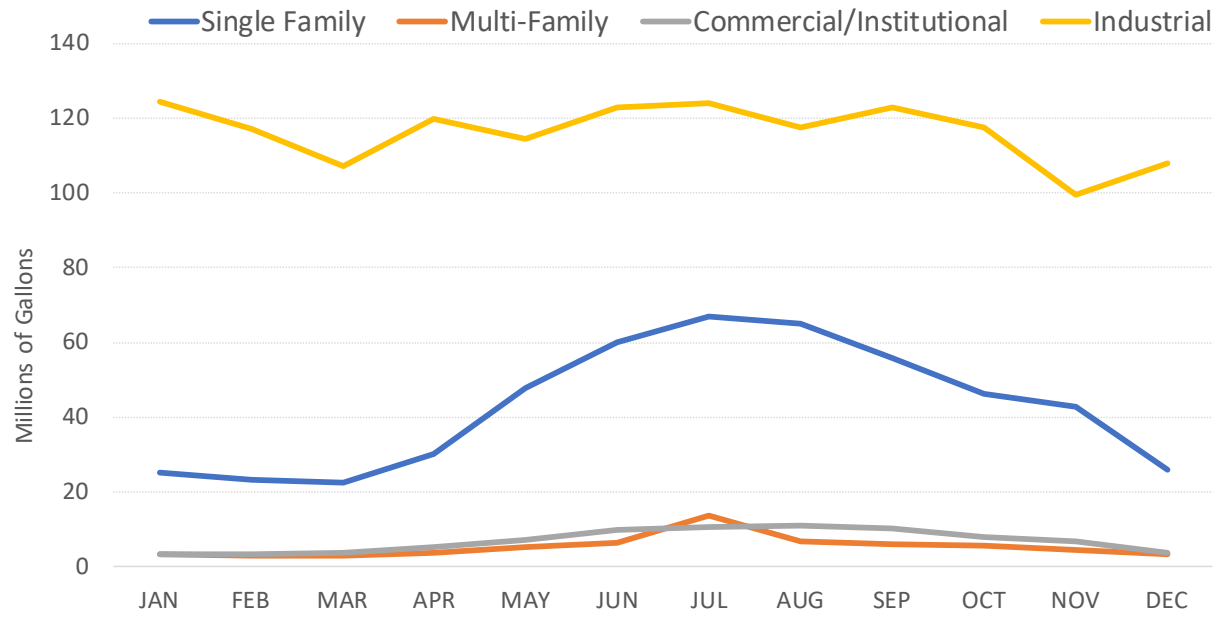


The City's water supply is 100% groundwater. Water use fluctuates from year to year depending on several factors including, but not limited to, growth, the weather, sustained drought, plumbing retrofits, and pricing of water. Historical average water use for 2016-2018 by customer category is used as the basis on which to project water use in the rate study. Historical potable water consumption is provided in **Appendix Table A-3.**

Like most cities in the western U.S., Livingston experiences greater water demand in the summer than the winter due to outside applications of water. **Figure 5** shows water use by month using 2017 and 2018 water use data provided by the City. Greater demand during the summer is driven by the single family customer category. Because such a large quantity of water is consumed by the industrial customers, with a steady water demand throughout the year, the City is not as susceptible to large swings in water use as many central valley communities.

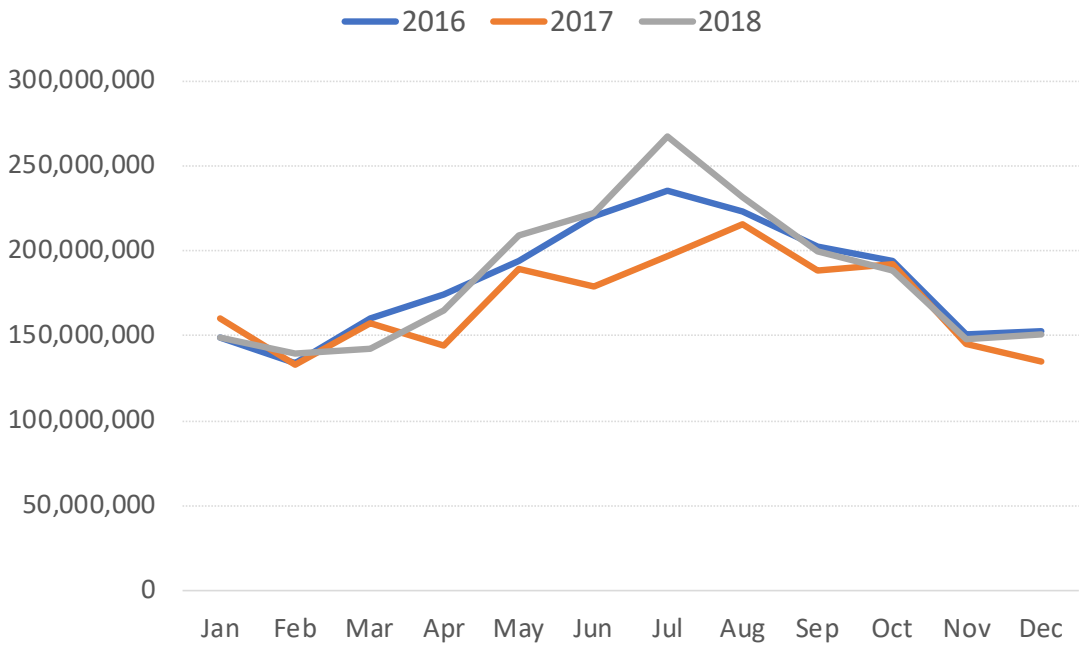
Well production data is provided in **Appendix Table A-4.** Approximately 84% of annual water production is for year-round water consumption, and approximately 16% of annual water production is additional water for increased demand during the summer months. Typically, central valley communities use 60%-65% of water for year-round demand, and 35%-40% of water additionally during the summer. **Figure 6** shows seasonal water production for the last three years.

Figure 5
Water Use Patterns by Customer Category



System-wide annual water production by month is shown in **Figure 7.**

Figure 6
Annual Water Production – Seasonal Trend



2.2 REVENUE REQUIREMENT

According to the American W M1 Manual, the first step in the ratemaking analysis is to determine the adequate and appropriate funding of a utility. This is referred to as the "revenue requirements" analysis. This analysis considers the short-term and long-term service objectives of the utility over a given planning horizon, including capital facilities and system operations and maintenance, to determine the adequacy of a utility's existing rates to recover its costs. A number of factors may affect these projections, including: the number of customers served, water-use trends, nonrecurring sales, weather, conservation, use restrictions, inflation, interest rates, wholesale contracts, capital finance needs, changes in tax laws, and other changes in operating and economic conditions.

After determining a utility's revenue requirements, a utility's next step is determining the cost of service. Utilizing a public agency's approved budget, financial reports, operating data, and capital improvement plans, a rate study generally categorizes (functionalizes) the costs, expenses, and assets of the water system among major operating functions to determine the cost of service.

After the assets and the costs of operating those assets are properly categorized by function, the rate study allocates those "functionalized costs" to the various customer classes (e.g., single-family residential, multi-family residential and commercial) by determining the characteristics of those classes and the contribution of each to incurred costs such as peaking factors or different delivery costs, service characteristics and demand patterns. Rate design is the final part of the M1 Manual's rate-making procedure and generally uses the revenue requirement and cost of service analysis to determine appropriate rates for each customer class.

The revenue requirement refers to the amount of money that must be raised for revenue sufficiency of the water fund through rates. The projection of the revenue requirement is the cornerstone for the calculation of rates. This section explains the derivation of revenue requirement for this study. Components of the revenue requirement include:

- Capital Improvements
- Debt Service
- Operations Expenses and Reserves
- System Rehabilitation

Non-water sales revenue projections are credited against projected operations costs. Non-water sales include meter replacement fees, meter installation fees, fines and forfeitures (penalties), interest income, and miscellaneous revenue.

2.2.1. Capital Improvements

Water system capital costs in any one year are dependent on the state of the current infrastructure to serve existing customers and necessary improvements to accommodate potential new customers. Over the next five years, total water system capital improvement costs are estimated at $24.56 million. The largest project cost is anticipated to be for wells 13 and 17 conveyance,

treatment plant and storage tank ($8.75 million). The new well 11 (estimated cost $1.20 million) will be constructed and paid for by Foster Farms under agreement with the City.

Table 3 summarizes the total estimated costs and anticipated funding sources. Total estimated costs are in future dollars (cost estimates were provided in 2019 dollars; the rate study inflates the cost estimates by 3% each year per the 10-year historical average increase in the Engineering News Record (ENR) Construction Cost Index (CCI)). **Appendix Tables A-5** and **A-6** provides greater detail of the CIP items and costs.

A $4.0 million loan has already been executed with the State Water Resources Control Board (SWRCB) for wells 14 and 16 treatment and conveyance facilities. Improvements to wells 8, 9, 13, and 17 are anticipated to be funded with additional loans from the SWRCB. All other capital improvement projects will be funded with reserves (currently accumulated and future collections of water rate revenues), and the park surface water irrigation project will be partially funded with a grant.

Two projects are estimated to benefit future water users; 25% of the well 8 and 9, as well as the well 13 and 17 project costs, are allocated to future users. These two projects are anticipated to be funded by SRF loans; therefore, 25% of annual debt service will be paid for with accumulated water connection fees.

Table 3
Summary of CIP Costs Fiscal Years Ending 2020-2025

	Estimated Cost in Inflated Dollars 2020-2025	Funding Source
Well 8 - New Well	$1,030,000	Reserves
Well 9 - New Well	$1,200,000	Reserves
Well 11 - New Well	$1,200,000	Foster Farms
Well 12 Conveyance & Treatment	$1,935,875	Reserves
Well 8 & 9 Conveyance & Treatment Plant	$4,635,000	SRF Loan [1]
Well 14 & 16 Conveyance & Treatment Plant - secured loan	$4,000,000	SRF Loan
Well 13 & 17 Conveyance, Treatment Plant & Storage Tank	$8,755,000	SRF Loan [1]
Water Line Replacement Ph 4 (Walnut, Davis, White, N Main)	$1,412,397	Reserves
Park Surface Water Irrigation	$370,800	Reserves [2]
Server Upgrades	$25,000	Reserves
Total Estimated Water Improvements Cost	**$24,564,073**	

Source: City of Livingston November 2019. cip sum

[1] A portion of debt service to be repaid with connection fees.
[2] A portion of this project will be funded by a grant.

2.2.2. Debt Service

The City has two existing loans with the SWRCB for wells 13 ($1.35 million) and wells 14 and 16 ($4.00 million). Repayment schedules are provided in **Appendix A Tables A-7** and **A-8**.

New debt service is assumed to be incurred for wells 8 and 9 (total $3.61 million), as well as wells 13 and 17 (total $8.76 million). The City does not yet know what the terms of financing will be; the rate study assumes 2.50% interest with a 30-year amortization. The State requires one year of debt service be held in reserve for debt payments. The City can either collect this up-front or increase debt service 10% for the first ten years of payments. The rate study assumes that an additional 10% per year is collected for the first ten years for both of these projects. Debt calculations associated with the estimated additional two new SWRCB loans is provided in **Appendix A Table A-9.**

In addition, the City is currently executing an agreement with TRANE for energy efficiency projects Citywide. A portion of the total projects cost is to upgrade water system components to be more energy efficient. The water system's share of debt service associated with these projects is estimated at $47,000 per year.

2.2.3. Operating Expenses and Reserves

Future year operating expenses are based on fiscal year 2019 actual operating expenses. Personnel costs are increased 6.0% each year, utilities costs are increased 4.0% each year, and all other annual expenses are increased 2.5%, 3.0%, or 3.5% each year. These cost increases were based on historical cost increases and discussions with City staff. Historically, City water operating expenses have increased 3.5% to 4.0% per year, which is very reasonable. It is very typical for water utility annual costs, and therefore water rates, to outstrip inflation. In May 2019, the American Water Works Association released an article, "Rate survey: water cost increases outpacing other U.S. goods and services" in which it documented that between 2016 and 2018 water rates increased 7.2% and wastewater rates 7.5% while the national consumer price index increased 4.6%.

In addition to historical types of costs incurred by the water fund, the City is adding new operations and maintenance costs for facilities included in the CIP. These costs will be partially offset by reduced electrical bills resulting from the completion of the water system energy efficiency projects.

2.2.4. System Rehabilitation

Depreciation is used as the basis on which to collect rates to cover system rehabilitation costs. Inclusion of system rehabilitation costs demonstrates fiscal responsibility toward the assets to potential future investors and helps to establish good credit[2]. Depreciation is calculated based on existing water facilities and new facilities built in the next five-year period.

[2] Per Governmental Accounting Standards Board (GASB) 34, local governments must report on the value of their infrastructure assets and plan for asset maintenance (including collecting sufficient revenue) to obtain good credit when issuing bonds or procuring other forms of financing for long-term construction projects.

Table 4 shows the total annual amount included in the rates for system rehabilitation. The estimated cost includes replacement of existing assets and assets that are estimated to be constructed during the study time period. The water rates include 50% depreciation; in many years not all of the money collected is spent; in these years the additional amount is kept in the reserves and spent in another year in which capital costs exceed collections for system rehabilitation.

Table 4
System Rehabilitation Annual Budget Estimate

Depreciation	**2020** Year 1	**2021** Year 2	**2022** Year 3	**2023** Year 4	**2024** Year 5	**2025** Year 6
Current Depreciation [1]	$183,000	$183,000	$183,000	$183,000	$183,000	$183,000
New Depreciation	$736,000	$736,000	$736,000	$736,000	$736,000	$736,000
Total Depreciation	**$919,000**	**$919,000**	**$919,000**	**$919,000**	**$919,000**	**$919,000**
	50%	50%	50%	50%	50%	50%
Amount in Rev. Req.	$459,500	$459,500	$459,500	$459,500	$459,500	$459,500

Source: City of Livingston and HEC November 2019. depr

[1] Current book value of all water assets minus wells which are to be replaced.

2.2.5. Calculated Revenue Requirement

Table 5 provides the projection of annual costs and revenues and the resulting revenue requirement through fiscal year 2025. Over the next five years, the revenue requirement is projected to continue to increase to account for inflation, to fund capital expenditures and depreciation, and to account for new debt. The total revenue requirement is projected to increase from $2.38 million in fiscal year 2019 to $4.03 million in fiscal year 2020 and fluctuate each year thereafter depending on the level of cash-funded capital expenditures.

The water rates are based on raising sufficient revenue to fund the revenue requirement with even 4.25% percentage increases over time. The amount to be raised each year by water rates is the "user fees" line underneath the revenue requirement line in **Table 5.** Note that although the amount to be raised by rates increases 4.25% in the first year, not all customer categories will have the same percentage increase. The difference in customer category increases is due to the cost of service analysis.

Table 5
Projected Revenue Requirement

Expenses and Credits	Inflator	Fiscal Year Ending 2019 actual	2020 Year 1	2021 Year 2	2022 Year 3	2023 Year 4	2024 Year 5	2025 Year 6
Operating Expenses								
Personnel	6.0%	$726,097	$769,663	$815,843	$864,794	$916,681	$971,682	$1,029,983
Contract Services	3.0%	$110,320	$113,630	$117,039	$120,550	$124,166	$127,891	$131,728
Utilities	4.0%	$560,431	$582,848	$606,162	$630,408	$655,625	$681,850	$709,124
less Electricity Savings [1]	4.0%			($75,000)	($78,000)	($81,120)	($84,365)	($87,739)
SGMA Compliance (placeholder)	2.5%	$0	$50,000	$51,250	$52,531	$53,845	$55,191	$56,570
Infrastructure O&M	3.5%	$381,515	$394,868	$408,688	$422,992	$437,797	$453,120	$468,979
Other Operating Costs	2.5%	$142,217	$145,772	$149,416	$153,152	$156,981	$160,905	$164,928
New Infrastructure Op. Costs	Table A-6	$0	$295,000	$97,850	$525,146	$103,809	$782,229	$110,131
Total Operating Expenses		**$1,920,580**	**$2,351,781**	**$2,171,249**	**$2,691,573**	**$2,367,784**	**$3,148,503**	**$2,583,704**
Debt Service								
SRF D15-02037 ($1.35 Mill - well 13)	secured	$78,778	$78,778	$78,778	$78,778	$78,778	$78,778	$78,778
SRF D18-02003 ($4.0 Mill -wells 14 & 16)	secured		$47,358	$172,989	$172,989	$172,989	$172,989	$172,989
Energy Retrofits [2]	estimate			$47,000	$47,000	$47,000	$47,000	$47,000
New Debt - Wells 13 & 17	estimate				$460,130	$460,130	$460,130	$460,130
New Debt - Wells 8 & 9	estimate				$243,650	$243,650	$243,650	$243,650
Subtotal Debt Service		**$78,778**	**$126,136**	**$298,767**	**$1,002,547**	**$1,002,547**	**$1,002,547**	**$1,002,547**
System Rehabilitation and New Projects								
Meter Replacement		$36,295	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000
Equipment Purchase		$27,130	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000
Vehicle Replacement		$38,229	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000
Cash-Funded Capital Projects		$560,996	$1,225,000	$1,223,002	$1,412,397	$0	$1,935,875	$0
Subtotal System Rehabilitation and New Projects		**$662,651**	**$1,322,000**	**$1,320,002**	**$1,509,397**	**$97,000**	**$2,032,875**	**$97,000**
Additional Collection for Depreciation		$0	$459,500	$459,500	$459,500	$459,500	$459,500	$459,500
Total Costs		**$2,662,009**	**$4,259,418**	**$4,249,518**	**$5,663,018**	**$3,926,831**	**$6,643,425**	**$4,142,751**
Credits								
Meter Replacement Fees	3.0%	$158,192	$151,304	$156,836	$161,541	$166,387	$171,378	$176,520
Meter Installation Fees	estimate	$51,718	$9,000	$9,000	$9,000	$9,000	$9,000	$9,000
Fines & Forfeitures	3.0%	$17,980	$18,519	$19,075	$19,647	$20,237	$20,844	$21,469
Interest Income	0.0%	$48,768	$48,768	$48,768	$48,768	$48,768	$48,768	$48,768
Loss of Highway Irrigation Area Revenue [3]	4.5%			($16,000)	($16,720)	($17,472)	($18,259)	($19,080)
Miscellaneous Revenue	0.0%	$7,959	$7,959	$7,959	$7,959	$7,959	$7,959	$7,959
Subtotal Credits		**$284,618**	**$235,551**	**$225,638**	**$230,195**	**$234,879**	**$239,691**	**$244,636**
Revenue Requirement		**$2,377,391**	**$4,023,867**	**$4,023,880**	**$5,432,822**	**$3,691,953**	**$6,403,734**	**$3,898,115**
Increase in User Fees [4]			4.25%	4.25%	4.25%	4.25%	4.25%	4.25%
User Fees		**$3,592,366**	**$3,745,041**	**$3,904,206**	**$4,070,134**	**$4,243,115**	**$4,423,448**	**$4,611,444**

Source: City of Livingston fiscal year 2019 budget, and HEC. rev req

[1] TRANE estimate is $79,953 in first year. This has been rounded down to the nearest $5,000.

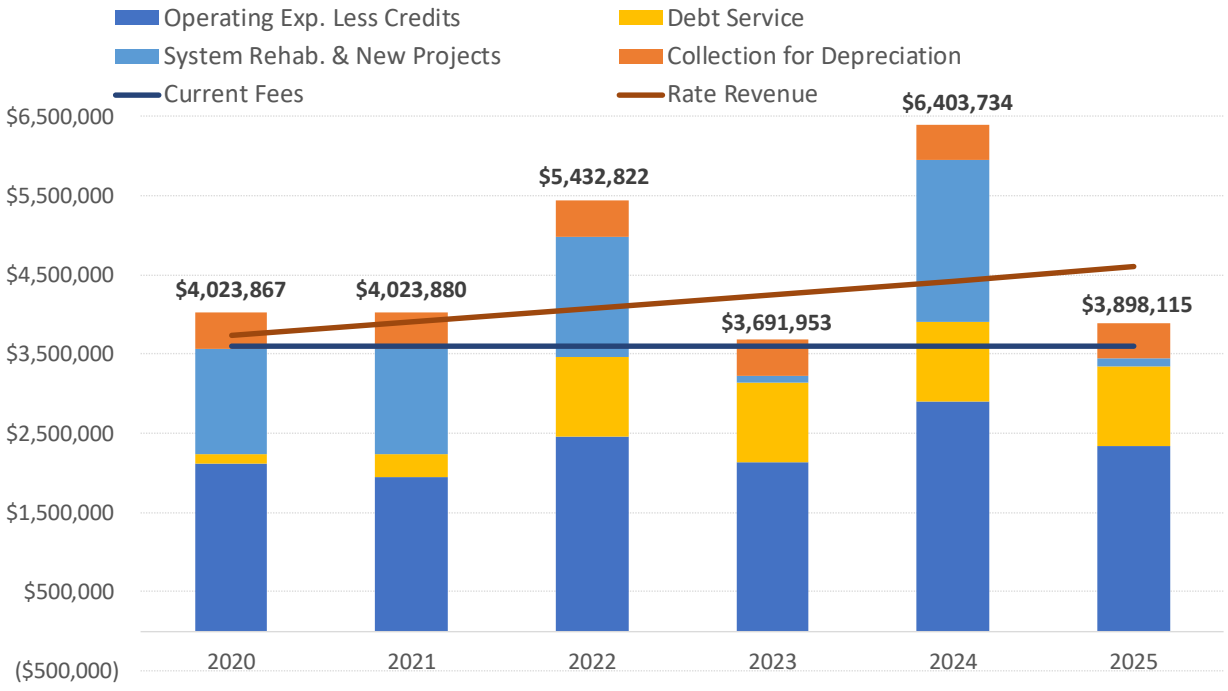
[2] Bank estimate of annual payments is $46,694. This has been rounded up to the nearest $1,000.

[3] Well 15 will be removed from domestic consumption supplies due to poor water quality; however, it will continue to provide irrigation water. At this time, it is unknown what revenues might be collected from the well 15 irrigation system.

[4] The amount to be raised from water sales is increased each year by a percentage to smooth out the changes.

Components of revenue requirement and projected water sales revenues are illustrated in **Figure 7**. The total revenue requirement decreases in 2023 and 2025 because of a decrease in cash spending on capital improvement projects during those years.

Figure 7
Components of Revenue Requirement



One of the credits in the revenue requirement is revenue generated by the monthly meter replacement fee. City crews replace older water meters that are near the end of their useful life, or which are inaccurately measuring water flow. The cost to replace meters by size of meter was used to determine appropriate monthly collection of fees to support routine meter replacements in **Appendix Table A-10**. Projected meter replacement fee revenue by year is shown in **Appendix Table A-11**.

The next step in calculating water rates is performing functional cost allocation and cost of service. Functional cost allocation is provided in **Appendix A, Tables A-12** and **A-13**. The cost classification provides a *guideline* for the City in determining the portion of revenue requirement to collect through service charges versus usage charges. There is no set formula for determining exactly how much to collect in the service charge versus the use charge.

City water system costs were classified into two categories; fixed (service) and variable (use) costs.

- **Fixed Costs.** Included in this category are costs associated with customer-driven costs and the water system's readiness to serve, which includes a portion of the water system's capacity costs for typical non-peaking water use. Forty-five percent of annual costs were determined to be fixed costs after performing a functional allocation of the 2019 water fund expenses.

  Fixed costs are allocated to customers based on the number of equivalent meters, determined by the relative hydraulic capacity of the meter size relative to a 1-inch meter. **Table A-14** shows the calculation of equivalent meters. Note that the number of equivalent meters is calculated using current number of billing meters (rather than total number of meters) on the water system at any one time.

- **Variable Costs.** These costs vary with the quantity of water consumed. They include the peaking portion of capacity costs and commodity costs. Commodity costs are expenses that increase or decrease almost directly with the amount of water supplied. Operations and maintenance variable costs primarily include well pumping electricity costs, but also a portion of administrative costs, debt service and other costs as determined in the functional allocation. Variable costs are recovered through use charges applied per thousand gallons above the base allowance each month.

Table 6 shows allocation of the amount to be collected in user fees each year between service and use charges in the rate model for the study. The amount to be collected in monthly service charges (the "fixed" fee component) is 35% rather than the 45% calculated in the functional cost allocation. This difference is because the City currently collects 35% of user fees in service charges. In the last water rate study, which was conducted in 2014, it was determined that 35% was the most appropriate percentage to use because such a large amount of use of the system is from industrial users. The industrial customers do not have many water meters; therefore, capacity of the system, as measured by instantaneous flow through water meters, is much less significant in determining use of the system than it is for most water systems.

Table 6
Allocation of User Fees

Allocated Rev. Requirement		Fiscal Year Ending 2020	2021	2022	2023	2024	2025
Revenue Requirement		$3,745,041	$3,904,206	$4,070,134	$4,243,115	$4,423,448	$4,611,444
Fixed	35%	$1,310,765	$1,366,472	$1,424,547	$1,485,090	$1,548,207	$1,614,005
Variable	65%	$2,434,277	$2,537,734	$2,645,587	$2,758,025	$2,875,241	$2,997,439

Source: City of Livingston November 2019 and HEC. rev alloc

2.3 WATER RATE CALCULATIONS

The calculation of monthly service charges is shown in **Table 7** below. Monthly service charges are applied to customers based on the size of their meter.

Table 7
Calculation of Monthly Service Charges

Base Meter Fee		Fiscal Year Ending 2020	2021	2022	2023	2024	2025
Total Costs		$1,310,765	$1,366,472	$1,424,547	$1,485,090	$1,548,207	$1,614,005
Meter Equivalents		3,858	3,883	3,908	3,933	3,958	3,983
Meter Size	**Ratio**	*Monthly Service Charge per Meter*					
1" and smaller	1	$28.31	$29.32	$30.37	$31.46	$32.59	$33.77
1.5"	2	$56.62	$58.65	$60.75	$62.93	$65.19	$67.53
2"	3	$90.59	$93.83	$97.20	$100.68	$104.30	$108.05
3"	7	$198.17	$205.26	$212.62	$220.24	$228.15	$236.36
4"	12	$339.72	$351.88	$364.48	$377.56	$391.12	$405.18
6"	25	$707.74	$733.07	$759.34	$786.58	$814.83	$844.13
8"	48	$1,358.87	$1,407.50	$1,457.93	$1,510.24	$1,564.48	$1,620.73
10"	76	$2,151.54	$2,228.54	$2,308.40	$2,391.21	$2,477.09	$2,566.16

Source: City of Livingston November 2019 and HEC. base fees

The calculation of use charges is shown in **Table 8**. Beginning January 2020, water use greater than the monthly allowance would be billed at $1.61 per thousand gallons.

Table 8
Calculation of Use Costs per Thousand Gallons

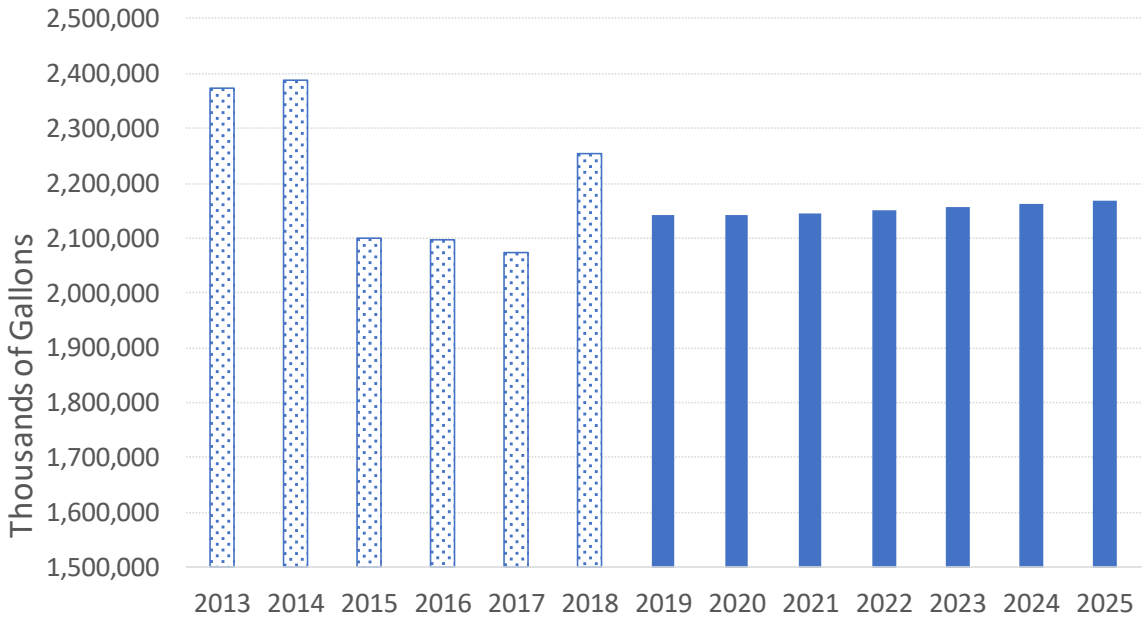
Customer Category	Fiscal Year Ending 2020	2021	2022	2023	2024	2025
Allocated Costs	**$2,434,277**	**$2,537,734**	**$2,645,587**	**$2,758,025**	**$2,875,241**	**$2,997,439**
Annual Demand (Thousands of Gallons)	2,139,398	2,144,857	2,150,377	2,155,960	2,161,606	2,167,317
Gallons Above Monthly Allowance						
Residential			*All figures in thousands of gallons*			
Single Family	62,742	63,131	63,523	63,918	64,315	64,714
Multi-Family	21,764	21,764	21,764	21,764	21,764	21,764
Subtotal Residential	**84,506**	**84,896**	**85,288**	**85,682**	**86,079**	**86,479**
Non-Residential						
Commercial	43,240	44,179	45,137	46,117	47,118	48,140
Industrial	1,329,351	1,329,351	1,329,351	1,329,351	1,329,351	1,329,351
Irrigation	54,934	54,934	54,934	54,934	54,934	54,934
Subtotal Non-Residential	**1,427,525**	**1,428,463**	**1,429,422**	**1,430,402**	**1,431,403**	**1,432,425**
Gallons Above Monthly Allowance	**1,512,031**	**1,513,359**	**1,514,710**	**1,516,084**	**1,517,482**	**1,518,904**
Estimated Total Water Billed	71%	71%	70%	70%	70%	70%
Cost per 1,000 Gallons above Base Allowance	**$1.61**	**$1.68**	**$1.75**	**$1.82**	**$1.89**	**$1.97**
Construction Water	$1.75	$1.82	$1.89	$1.97	$2.05	$2.13

Source: City of Livingston and HEC September 2019. use fees

The calculation of use charges is based on allocated cost and projected water demand for each customer category. Total projected water demand is shown in **Figure 8** on the next page and by customer category in **Appendix Table A-15**. The projection of water demand is based on average water use for the past three years plus the assumed growth of 25 new one-inch water meters per year. In addition, the projected water use accounts for customers' reactions to price increases. The relationship between increased prices and decreased demand is referred to as price elasticity. Price elasticity varies by geography due to many micro-economic variables. HEC applied industry knowledge to establish assumed price elasticity factors for the Study. Price elasticity analysis is shown in **Tables A-16** and **A-17**.

Construction water use fees for water pulled off fire hydrants, and which are not property-related fees, are calculated as the average cost per gallon for all water service costs excluding meter replacement. This methodology is updated from the 2014 water rate study which is why the cost increase is greater than for other water customers.

Figure 8
Historical and Projected Annual Water Demand



The calculated meter replacement fees are shown in **Table 9.** Due to updated pricing provided by the City's water meter supplier, the monthly meter fee for 10" meters decreased. All other monthly meter fees increased.

Table 9
Calculated Meter Replacement Fees by Meter Size

	Fiscal Year Ending					
Meter Size	**2020** Year 1	**2021** Year 2	**2022** Year 3	**2023** Year 4	**2024** Year 5	**2025** Year 6
	Annual Escalator 3%					
1"	$3.21	$3.31	$3.41	$3.51	$3.62	$3.72
1-1/2"	$7.57	$7.80	$8.04	$8.28	$8.52	$8.78
2"	$14.46	$14.90	$15.35	$15.81	$16.28	$16.77
3"	$18.05	$18.59	$19.15	$19.72	$20.31	$20.92
4"	$42.72	$44.01	$45.33	$46.69	$48.09	$49.53
6"	$73.83	$76.04	$78.32	$80.67	$83.09	$85.59
8"	$120.38	$123.99	$127.71	$131.54	$135.49	$139.55
10"	$155.35	$160.01	$164.81	$169.76	$174.85	$180.10

Source HEC. meter fee

Total calculated rates include the fixed monthly service charges, meter replacement fees, and consumption charges. The calculated water rate schedule is provided in **Table 10** below.

Table 10
Calculated New Water Rates Schedule

Charges	Current	Jan-20	Jan-21	Jan-22	Jan-23	Jan-24	Jan-25
Base Charge	Inside City *						
1" and smaller	$25.13	$28.31	$29.32	$30.37	$31.46	$32.59	$33.77
1.5"	$50.27	$56.62	$58.65	$60.75	$62.93	$65.19	$67.53
2"	$80.43	$90.59	$93.83	$97.20	$100.68	$104.30	$108.05
3"	$175.94	$198.17	$205.26	$212.62	$220.24	$228.15	$236.36
4"	$301.61	$339.72	$351.88	$364.48	$377.56	$391.12	$405.18
6"	$628.35	$707.74	$733.07	$759.34	$786.58	$814.83	$844.13
8"	$1,206.43	$1,358.87	$1,407.50	$1,457.93	$1,510.24	$1,564.48	$1,620.73
10"	$1,910.18	$2,151.54	$2,228.54	$2,308.40	$2,391.21	$2,477.09	$2,566.16
Meter Fee							
1" and smaller	$3.05	$3.21	$3.31	$3.41	$3.51	$3.62	$3.72
1.5"	$11.11	$7.57	$7.80	$8.04	$8.28	$8.52	$8.78
2"	$12.13	$14.46	$14.90	$15.35	$15.81	$16.28	$16.77
3"	$25.74	$18.05	$18.59	$19.15	$19.72	$20.31	$20.92
4"	$40.61	$42.72	$44.01	$45.33	$46.69	$48.09	$49.53
6"	$56.33	$73.83	$76.04	$78.32	$80.67	$83.09	$85.59
8"	$89.50	$120.38	$123.99	$127.71	$131.54	$135.49	$139.55
10"	$204.51	$155.35	$160.01	$164.81	$169.76	$174.85	$180.10
Service Charge Monthly Water Allowance							
Attached Residential (per Unit)	10,000	gallons					
Detached Residential (per Unit)	25,000	gallons					
Non-Residential (per Meter)	35,000	gallons					
Consumption Charge per 1,000 gallons of water in excess of allowance each month							
All Customers	$1.57	$1.61	$1.68	$1.75	$1.82	$1.89	$1.97
Construction Water	$1.17	$1.75	$1.82	$1.89	$1.97	$2.05	$2.13

Source: City of Livingston and 2019 HEC rate study. sched

* Water rate schedules 1.5x outside City limits.

In compliance with California SB-7, which requires all new multi-family residential development to be individually metered or sub-metered, any newly constructed units will pay the same base rate per unit as all current detached residential units unless the owner of the building(s) sub-meters each unit and performs its own internal water billing of each unit.

2.4 CASH FLOW AND FUND BALANCE

Table 11 below shows the projected cash flow for the water enterprise fund through fiscal year 2025. With adoption of the calculated rates it is anticipated that the City will be able to meet all water enterprise fund obligations, including existing and potential debt service coverage requirements, and achieve a target of at least six months of revenues in unrestricted cash reserves most years.

Table 11
Projected Cash Flow

Revenues and Expenses	Fiscal Year Ending 2020 Year 1	2021 Year 2	2022 Year 3	2023 Year 4	2024 Year 5	2025 Year 6
Revenues						
User Fees ---- Jul-Dec	$1,796,183	$1,872,521	$1,952,103	$2,035,067	$2,121,558	$2,211,724
User Fees ---- Jan-Jun	$1,872,521	$1,952,103	$2,035,067	$2,121,558	$2,211,724	$2,305,722
Meter Replacement Fees	$154,748	$154,070	$159,188	$163,964	$168,883	$173,949
Meter Installation Fees	$9,000	$9,000	$9,000	$9,000	$9,000	$9,000
Fines & Forfeitures	$18,519	$19,075	$19,647	$20,237	$20,844	$21,469
Interest Income	$48,768	$48,768	$48,768	$48,768	$48,768	$48,768
Miscellaneous Revenue	$7,959	$7,959	$7,959	$7,959	$7,959	$7,959
Total Revenues	**$3,907,698**	**$4,063,496**	**$4,231,733**	**$4,406,553**	**$4,588,735**	**$4,778,591**
Operating Expenses	$2,351,781	$2,171,249	$2,691,573	$2,367,784	$3,148,503	$2,583,704
Net Income before Debt Service	**$1,555,917**	**$1,892,247**	**$1,540,160**	**$2,038,769**	**$1,440,232**	**$2,194,887**
Debt Service	$126,136	$298,767	$1,002,547	$1,002,547	$1,002,547	$1,002,547
Debt Coverage	*12.3*	*6.3*	*1.5*	*2.0*	*1.4*	*2.2*
System Rehab & New Projects Cash-Funded	$1,322,000	$1,320,002	$1,509,397	$97,000	$2,032,875	$97,000
Net Revenue	**$107,781**	**$273,477**	**($971,785)**	**$939,221**	**($1,595,190)**	**$1,095,340**
Beginning Cash Balance [1]	$3,343,451	$3,451,232	$3,724,709	$2,928,870	$4,044,036	$2,624,791
Net Revenue	$107,781	$273,477	($971,785)	$939,221	($1,595,190)	$1,095,340
Transfer In from Capital Fund for Debt			$175,945	$175,945	$175,945	$175,945
Estimated Ending Cash Balance	**$3,451,232**	**$3,724,709**	**$2,928,870**	**$4,044,036**	**$2,624,791**	**$3,896,076**
Restricted Balance [2]	$126,136	$298,767	$1,002,547	$1,002,547	$1,002,547	$1,002,547
Unrestricted Balance	**$3,325,096**	**$3,425,942**	**$1,926,322**	**$3,041,489**	**$1,622,243**	**$2,893,528**
Min. Unrestricted Balance [3]	$1,953,849	$2,031,748	$2,115,866	$2,203,276	$2,294,368	$2,389,296

Source: City of Livingston September 2019 and HEC. flow

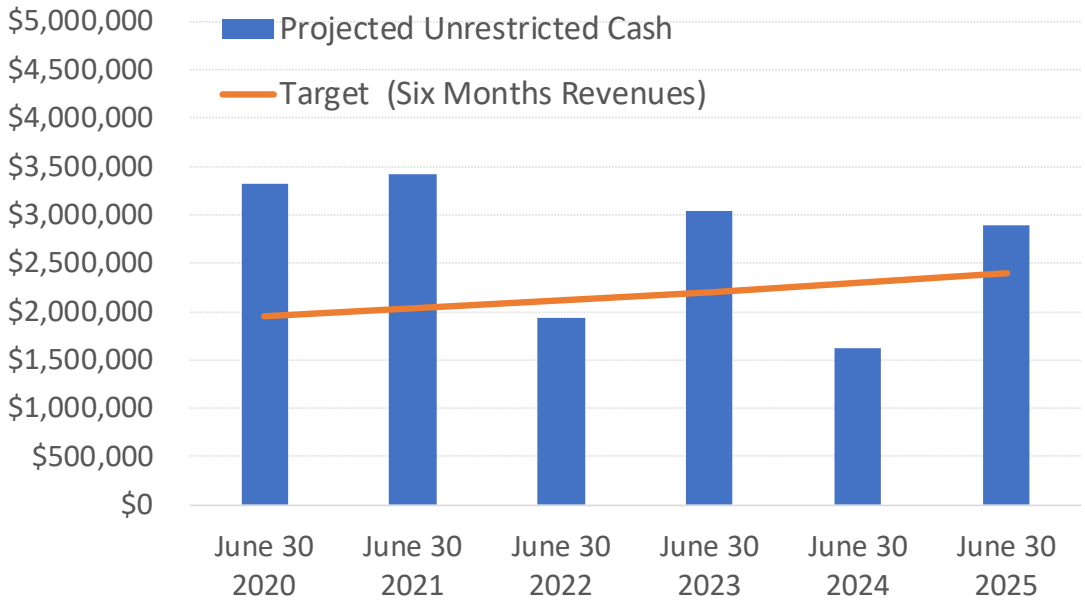
[1] Beginning cash balance as of July 1, 2019.

[2] One year of debt service.

[3] Six months of revenues.

Figure 9 shows projected and target water fund balances through fiscal year ending 2025.

Figure 9
Projected Water Fund Cash Balance



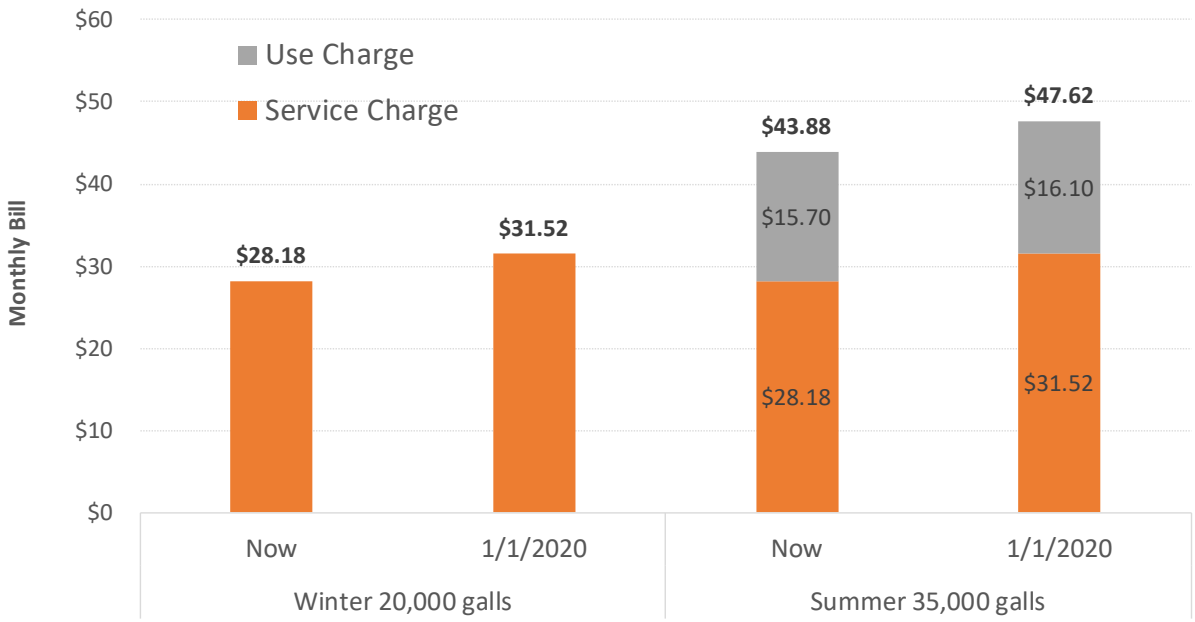
A higher than minimum cash balance at the end of five years would be prudent for the water fund because of the multiple number of CIP project planned in the next five years. Cash reserves can be used, if necessary, to pay for project cost overruns; it can also be used to pay off State loans early and complete other system rehabilitation projects not currently in the CIP.

2.5 BILL IMPACTS

2.5.1. Residential Bill Impacts

Bill impacts arising from new rates beginning January 2020 are illustrated for single family homes at different use levels in **Table 12** on page 30. During the winter, most homes would have an increase of $3.34 per month. During the summer, most homes would have an increase of about $4.00 per month. An illustration of bill impacts to a single-family home for winter and summer use is shown in **Figure 10** on the following page.

Figure 10
First Year Seasonal Bill Impacts for Single Family Home



The projection of a monthly bill for homes using 20,000 gallons is illustrated in **Figure 11** for the next five years.

Figure 11
Bill Impact for a Home using 20,000 Gallons

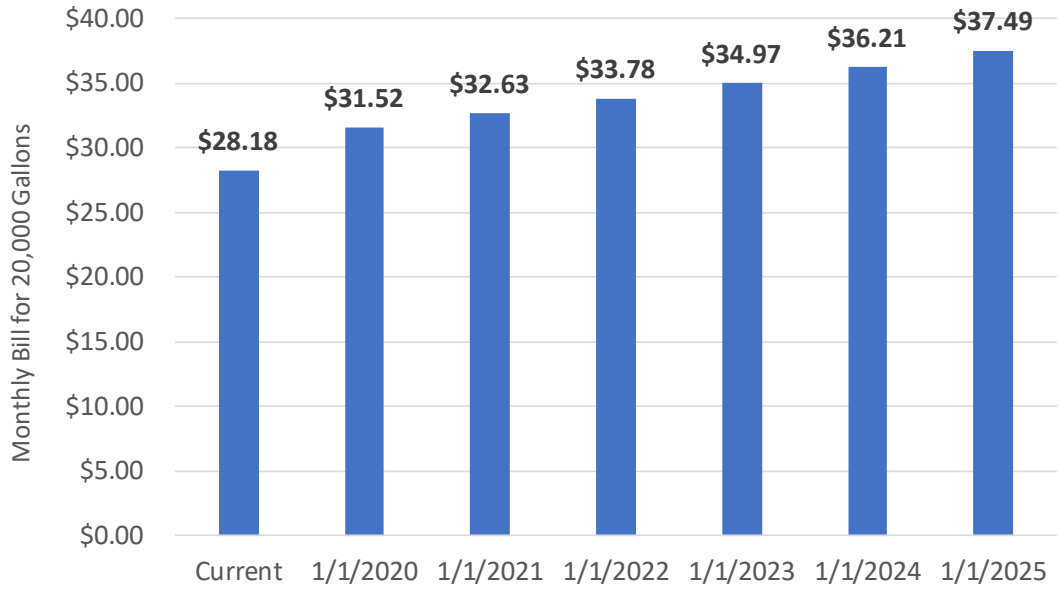


Table 12
Single Family Water Usage Monthly Bill Impacts

Monthly Use in Thousands of Gallons	Current Service Fee 1" and Smaller	Current Meter Fee	Current Use Charge > 25,000 galls	Total Monthly Bill	New Rates Jan. 2020 Service Fee 1" and Smaller	New Rates Jan. 2020 Meter Fee	New Rates Jan. 2020 Use Charge > 25,000 galls	Total Monthly Bill	Difference New less Current
			Rate per 1,000 galls				*Rate per 1,000 galls*		
			$1.57				*$1.61*		
1	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
2	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
3	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
4	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
5	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
6	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
7	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
8	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
9	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
10	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
11	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
12	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
13	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
14	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
15	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
16	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
17	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
18	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
19	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
20	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
25	$25.13	$3.05	$0.00	**$28.18**	$28.31	$3.21	$0.00	**$31.52**	**$3.34**
30	$25.13	$3.05	$7.85	**$36.03**	$28.31	$3.21	$8.05	**$39.57**	**$3.54**
35	$25.13	$3.05	$15.70	**$43.88**	$28.31	$3.21	$16.10	**$47.62**	**$3.74**
40	$25.13	$3.05	$23.55	**$51.73**	$28.31	$3.21	$24.15	**$55.67**	**$3.94**
45	$25.13	$3.05	$31.40	**$59.58**	$28.31	$3.21	$32.20	**$63.72**	**$4.14**
50	$25.13	$3.05	$39.25	**$67.43**	$28.31	$3.21	$40.25	**$71.77**	**$4.34**

Source: HEC. sf bill use

The SWRCB program bases its evaluation of affordability of water rates on two criteria:

1. The median household income (MHI) of the community compared to the State MHI, and
2. The percentage of MHI spent on water bills.

Generally, water rates are considered to be burdensome if they are greater than 2.0 percent of MHI. If a community's MHI is less than 80 percent of the State MHI, the community is considered "Disadvantaged", in which case a rate greater than 1.5 percent of MHI is considered burdensome. The City of Livingston meets the definition of Disadvantaged in 2019.

The affordability test is shown in **Table 13**. Under the calculated water rates for January 2020, a household using less than 25,000 gallons in a month would pay $31.73, which is 0.72% of the estimated MHI for Livingston. The proposed water rates are, per the SWRCB definitions, affordable.

Table 13
Test of Water Bill Affordability

Item	Current Rates	Rates Jan 2020 [1]
Monthly Water Bill		
Monthly Median Household Income (MHI)	$4,426.25	$4,426.25
Monthly Water Bill < 25,000 Gallons	$28.18	$31.52
Average Monthly Water Bill as Percentage of MHI [2]	**0.64%**	**0.71%**
Median Household Income (MHI)		
Statewide California	$67,169	
Estimated Livingston [3]	$53,115	
Livingston MHI as a percentage of the State MHI [4]	**79.1%**	

Source: HEC, State Water Resources Control Board, and US Census Bureau. aff

[1] Bills must be greater than or equal to 1.5% of MHI to qualify for Disadvantaged principal forgiveness.

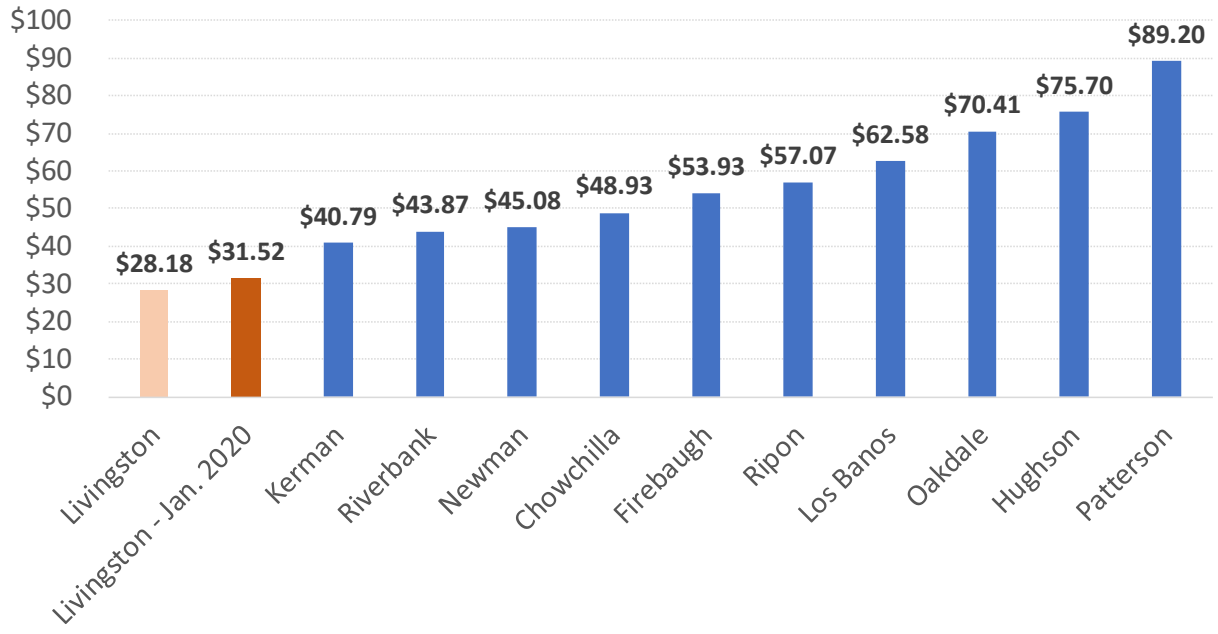
[2] Water bills that are 1.5% to 2.0% of MHI are considered affordable.

[3] 2017 5-year American Community Survey.

[4] Per SWRCB, community with an MHI <80% of the Statewide MHI is Disadvantaged. For a Disadvantaged Community to qualify for grant funding water rates must exceed 1.5% of the service area MHI.

Figure 12 on the next page displays a comparison of regional water bills for a single-family home using 20,000 gallons in a month. Note, however, that some of the comparison cities may be in the process of rate increases as well; this is a snapshot in time.

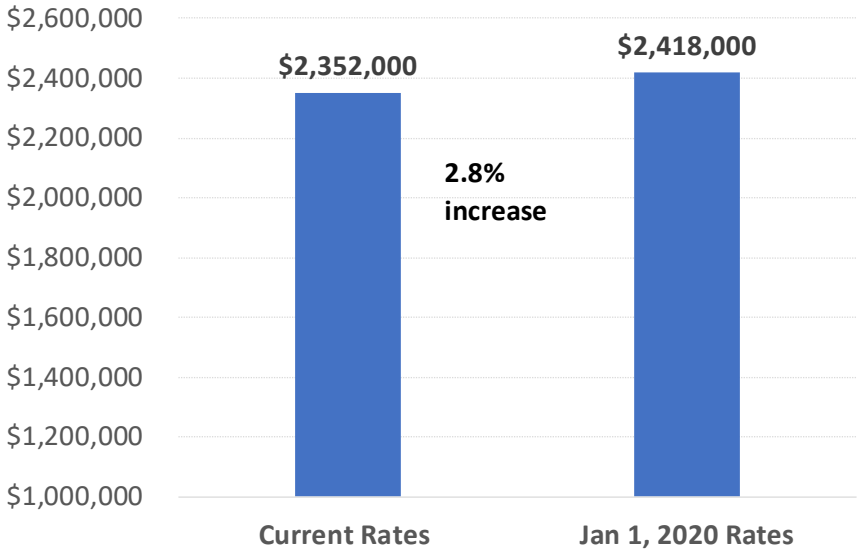
Figure 12
Comparison of Regional Water Bills



2.5.2. Non-Residential Bill Impacts

The effect of the January 2020 rate increase on the City's largest nonresidential customer, Foster Farms, is shown in **Figure 13** below. The total annual bill would increase from approximately $2.35 million to $2.42 dollars, depending on actual water consumption. For other non-residential customers, the total water bills will increase approximately 4.25%, depending on the actual quantity of water used.

Figure 13
Impact of Year 1 Rate Increase on Foster Farms



Section 3: WASTEWATER RATE STUDY

The wastewater rate study was prepared using the principles established by the Water Environment Federation Manual of Practice No. 27 and guidelines prepared by the California State Water Resources Control Board for State Revolving Fund financing. This study uses the functional cost allocation methodology to determine rates[3].

The following four steps outline how wastewater rates are calculated such that the monthly wastewater rates meet California's legal requirements.

1. **Establish the Wastewater Customer Base and User Characteristics** – Wastewater flow and strength data for each customer type is based on City flow measurements and industry standards.

2. **Project the Revenue Requirement and Allocate to Collection and Treatment** – The revenue requirement analysis compares the revenues of the utility to its operating and capital costs to determine the adequacy of existing rates to recover the utility's costs. Components of revenue requirement include capital improvement costs, system rehabilitation costs, operations and maintenance costs, debt service costs, and operating reserve costs. Non-rate revenue credited against the projected costs include interest income, fines and forfeits, and miscellaneous revenues.

3. **Allocate Revenue Requirement based on Flow and Strength and Determine Unit Costs** – The revenue requirement is allocated based on flow and strength depending on the percentage distribution of operations and maintenance operations attributed to flow, biological oxygen demand (BOD),[4] and total suspended solids (SS).[5] Per unit revenue requirement for each projected year is determined by dividing the allocated revenue requirement by the demand for each customer type.

4. **Determine Revenue Requirement by Customer Type** – Per unit costs from step 3 are multiplied by the flow and strength characteristics of each customer category to determine the annual cost by customer type.

3.1 THE WASTEWATER FUND AND ITS CUSTOMERS

3.1.1 Revenues.

The wastewater system is funded through monthly charges, fees, and investment earnings. The existing wastewater rate schedule of monthly charges is shown in **Table 14**.

[3] Chapter 6, pages 110-120, Financing and Charges for Wastewater Systems, Manual of Practice No. 27.
[4] BOD demand is the amount of dissolved oxygen needed by aerobic biological organisms in a body of water to break down organic material present in a given water sample at certain temperature over a specific time period. The term also refers to a chemical procedure for determining this amount.
[5] Total SS is a measure of the combined content of all inorganic and organic substances contained in a liquid in molecular, ionized or micro-granular (colloidal sol) suspended form.

Table 14
Current Wastewater Rates Schedule

Customer Category		Monthly Rates
Flat Monthly Charges		
Residential Inside City	per unit	$43.84
Residential Outside City	per unit	$65.76
Churches/Temples/Comm. Ctrs	per account	$42.28
Schools (with Cafeteria)	per student	$1.46
Hotel / Motel	per room	$17.22
Flat and Variable Monthly Charges		
Industrial Flat Charge	per account	$43.84
Commercial Flat Charge	per account	$43.84
Industrial Variable Charge [1]	per gallon	$0.010417
Commercial Variable Charge [2]	per gallon	$0.003837

Source: HEC. curr

[1] Charge applied to the first 95% of total water use per month.

[2] Charge applied to the first 70% of total water use per month.

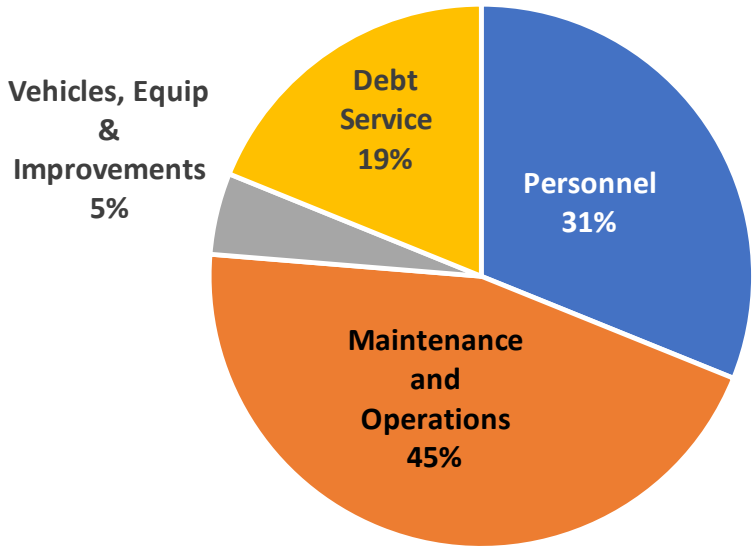
Flat monthly charges are paid by residential, church/temple/community center, school and hotel/motel customers. Industrial and commercial customers pay a flat monthly charge plus a use charge. The use charge is applied to water meter monthly readings multiplied by 95% for industrial customers, and 70% for commercial customers. The use charges are applied to a reduced water use to account for applications of water that do not enter the wastewater system.

Flat monthly charges are applied to residential users per unit, to churches/temples/community centers, industrial and commercial customers per account, to schools per student, and to hotels/motels per room.

Wastewater fund revenues for the past three years are provided in **Appendix B Table B-1.**

3.1.2 Expenses.
Monthly wastewater bills pay for operating costs, including personnel costs, debt service, and vehicles, equipment and infrastructure replacement and improvements. **Figure 14** on the next page shows what monthly bills pay for. Wastewater fund expenses for the past three years are provided in **Appendix B Table B-2.**

Figure 14
Wastewater Fund Annual Expenses



For the last three years, the wastewater fund has generated sufficient revenues to pay for the costs of the wastewater system. **Table 15** on the next page shows that revenues are currently approximately $2.31 million per year, while expenses are approximately $1.89 million per year.

Table 15
Historical Wastewater Fund Revenues and Expenses

Revenues and Expenses	Fiscal Year Ending 2017	2018	2019
Revenues			
Intergovernmental	$0	$13,230	($3,035)
Charges for Services	$2,038,750	$2,078,675	$2,198,789
Fines & Forfeits	$24,803	$28,702	$22,417
Return on Use of Money/Property	$16,694	$20,976	$22,119
Miscellaneous	$10,988	$41,847	$66,466
Total Revenues	**$2,091,235**	**$2,183,429**	**$2,306,757**
Expenses			
Personnel	$422,346	$543,621	$630,284
Supplies	$978,618	$618,001	$711,411
Maintenance and Operations	$3,856	$2,741	$2,458
Vehicles, Equip & Improvements	$42,348	$64,278	$142,046
Debt Service	$247,046	$271,950	$448,450
Total Expenses	**$1,694,213**	**$1,500,591**	**$1,934,649**
Net Revenue	**$397,022**	**$682,838**	**$372,108**

Source: City of Livingston financials, provided November 2019. net

RATE METHODOLOGY STEP 1

Establish the Wastewater Customer Base and User Characteristics
Figure 15 on the next page shows the percentage of wastewater customers by customer category. Residential customers comprise 96% of the wastewater system customer base. Commercial, light industrial and other customers (such as churches and schools) comprise the remaining 4% of the customer base. The current number of wastewater accounts by customer category is provided in **Appendix B Table B-3**.

The wastewater customers generate, on average, 1.12 million gallons per day in flow that is treated at the wastewater treatment plant. Flow is reasonably steady from year to year, growing with increased number of customers. Historical wastewater plant influent flow is shown in **Appendix B Table B-4**.

Figure 16 on the next page shows wastewater flows to the treatment plant for the last three years. Wastewater flows fluctuate from year to year with changes to the customer base and quantity of water consumed (that is not applied to landscapes).

Figure 15
Wastewater Customers by Category

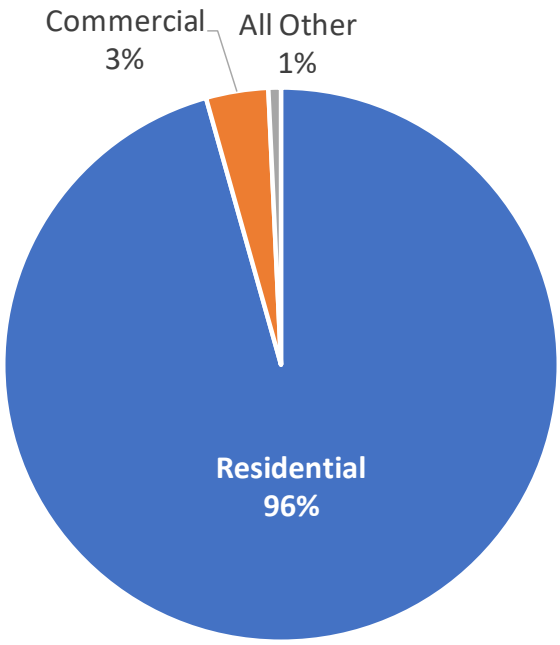
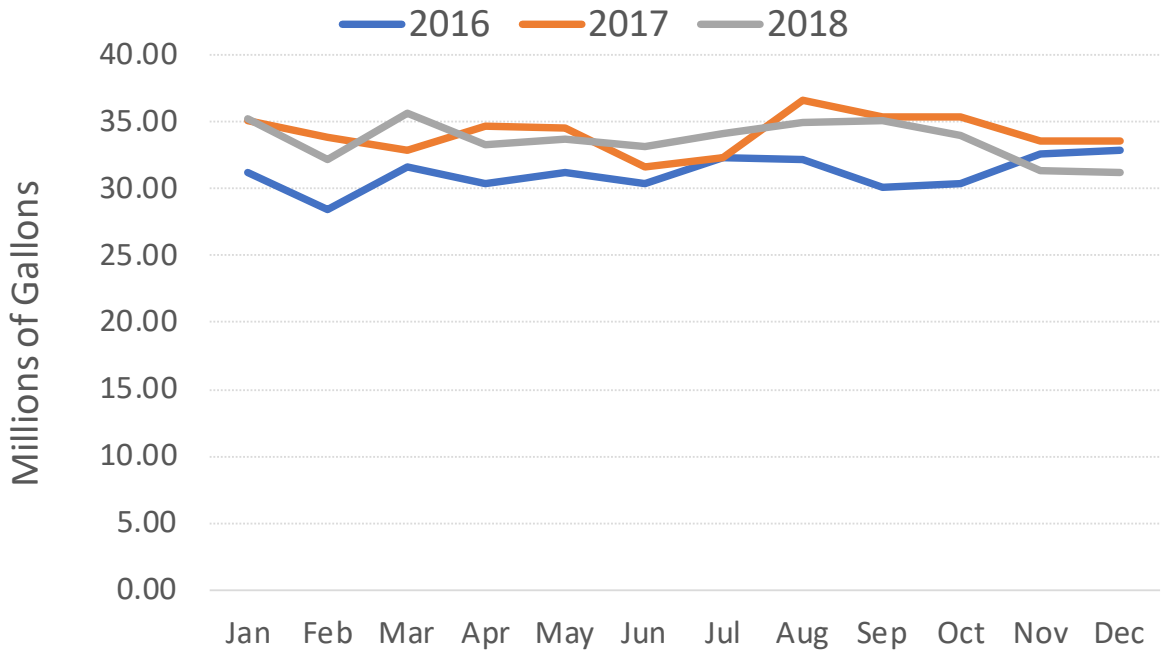


Figure 16
Wastewater Flow for the Last Three Years



The rate study allocates wastewater system costs to customer groups based on their user characteristics. The current number of wastewater customers and total calculated flow for each customer and customer category, BOD, and SS characteristics are summarized in **Table 16** on the following page.

About 80% of total annual flow is generated by residential customers and 20% by non-residential customers. Residential customers generated approximately 70% of the BOD and SS treated annually at the wastewater treatment plant. Generally, non-residential customers generate dirtier wastewater that requires greater costs to clean.

3.2 REVENUE REQUIREMENT

RATE METHODOLOGY STEP 2

Project the Revenue Requirement and Allocate to Collection and Treatment Costs
The revenue requirement is the amount to be raised by wastewater charges. The projection of the revenue requirement is the cornerstone for calculation of rates. This section explains the derivation of the revenue requirement for this Study.

Components of the revenue requirement include:

- Operating Expenses
- Capital Improvement and Debt Service
- System Rehabilitation

Non-wastewater sales revenue projections are credited against projected operations costs. Non-wastewater sales include interest income, fines and forfeits, and other miscellaneous revenues.

3.2.1 Operations Expenses

Operating expenses are projected based on fiscal year 2019 actual expenditures. Operating expenses include annual costs for personnel (including benefits), professional and contract services, treatment plant operations and maintenance, collection system and other wastewater facilities operations and maintenance, utilities, facilities equipment and other costs, and tools, subscriptions, and supplies. Operating expenses totaled $1.34 million in fiscal year 2019. The rate study increases each of the operating cost categories over the next five years in anticipation of cost increases.

Personnel costs are increased 6.0% per year, utilities at 4.0% per year, and other costs between 2.5% and 3.5% per year.

3.2.2 Capital Improvements and Debt Service

Anticipated capital improvement expenses over the next five years include upgrades of the biosolids dewatering equipment at the treatment plant, as well as replacement of the SCADA tower. The collection system improvements include lift station rehabilitation, sewer line replacement, and vehicles. The CIP was provided in 2019 dollars (see **Appendix Table B-5**) and inflated to future dollars as shown in **Table 17.**

Table 16
Wastewater User Characteristics

Customer Category	Billing Basis	No. Billing Units	Wastewater Characteristics: Flow GPD	BOD MG/L	SS MG/L	Treatment Capacity/Load: Avg. Day Dry Weather Flow (MGD)	BOD Lbs/Day	SS Lbs/Day	Annual Capacity/Load: Flow MG	BOD Lbs/Year	SS Lbs/Year
		(A)	*(B)*	*(C)*	*(D)*	*(E)=(A)x(B)/1000000*	*(F)= (C)x(E)x8.34*	*(G)= (D)x(E)x8.34*	*(H)=(E)x365*	*(I)=(C)x(H)x8.34*	*(J)=(D)x(H)x8.34*
Residential											
Detached	Unit	3,116	250	250	250	0.78	1,624.22	1,624.22	284.3	592,838	592,838
Attached	Unit	576	220	250	250	0.13	264.21	264.21	46.3	96,437	96,437
Non-Residential											
Churches/Temples/Comm. Ctrs.	Account	16	285	155	170	0.00	5.89	6.47	1.7	2,152	2,360
Schools (with cafeteria)	Student	3,707	20	230	165	0.07	142.22	102.02	13.3	25,599	18,364
Hotel/Motel	Room	93	100	350	500	0.01	27.15	38.78	3.4	9,909	14,155
Light Industrial	Account	1	24,000	1,000	800	0.02	200.16	160.13	8.8	73,058	58,447
Commercial	Account	119	850	525	650	0.10	442.89	548.33	36.9	161,653	200,142
TOTAL						**1.12**	**2,706.73**	**2,744.16**	**394.7**	**961,646**	**982,743**

Source: City of Livingston May 2019, and HEC.

char

Table 17
Inflated Wastewater CIP

Capital Project	Funding Source	Fiscal Year Ending 2020	2021	2022	2023	2024	2025
Treatment Plant				3.5%			
Biosolids Dewatering Equipment	Rates	$300,000	$207,000	$0	$0	$0	$0
SCADA Tower	Rates	$15,000	$0	$0	$0	$0	$0
Total Treatment Plant		**$315,000**	**$207,000**	**$0**	**$0**	**$0**	**$0**
Collection System							
Lift Station Rehabilitation (Singh & Burgandy)	Rates	$100,000	$103,500	$0	$0	$0	$0
Sewer Line Replacement [1]	Grant	$0	$2,898,000	$0	$0	$0	$0
Additional Sewer Line Replacement	Rates	$0	$0	$214,245	$665,231	$745,890	$831,380
New Disc & Ripper Tractor	Rates	$0	$222,525	$0	$0	$0	$0
New Vac-On Sewer Truck	Rates	$0	$0	$374,929	$0	$0	$0
Total Collection System		**$100,000**	**$3,224,025**	**$589,174**	**$665,231**	**$745,890**	**$831,380**
Total Wastewater System	**$6,677,700**	**$415,000**	**$3,431,025**	**$589,174**	**$665,231**	**$745,890**	**$831,380**
Funded by Grants	$2,898,000	$0	$2,898,000	$0	$0	$0	$0
Funded by Rates	$3,779,700	$415,000	$533,025	$589,174	$665,231	$745,890	$831,380
Funded by Loan	$0	$0	$0	$0	$0	$0	$0

Source: City of Livingston Public Works May 2019. inf cip

[1] The City anticipates that this cost will be funded by a CDBG grant.

Of the total $6.68 million in the CIP, the City anticipates $2.90 million will be funded by a Community Development Block Grant. The remaining $3.78 million would be funded by wastewater rates and the projects would be funded on a pay-as-you-go basis.

No new debt is anticipated to be necessary over the next five years; however, the City does have existing wastewater system debt. The debt was refunded in 2016 with savings to the wastewater customers. The remaining debt payments are provided in **Appendix B Table B-6.** Debt service is about $450,000 per year.

3.2.3 System Rehabilitation

All of the capital improvement plan is for system rehabilitation. As such, there is no additional collection included in the rates for depreciation. The City's current wastewater assets and estimated annual depreciation cost through the study period is provided in **Appendix B Table B-7** (with support **Table B-8**).

The projected revenue requirement is provided in **Table 18.** Included in the projection is an adjustment to allow for variances from year to year for non-residential use as well as delinquencies. The revenue requirement is projected to increase from $1.81 million in fiscal year 2019 to $3.04 million in fiscal year 2025. Currently, the City raises $2.20 million in user fees. The rate study smooths out rate increases each year so that the amount to be collected from rates increases to $2.48 million in 2020 and $3.25 million in 2025.

Table 18
Projected Revenue Requirement for Wastewater

Expenses	inflator	Fiscal Year Ending 2019	2020 Year 1	2021 Year 2	2022 Year 3	2023 Year 4	2024 Year 5	2025 Year 6
Operating Expenses								
Personnel	6.0%	$630,284	$668,101	$708,187	$750,678	$795,719	$843,462	$894,070
Professsional & Contract Services	3.0%	$95,330	$98,190	$101,136	$104,170	$107,295	$110,514	$113,829
Treatment Plant O&M	3.5%	$51,286	$53,081	$54,939	$56,862	$58,852	$60,912	$63,044
Collection & Facilities O&M	3.5%	$53,971	$55,860	$57,815	$59,838	$61,933	$64,100	$66,344
Utilities	4.0%	$239,258	$248,828	$258,781	$269,133	$279,898	$291,094	$302,737
Facilities, Equipment & Other O&M	3.5%	$65,969	$68,278	$70,667	$73,141	$75,701	$78,350	$81,092
Tools, Subscriptions, Supplies	2.5%	$208,055	$213,256	$218,588	$224,052	$229,653	$235,395	$241,280
Total Operating Expenses		**$1,344,153**	**$1,405,594**	**$1,470,113**	**$1,537,874**	**$1,609,051**	**$1,683,827**	**$1,762,396**
Debt Service								
Series 2016A Refunding		$448,450	$451,250	$448,650	$445,850	$447,850	$449,450	$450,650
New Debt Service		$0	$0	$0	$0	$0	$0	$0
Total Debt Service		**$448,450**	**$451,250**	**$448,650**	**$445,850**	**$447,850**	**$449,450**	**$450,650**
System Rehabilitation and New Projects								
Equipment & Vehicle Purchases	constant	$142,046	$50,000	$272,525	$424,929	$50,000	$50,000	$50,000
Cash-Funded Capital Projects			$415,000	$310,500	$214,245	$665,231	$745,890	$831,380
Subtotal System Rehab. And New Projects		**$142,046**	**$465,000**	**$583,025**	**$639,174**	**$715,231**	**$795,890**	**$881,380**
Addition to Operating Reserve			$50,000	$50,000	$50,000	$0	$0	$0
Additional Collection for Depreciation			$0	$0	$0	$0	$0	$0
Total Costs		**$1,934,649**	**$2,371,844**	**$2,551,788**	**$2,672,898**	**$2,772,132**	**$2,929,167**	**$3,094,427**
Fixed	*70%*	*$1,326,037*	*$1,743,292*	*$1,902,616*	*$2,002,402*	*$2,079,585*	*$2,213,814*	*$2,355,488*
Variable	*30%*	*$608,612*	*$628,552*	*$649,172*	*$670,495*	*$692,547*	*$715,353*	*$738,939*
Credits								
Intergovernmental	[1]	($3,035)	$0	$0	$0	$0	$0	$0
Charges for Services	[1]	$16,464	$0	$0	$0	$0	$0	$0
Fines & Forfeits	constant	$22,417	$24,000	$24,000	$24,000	$24,000	$24,000	$24,000
Return on Use of Money	constant	$22,119	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000
Miscellaneous	constant	$66,466	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Total Credits		**$124,431**	**$54,000**	**$54,000**	**$54,000**	**$54,000**	**$54,000**	**$54,000**
Total Revenue Requirement		**$1,810,217**	**$2,317,844**	**$2,497,788**	**$2,618,898**	**$2,718,132**	**$2,875,167**	**$3,040,427**
Adjustment [2]			$161,050	$173,553	$181,969	$188,864	$199,775	$211,258
Estimated Revenue Requirement			**$2,478,894**	**$2,671,341**	**$2,800,866**	**$2,906,995**	**$3,074,942**	**$3,251,684**

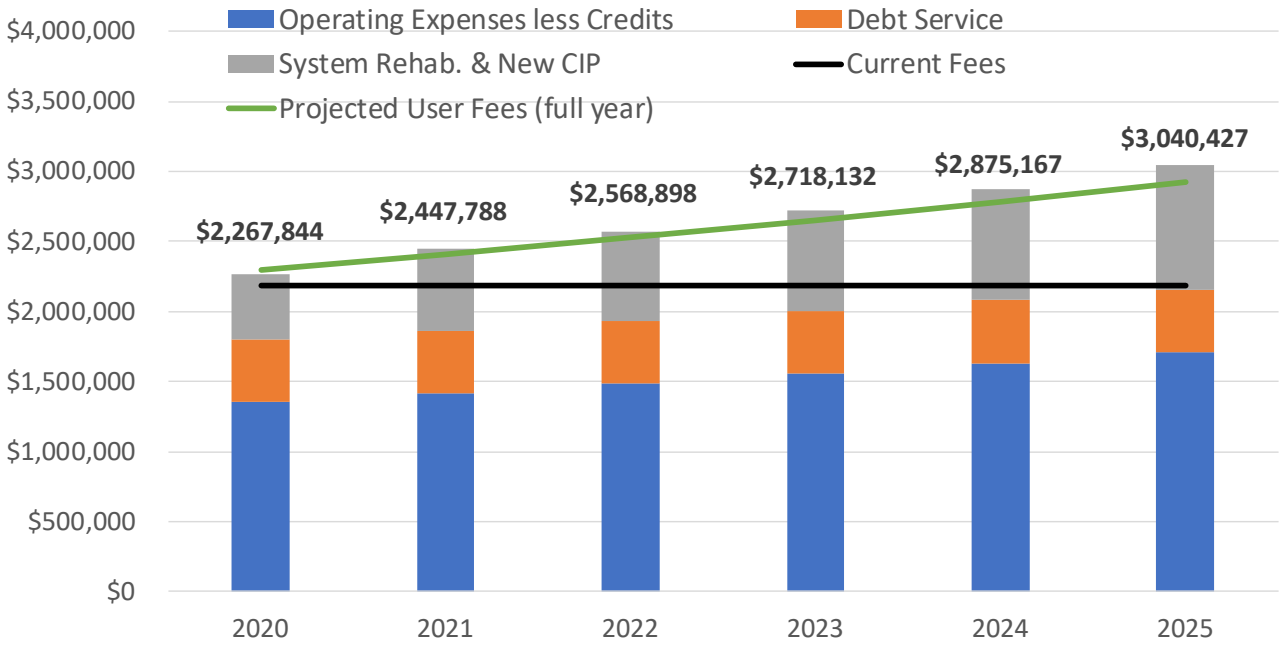
Source: City of Livingston Financials provided September 2019, and HEC. rev req

[1] Infrequent, one-time revenues.

[2] Includes allowance for variancies year to year for non-residential use as well as delinquencies.

Figure 17 on the next page shows the current fee collections, projected fee collections and components of revenue requirement for the next five years.

Figure 17
Projected Revenue Requirement and Fee Collections



3.3 WASTEWATER RATE CALCULATIONS

All of the tables in this section show the calculations for the first year of the analysis, fiscal year 2019-20 to illustrate how the rates are calculated. The same cost allocation methodology is used for all years considered in this analysis.

RATE METHODOLOGY STEP 3

Allocate Revenue Requirement based on Flow and Strength and Determine Unit Costs
The cost to treat wastewater is a function of the total volume ("flow") and the level of pollutants ("strength") of the wastewater discharged by a customer.

Costs are allocated to customer categories as follows:

A. Allocate the costs (by Cost Category) to flow, BOD and SS
B. Determine the Unit Cost by Cost Category

Each of these steps is described in greater detail below.

A. Cost Allocation to Flow, BOD, and SS
Costs are first allocated between treatment and collection functions of the wastewater system, as shown in **Table B-9**. Then, costs are allocated to flow, BOD, and SS based on percentage allocation or distribution factors. These percentage allocation factors are based on the estimated distribution

of the treatment and collection facilities operations and maintenance (O&M) activities between or related to flow, BOD, and SS.

B. Unit Cost by Cost Category

The allocated costs are then divided by total annual capacity from **Table 16**. **Table B-10** in Appendix B shows the calculation of unit costs by cost category for flow, BOD, and SS. Collection costs are strictly related to flow and therefore 100 percent of the collection costs are allocated to flow. The offsetting revenues are allocated by cost category for flow, BOD and SS using the subtotal percentages from the collection and treatment cost allocations.

RATE METHODOLOGY STEP 4

Determine Revenue Requirement by Customer Type

The unit costs determined in **Table B-10** are multiplied by the flow, BOD, or SS for each customer type. These costs are then summed to determine the total costs allocated to each customer type. **Table B-11** in Appendix B shows the cost allocated to flow, BOD, and SS by customer category for fiscal year ending 2020.

Treatment Cost per Thousand Gallons

Total allocated costs to each customer category are shown in **Appendix B Table B-12**. Residential customers are responsible for 80% of the total costs. Commercial customers are responsible for 12% of the cost, and all other customer categories are responsible for 8% of the total cost.

Total treatment cost per thousand gallons is greatest for the highest strength customers (which are in the light industrial customer category) and lowest for churches/temples/community centers, which have the lowest strength wastewater. This is illustrated in **Figure 18**.

Figure 18
Calculated Cost per Thousand Gallons

Table 19 on the following page presents the calculated rates for fiscal year ending 2020. The total allocated costs to each customer category provide the basis for the rates. All residential customers will pay for wastewater on a per unit basis. Schools will pay per student. Hotels/motels will pay monthly rates per room. Commercial wastewater customers will pay a flat monthly charge per account and flow charges based on 70% of their metered potable water use each month. Light industrial users will pay a flat monthly charge per account and flow charges based on 95% of their metered potable water use each month.

Table 20 shows the calculated rates for the next five years. The rates take into account anticipated additional growth within the City (shown in **Appendix B Table B-13**). Since 2014, the City has experienced growth in the number of commercial customers and types of commercial customer. The shift in the customer base, as well as updated cost allocation factors used in the rate calculations, results in calculated fees that are slightly lower than current fees for variable charges for light industrial customers. To smooth out the difference between current and January 2021 rates, the rate study takes the midpoint for light industrial variable rate, and for the residential, light industrial and commercial base rates which would otherwise experience a greater jump between 2020 and 2021.

The proposed schedule of rates shown in **Table 21** increases rates for all customer categories in January 2020.

Table 19
Calculated Rates by Customer Category – Fiscal Year 2020

Customer Category	Billing Basis	No. Billing Units	Allocated Cost	Base	Flow	Annual Cost per Billing Unit			Monthly Cost	
				70%	*30%*	Base	Flow	Total	Base	Use
Residential	Unit	3,692	$1,974,414	$1,382,090	$592,324	$374.35	$160.43	**$534.78**	$44.57	
Non-Residential										
Churches/Temples/Comm. Ctrs.	Account	16	$8,948	$6,264	$2,685	$391.49	$167.78	**$559.28**	$46.61	
Schools (with cafeteria)	Student	3,707	$74,967	$52,477	$22,490	$14.16	$6.07	**$20.22**	$1.69	
Hotel/Motel	Room	93	$24,297	$17,008	$7,289	$182.88	$78.38	**$261.26**	$21.77	
Light Industrial	Account	1	$91,135	$535	$90,600	$534.78		**$534.78**	$44.57	$0.010342
Commercial	Account	119	$305,132	$63,639	$241,493	$534.78		**$534.78**	$44.57	$0.006541
TOTAL			**$2,478,894**	**$1,522,013**	**$956,881**					

Source: 2019 HEC wastewater rate study. calc

Table 20
Calculated Wastewater Rates

Customer Category	Billing Basis	Current	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
	Rates Effective --->		*Jan. 2020*	*Jan. 2021*	*Jan. 2022*	*Jan. 2023*	*Jan. 2024*	*Jan. 2025*
Residential	**per unit**	**$43.84**	**$44.57**	**$48.02**	**$50.35**	**$52.26**	**$55.28**	**$58.46**
Non-Residential								
Churches/Temples/Comm. Ctrs.	per account	$42.28	$46.61	$50.22	$52.66	$54.66	$57.81	$61.14
Schools (with cafeteria)	per student	$1.46	$1.69	$1.82	$1.90	$1.98	$2.09	$2.21
Hotel/Motel	per room	$17.22	$21.77	$23.46	$24.60	$25.53	$27.01	$28.56
Light Industrial (Base)	per account	$43.84	$44.57	$48.02	$50.35	$52.26	$55.28	$58.46
Commercial (Base)	per account	$43.84	$44.57	$48.02	$50.35	$52.26	$55.28	$58.46
Variable Charges for Non-Residential Only								
Light Industrial	per gallon	$0.010417	$0.010342	$0.011145	$0.011686	$0.012129	$0.012829	$0.013567
Commercial	per gallon	$0.003837	$0.006541	$0.007049	$0.007391	$0.007671	$0.008114	$0.008580

Source: 2019 HEC rate study.

sum

Table 21
Proposed Wastewater Rates

Customer Category	Billing Basis	Current	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
		Rates Effective --->	*Jan. 2020*	*Jan. 2021*	*Jan. 2022*	*Jan. 2023*	*Jan. 2024*	*Jan. 2025*
Residential	per unit	**$43.84**	**$45.93**	**$48.02**	**$50.35**	**$52.26**	**$55.28**	**$58.46**
Non-Residential								
Churches/Temples/Comm. Ctrs.	per account	$42.28	$46.61	$50.22	$52.66	$54.66	$57.81	$61.14
Schools (with cafeteria)	per student	$1.46	$1.69	$1.82	$1.90	$1.98	$2.09	$2.21
Hotel/Motel	per room	$17.22	$21.77	$23.46	$24.60	$25.53	$27.01	$28.56
Light Industrial (Base)	per account	$43.84	$45.93	$48.02	$50.35	$52.26	$55.28	$58.46
Commercial (Base)	per account	$43.84	$45.93	$48.02	$50.35	$52.26	$55.28	$58.46
Variable Charges for Non-Residential Only								
Light Industrial [1]	per gallon	$0.010417	$0.010781	$0.011145	$0.011686	$0.012129	$0.012829	$0.013567
Commercial [2]	per gallon	$0.003837	$0.006541	$0.007049	$0.007391	$0.007671	$0.008114	$0.008580

Source: 2019 HEC rate study. summ

[1] Charge applied to the first 95% of total water use per month.

[2] Charge applied to the first 70% of total water use per month.

3.4 CASH FLOW AND FUND BALANCE

The projected cash flow, with revenues that are based on the proposed wastewater rates presented in **Table 21,** is shown in **Table 22.**

Table 22
Projected Cash Flow for the Wastewater Fund

Revenues and Expenses	Fiscal Year Ending 2020	2021	2022	2023	2024	2025
Revenues	***Each fiscal year has 7 months under the 'old' rates and 5 months under the 'new' rates***					
User Fees	$2,266,108	$2,447,159	$2,603,110	$2,755,330	$2,923,501	$3,135,241
Fines & Forfeits	$24,000	$24,000	$24,000	$24,000	$24,000	$24,000
Return on Use of Money	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000
Miscellaneous	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Subtotal Revenues	**$2,320,108**	**$2,501,159**	**$2,657,110**	**$2,809,330**	**$2,977,501**	**$3,189,241**
Operating Expenses	**$1,405,594**	**$1,470,113**	**$1,537,874**	**$1,609,051**	**$1,683,827**	**$1,762,396**
Net Income before Debt Service	**$914,514**	**$1,031,046**	**$1,119,236**	**$1,200,280**	**$1,293,674**	**$1,426,844**
Debt Service	$451,250	$448,650	$445,850	$447,850	$449,450	$450,650
Debt Service Coverage	*2.03*	*2.30*	*2.51*	*2.68*	*2.88*	*3.17*
System Rehabilitation and New Projects	$465,000	$583,025	$639,174	$715,231	$795,890	$881,380
Net Revenue	**($1,736)**	**($629)**	**$34,212**	**$37,199**	**$48,334**	**$94,814**
Beginning Balance [1]	$928,571	$926,835	$926,206	$960,418	$997,617	$1,045,950
Net Revenue	($1,736)	($629)	$34,212	$37,199	$48,334	$94,814
Ending Balance	**$926,835**	**$926,206**	**$960,418**	**$997,617**	**$1,045,950**	**$1,140,764**
Restricted Cash	$451,850	$451,850	$451,850	$451,850	$451,850	$451,850
Est. Ending Unrestricted Cash Balance	**$474,985**	**$474,356**	**$508,568**	**$545,767**	**$594,100**	**$688,914**
Target Ending Balance [2]	**$468,531**	**$490,038**	**$512,625**	**$536,350**	**$561,276**	**$587,465**

Source: City of Livingston September 2019 financials and HEC. flow

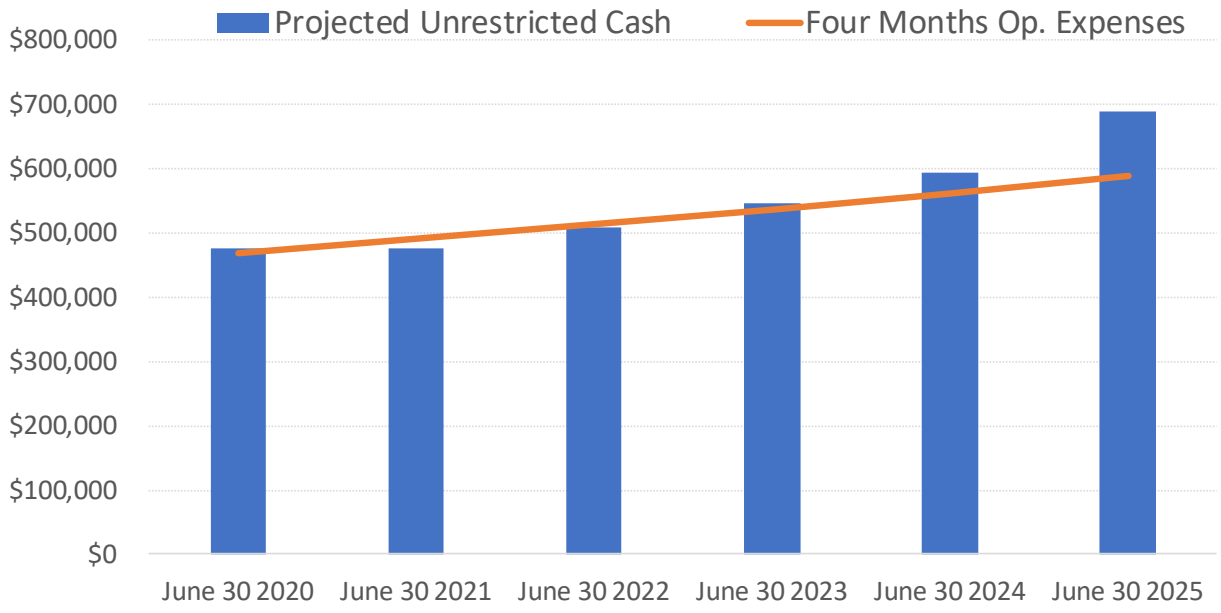
[1] Cash and investments as of July 1, 2019.

[2] Four months of operating expenses.

The projected wastewater fund ending cash balances are shown in **Figure 19** on the next page. Note that although the total cash balance is projected to be greater than illustrated, one year of debt service must be restricted making this cash unavailable for any other purpose.

The target cash balance is four months of operating expenses. If cash accumulation is greater than projected, the City would be able to accelerate sewer main replacements.

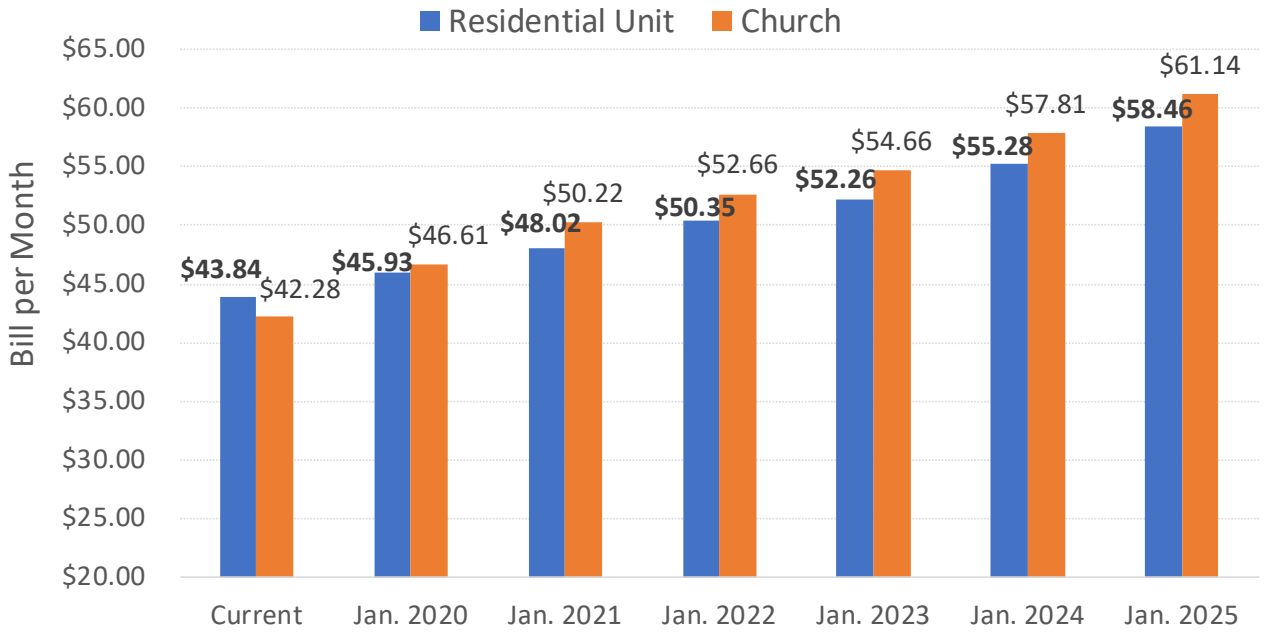
Figure 19
Projected Wastewater Cash Balance



3.5 BILL IMPACTS

Figure 20 illustrates the impact of the new rate schedule on a residential unit and a church. Currently, the monthly rate for churches is a little lower than for a residential unit but in the calculated future rates schedule the monthly charge to a church is greater than the monthly charge to a residential unit. This is because the rate study cost of service analysis assigns greater cost to the churches category in 2019 than it did in 2014. The cost allocation methodology for assigning costs to churches, and all customer categories, was updated following a review of BOD and SS parameters used in fifteen other California communities since 2014.

Figure 20
Bill Impact to a Residential Unit and a Church



Residential monthly wastewater bills are compared in **Figure 21** with other regional wastewater providers. The graph shows that Livingston's monthly wastewater bill for a home is and will remain in the middle of the range with neighboring and regional cities.

3.5.1 Affordability

The SWRCB also administers the California Clean Water SRF (CWSRF) program and evaluates the affordability of wastewater rates on the same two criteria as water rates.

As shown in **Table 23**, under the calculated wastewater rates for January 2020, a household would pay $45.93 each month, which is 1.04 percent of the estimated median household income for Livingston. The proposed wastewater rates are, per the SWRCB definitions, affordable.

Figure 21
Comparison of Monthly Residential Wastewater Bills

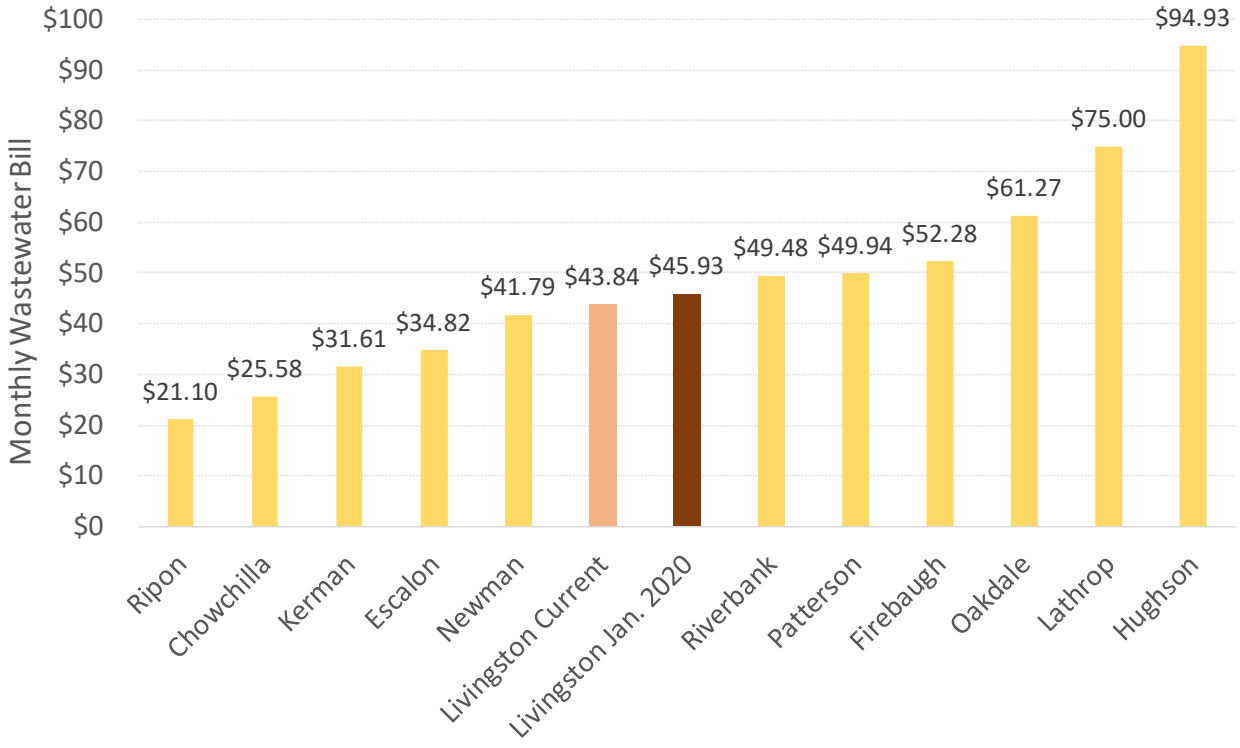


Table 23
Test of Wastewater Bill Affordability

Item	Current Rates	Rates Jan. 2020 [1]
Monthly Water Bill		
Monthly Median Household Income (MHI)	$4,426.25	$4,426.25
Monthly Wastewater Bill	$43.84	$45.93
Average Monthly Bill as Percentage of MHI [2]	**0.99%**	**1.04%**
Median Household Income (MHI)		
Statewide California	$67,169	
Estimated Livingston [3]	$53,115	
Livingston MHI as a percentage of the State MHI [4]	**79.1%**	

Source: HEC, State Water Resources Control Board, and US Census Bureau. aff

[1] Bills must be greater than or equal to 1.5% of MHI to qualify for Disadvantaged principal forgiveness.
[2] Bills that are 1.5% to 2.0% of MHI are considered affordable.
[3] 2017 5-year American Community Survey.
[4] Per SWRCB, community with an MHI <80% of the Statewide MHI is Disadvantaged. For a Disadvantaged Community to qualify for principal forgiveness must exceed 1.5% of the service area MHI.

3.5.2 Non-Residential Bill Impacts

Figure 22 illustrates the annual impact of the January 2020 rate increase to a randomly selected convenience store and a randomly selected hotel. **Figure 23** illustrates the annual impact of the rate increase on the Livingston Middle School and a randomly selected gas station.

Figure 22
Impacts on a Convenience Store and a Hotel

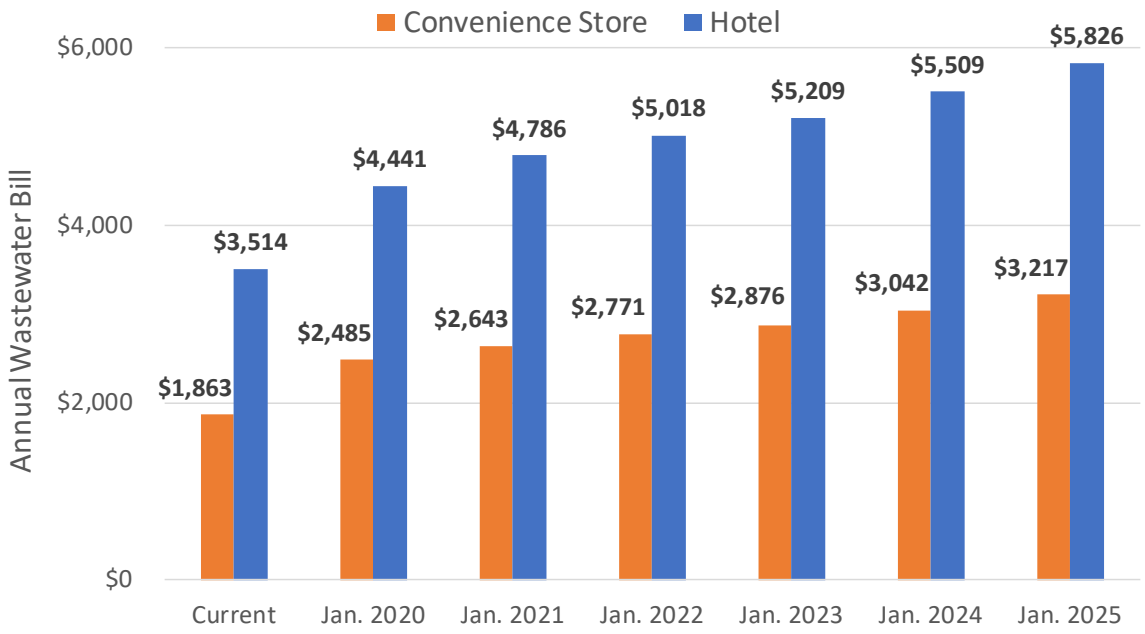
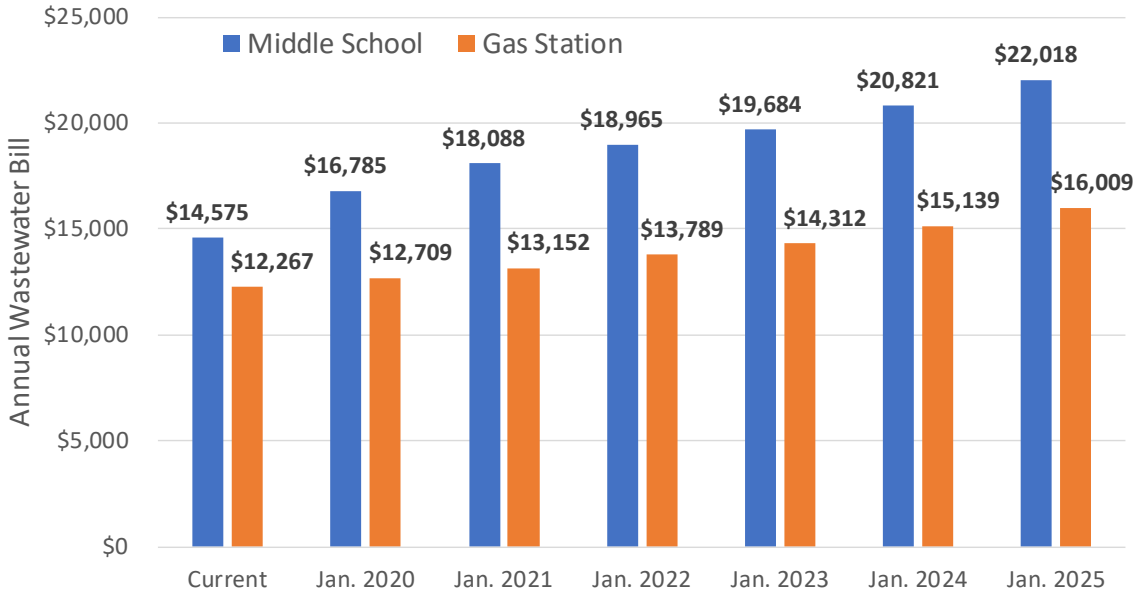


Figure 23
Impacts on a Gas Station and Livingston Middle School



Section 4: SOLID WASTE RATE STUDY

Solid waste service in Livingston is provided by Gilton under an exclusive solid waste collection franchise agreement. The agreement requires solid waste collection at least once a week to all residential customers and more frequently to commercial and industrial customers if needed. The solid waste is disposed at landfills in Merced County.

4.1 THE SOLID WASTE FUND AND ITS CUSTOMERS

The solid waste fund pays for the services provided by Gilton, landfill disposal costs, street sweeping (conducted by City staff, not Gilton), City staff costs to administer and manage both services, and associated City costs.

Historical sanitation fund revenues and expenses are shown in **Table 24**. The fund has been able to cover expenses for each of the past three years. Detail of revenues is provided **Appendix C Table C-1.** Detail of expenses is provided in **Table C-2.**

Table 24
Historical Sanitation Fund Revenues and Expenses

Expenses and Revenues	Fiscal Year Ending		
	2017	**2018**	**2019**
	actual	actual	actual
Revenues			
Intergovernmental	$10,000	$14,702	$1,965
Charges for Services	$1,371,342	$1,386,815	$1,417,249
Fines & Forfeitures	$15,229	$17,733	$15,595
Return on Use of Money/Property	$1,476	$7,549	$10,875
Miscellaneous	$3,487	$10,019	$6,061
Subtotal Revenues	**$1,401,534**	**$1,436,818**	**$1,451,745**
Expenses			
Personnel	$91,307	$180,716	$177,295
Disposal Contract Services	$907,749	$919,518	$997,084
Maintenance & Operations	$97,734	$75,308	$91,808
Vehicles, Equip. Improvements	$788	$3,791	$0
Subtotal Expenses	**$1,097,578**	**$1,179,333**	**$1,266,188**
Net Operating Income	**$303,956**	**$257,485**	**$185,557**

Source: City of Livingston financials November 2019. net

Almost all of the revenues for solid waste provision is generated by monthly user rates. The current rate schedule is shown in **Table 25.** The table shows n/a for services that currently do not have any customers but that Gilton has provided the City a cost for. Current charges for service by Gilton are provided in **Appendix C Table C-3.**

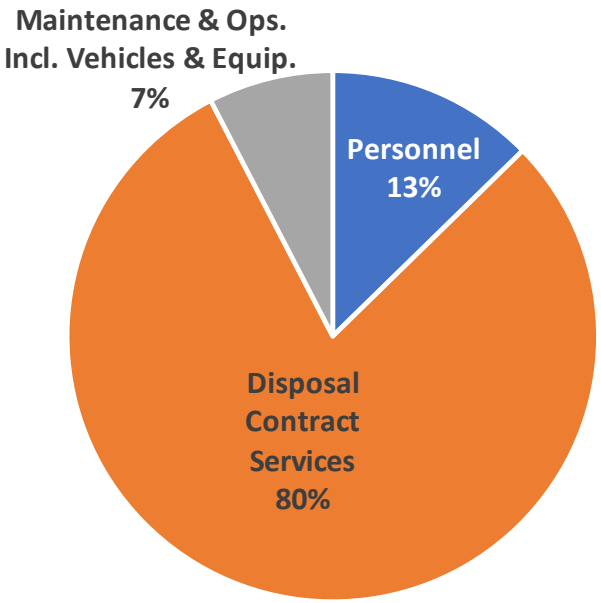
Table 25
Current Sanitation Fund Rates

	Current City Rates				
Collections per Week	x1	x2	x3	x4	x5
Residential					
96 gal. cart	$25.16				
Add'l cart	$5.97				
96 gal. cart greenwaste	$1.33				
Add'l greenwaste cart	$5.97				
Multi-Family & Comm'l					
1 CY	$47.36	$93.90	n/a	n/a	n/a
2 CY	$94.41	$187.14	n/a	n/a	n/a
3 CY	$139.86	$264.56	$398.63	n/a	n/a
4 CY	$179.04	$348.86	$545.64	n/a	n/a
6 CY	$251.71	$490.40	$750.40	n/a	n/a
Commercial - Compacting Bins					
3 CY	n/a	n/a	n/a	n/a	n/a
4 CY	n/a	n/a	n/a	n/a	n/a
Standard Recycle Bins					
4 CY	$71.41	n/a	n/a	n/a	n/a
6 CY	$71.41	n/a	n/a	n/a	n/a

Source: City of Livingston May 2019. now

The majority of sanitation fund annual expenditures are for the disposal contract with Gilton. **Figure 24** shows that 80% of the total sanitation fund expenses for the last three fiscal years were for the Gilton contract.

Figure 24
Typical Annual Sanitation Fund Expenses



The City provides service to more than 3,000 customers of which 97% are single-family or duplex/triplex/four-plex residential. The projection of customer accounts with a 1.5% growth rate through the five-year rate period is provided in **Appendix Table C-4**.

4.2 REVENUE REQUIREMENT

The projected revenue requirement for the solid waste fund is shown in **Table 26.** The revenue requirement is projected to increase from $1.23 million in fiscal year 2019 to $1.83 million by fiscal year ending 2025.

Currently, user fees are greater than the revenue requirement. In fiscal year 2020 the revenue requirement is estimated at $1.35 million, however, user fees were $1.42 million in fiscal year 2019 and are expected to be about the same fiscal year 2020. Due to a sufficiency of cash reserves in the sanitation fund, the solid waste user fees do not need to be increased until January 2021.

The rate calculations are based on the user fee increases shown at the bottom of **Table 26.**

Table 26
Projected Revenue Requirement for the Sanitation Fund

Expenses	Inflator	Fiscal Year Ending 2019	2020 Year 1	2021 Year 2	2022 Year 3	2023 Year 4	2024 Year 5	2025 Year 6
Operating Expenses								
Personnel	6.0%	$177,295	$187,933	$199,209	$211,161	$223,831	$237,261	$251,496
Disposal Contract Service [1]	6.5%	$997,084	$1,061,895	$1,130,918	$1,204,428	$1,282,716	$1,366,092	$1,454,888
Professional Services	3.0%	$26,240	$27,027	$27,838	$28,673	$29,533	$30,419	$31,332
Computer Support Agreement	2.5%	$21,136	$21,665	$22,206	$22,761	$23,331	$23,914	$24,512
Equipment and Repairs	3.5%	$5,050	$5,227	$5,410	$5,599	$5,795	$5,998	$6,208
Insurance	2.5%	$4,831	$4,951	$5,075	$5,202	$5,332	$5,465	$5,602
Supplies and Other	2.5%	$34,608	$35,473	$36,360	$37,269	$38,200	$39,155	$40,134
Subtotal Operating Expenses		**$1,266,244**	**$1,344,170**	**$1,427,015**	**$1,515,093**	**$1,608,738**	**$1,708,304**	**$1,814,172**
Equipment Purchase [2]	3.5%	$0	$40,000	$41,400	$42,849	$44,349	$45,901	$47,507
Estimated Annual Costs		**$1,266,244**	**$1,384,170**	**$1,468,415**	**$1,557,942**	**$1,653,086**	**$1,754,205**	**$1,861,679**
Disposal Contract Service % of Op. Costs		*79%*	*77%*	*77%*	*77%*	*78%*	*78%*	*78%*
Credits								
Intergovernmental	estimate	$1,965	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Fines & Forfeitures	3.0%	$15,595	$16,063	$16,545	$17,042	$17,553	$18,079	$18,622
Return on Use of Money	estimate	$10,875	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Miscellaneous	constant	$6,061	$6,061	$6,061	$6,061	$6,061	$6,061	$6,061
Total Credits		**$34,496**	**$32,125**	**$32,606**	**$33,103**	**$33,614**	**$34,141**	**$34,683**
Total Revenue Requirement		**$1,231,748**	**$1,352,046**	**$1,435,809**	**$1,524,839**	**$1,619,472**	**$1,720,065**	**$1,826,996**
Increase in User Fees		*0.0%*	*3.5%*	*4.0%*	*4.5%*	*5.0%*	*5.0%*	
User Fees		**$1,417,249**	**$1,417,249**	**$1,466,853**	**$1,525,527**	**$1,594,176**	**$1,673,884**	**$1,757,579**

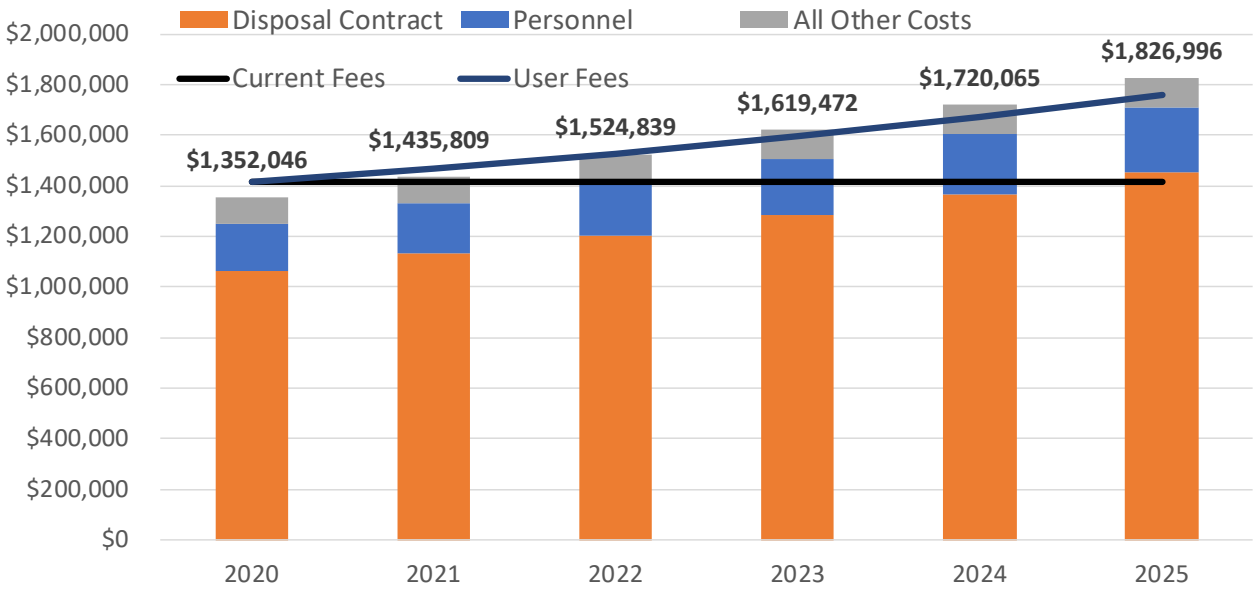
Source: City of Livingston September 2019 and HEC. rev req

[1] The disposal contract will increase 3.5% fiscal year 19/20 (per Gilton's request as allowed by contract) for inflation; the model increases costs 6.5% per year to account for inflation, increased Merced County Regional Solid Waste Management Authority costs, and growth in number of customers.

[2] Estimate based on replacement of a street sweeper every five years as well as $5,000 each year for various equipment needs.

Figure 25 on the following page illustrates the components of revenue requirement in the study period, the amount estimated to be collected in user fees, and the amount currently collected in user fees.

Figure 25
Projected Revenue Requirement and Fee Collections



4.3 SOLID WASTE RATE CALCULATIONS

The cost of service to each customer group is what the Gilton contract cost is plus additional City costs to provide sanitation and street sweeping services. Gilton contract costs are about 80% of total operating costs; however, the City should be collecting annually for capital costs such as replacement of street sweepers and specialized equipment. After accounting for capital replacement and upgrade costs, Gilton rates are about 77% of total annual costs.

The rate calculations are based on total user fees to be raised each year to provide revenue sufficiency for the sanitation fund. The calculated rates are shown in **Table 27**. These rates were calculated based on the Gilton rates plus the City's service costs. The calculated rates are lower than current rates because the City is currently collecting more in revenue than necessary to pay for the Gilton contract and City costs.

Rather than lower the rates, which runs the risk of insufficient revenue collection in future years, the rates are frozen January 2020 and then gradually increased each year. Under this schedule of rates, as shown in **Table 28** on page 58, the City would draw down on reserves to meet the requirements of SB 1383.

Table 27
Calculated Fiscal Year 2019/20 Rates

	Calculated Rates				
Collections per Week	x1	x2	x3	x4	x5
Residential	***Gilton Contract as % of Total 77%***				
96 gal. cart	$22.14				
Add'l cart	$5.84				
96 gal. cart greenwaste	$1.17				
Add'l greenwaste cart	$5.84				
Multi-Family & Comm'l					
1 CY	$41.69	$82.65	$123.48	$164.40	$205.31
2 CY	$83.09	$164.70	$248.32	$330.61	$412.87
3 CY	$123.10	$232.84	$350.86	$461.65	$561.64
4 CY	$157.57	$307.05	$480.22	$587.19	$703.52
6 CY	$221.55	$431.62	$660.44	$823.48	$1,036.58
Organics Bin (New)	$232.52	$453.06			
Commercial - Compacting Bins					
3 CY	$428.09	$825.01	$1,651.69	$1,651.69	$2,064.60
4 CY	$543.00	$1,039.44	$2,202.23	$2,202.23	$2,752.82
Standard Recycle Bins					
4 CY	$62.84	$125.69	$251.40	$251.40	$314.23
6 CY	$62.84	$125.69	$251.40	$251.40	$314.23

Source: City of Livingston and HEC November 2019. new

A new service is included in the rate schedule for organics bins. The organics bins will be provided by Gilton to commercial and multi-family customers primarily for food waste services, which is a requirement of Senate Bill (SB) 1383.

Table 28
Five-Year Schedule of Solid Waste Rates

Service Type	Current	Fiscal Year Ending					
		2020	2021	2022	2023	2024	2025
New Rates Effective --->		*Jan. 2020*	*Jan. 2021*	*Jan. 2022*	*Jan. 2023*	*Jan. 2024*	*Jan. 2025*
Rate Increase --->		*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
Rates do not include charges for special services that are scheduled between the customer and provider such as off schedule pick up, container maintenance, and delivery charges.							
SINGLE FAMILY RESIDENTIAL				***Once per week pickup***			
96 gal. cart	$25.16	$23.25	$24.41	$25.63	$26.91	$28.26	$29.67
Add'l cart	$5.97	$6.14	$6.44	$6.77	$7.10	$7.46	$7.83
96 gal. cart greenwaste	$1.33	$1.23	$1.29	$1.35	$1.42	$1.49	$1.57
Add'l greenwaste cart	$5.97	$6.14	$6.44	$6.77	$7.10	$7.46	$7.83
MULTI-FAMILY & COMMERCIAL				***Once per week pickup***			
1 cubic yard container	$47.36	$43.77	$45.96	$48.26	$50.67	$53.21	$55.87
2 cubic yards container	$94.41	$87.25	$91.61	$96.19	$101.00	$106.05	$111.35
3 cubic yards container	$139.86	$129.26	$135.72	$142.51	$149.63	$157.12	$164.97
4 cubic yards container	$179.04	$165.45	$173.72	$182.41	$191.53	$201.11	$211.16
6 cubic yards container	$251.71	$232.62	$244.25	$256.47	$269.29	$282.75	$296.89
Organics Bin (New)		$65.99	$69.29	$72.75	$76.39	$80.21	$84.22
Recycle Bins							
4 & 6 cubic yard containers	$71.41	$65.99	$69.29	$72.75	$76.39	$80.21	$84.22
Commercial Compacting							
3 cubic yards container	n/a	$449.50	$471.97	$495.57	$520.35	$546.36	$573.68
4 cubic yards container	n/a	$570.15	$598.66	$628.59	$660.02	$693.02	$727.67
MULTI-FAMILY & COMMERCIAL				***Twice per week pickup***			
1 cubic yard container	$93.90	$103.52	$108.70	$114.14	$119.84	$125.83	$132.13
2 cubic yards container	$187.14	$206.32	$216.64	$227.47	$238.84	$250.79	$263.32
3 cubic yards container	$264.56	$291.68	$306.26	$321.57	$337.65	$354.54	$372.26
4 cubic yards container	$348.86	$384.62	$403.85	$424.04	$445.24	$467.51	$490.88
6 cubic yards container	$490.40	$540.67	$567.70	$596.08	$625.89	$657.18	$690.04
Organic Bins (New)	n/a	$131.97	$138.57	$145.50	$152.77	$160.41	$168.43
Recycle Bins							
4 & 6 cubic yard containers	n/a	$131.97	$138.57	$145.50	$152.77	$160.41	$168.43
Commercial Compacting							
3 cubic yards container	n/a	$866.26	$909.58	$955.06	$1,002.81	$1,052.95	$1,105.60
4 cubic yards container	n/a	$1,091.41	$1,145.98	$1,203.28	$1,263.45	$1,326.62	$1,392.95
MULTI-FAMILY & COMMERCIAL				***Three times per week pickup***			
1 cubic yard container	n/a	$147.32	$154.69	$162.42	$170.54	$179.07	$188.02
2 cubic yards container	n/a	$296.27	$311.08	$326.64	$342.97	$360.12	$378.12
3 cubic yards container	$398.63	$439.49	$461.46	$484.54	$508.76	$534.20	$560.91
4 cubic yards container	$545.64	$601.57	$631.65	$663.23	$696.39	$731.21	$767.77
6 cubic yards container	$750.40	$827.32	$868.68	$912.12	$957.72	$1,005.61	$1,055.89
Recycle Bins							
4 & 6 cubic yard containers	n/a	$263.97	$277.17	$291.03	$305.58	$320.86	$336.90
Commercial Compacting							
3 cubic yards container	n/a	$1,734.27	$1,820.99	$1,912.04	$2,007.64	$2,108.02	$2,213.42
4 cubic yards container	n/a	$2,312.35	$2,427.96	$2,549.36	$2,676.83	$2,810.67	$2,951.20

Source: City of Livingston and HEC. sum

Table 29 shows the amount of revenue estimated to be generated by each customer group in fiscal year 2019/20 with current rates frozen. The total revenue estimate is slightly lower than actually realized in fiscal year 2019 because approximately $125,000 is collected not from monthly rates but from additional services that are specially requested by customers such as off-schedule pickups.

Table 29
Estimated Revenue Fiscal Year 2019/20

Customer	% of Revenue	Total Revenue	Projected Revenue in FY 2020 x1	x2	x3
Residential					
96 gal. cart	72.02%	$930,517	$930,517		
Add'l cart	1.57%	$20,346	$20,346		
96 gal. cart greenwaste	3.77%	$48,758	$48,758		
Add'l greenwaste cart	0.04%	$501	$501		
Multi-Family & Comm'l					
1 CY	0.31%	$3,978	$3,978	$0	$0
2 CY	2.54%	$32,835	$30,589	$2,246	$0
3 CY	2.67%	$34,517	$21,818	$12,699	$0
4 CY	9.25%	$119,498	$36,524	$50,236	$32,738
6 CY	7.83%	$101,121	$21,144	$52,963	$27,014
TOTAL	**100.00%**	**$1,292,072**	**$1,114,176**	**$118,144**	**$59,753**

Source: City of Livingston and HEC November 2019. 2020

Table 30 on the next page shows total revenue estimated through the five-year period. Due to estimated growth in number of customers, revenue generation is greater than required in **Table 26**. While customers will be required to use the organics bins, the number of customers in this rate category is not known at this time; therefore, no revenue from this category has been included in the projection.

Table 30
Projected Sanitation Fund Revenue

Customer Type	2019	Annual Revenue with Growth in Number of Services					
		2020	2021	2022	2023	2024	2025
Residential							
96 gal. cart	$930,517	$930,517	$977,532	$1,031,883	$1,094,492	$1,166,455	$1,243,149
Add'l cart	$20,346	$20,346	$21,374	$22,562	$23,931	$25,505	$27,181
96 gal. cart greenwaste	$48,758	$48,758	$51,221	$54,069	$57,350	$61,121	$65,139
Add'l greenwaste cart	$501	$501	$527	$556	$590	$629	$670
Multi-Family & Comm'l - 1x / Week							
1 CY	$3,978	$3,978	$4,179	$4,412	$4,679	$4,987	$5,315
2 CY	$30,589	$30,589	$32,134	$33,921	$35,979	$38,345	$40,866
3 CY	$21,818	$21,818	$22,921	$24,195	$25,663	$27,350	$29,149
4 CY	$36,524	$36,524	$38,370	$40,503	$42,960	$45,785	$48,795
6 CY	$21,144	$21,144	$22,212	$23,447	$24,870	$26,505	$28,247
Multi-Family & Comm'l - 2x/Week							
1 CY	$0	$0	$0	$0	$0	$0	$0
2 CY	$2,246	$2,246	$2,359	$2,490	$2,641	$2,815	$3,000
3 CY	$12,699	$12,699	$13,340	$14,082	$14,937	$15,919	$16,965
4 CY	$50,236	$50,236	$52,774	$55,708	$59,088	$62,973	$67,114
6 CY	$52,963	$52,963	$55,639	$58,733	$62,296	$66,392	$70,758
Multi-Family & Comm'l - 3x/Week							
1 CY	$0	$0	$0	$0	$0	$0	$0
2 CY	$0	$0	$0	$0	$0	$0	$0
3 CY	$0	$0	$0	$0	$0	$0	$0
4 CY	$32,738	$32,738	$34,393	$36,305	$38,508	$41,039	$43,738
6 CY	$27,014	$27,014	$28,379	$29,957	$31,775	$33,864	$36,091
TOTAL	**$1,292,072**	**$1,292,072**	**$1,357,354**	**$1,432,823**	**$1,519,759**	**$1,619,683**	**$1,726,178**
Other Services [1]	$125,177	$125,177	$131,502	$138,813	$147,236	$156,917	$167,234
Total Estimated Revenue	**$1,417,249**	**$1,417,249**	**$1,488,856**	**$1,571,636**	**$1,666,995**	**$1,776,600**	**$1,893,411**

Source: City of Livingston and HEC May 2019. rev proj

[1] Includes off schedule pick up, container maintenance, and delivery charges

4.4 CASH FLOW AND FUND BALANCE

The projected sanitation fund cash flow is provided in **Table 31.** It is projected that the City could fund all anticipated operations costs and new costs associated with SB 1383 while maintaining at least four months of operating expenses in the fund. Included in the cost projection is $100,000 per year in 2019 dollars to pay for the anticipated costs of implementing SB 1383. Anticipated costs include legal, education, outreach, software, enforcement and inspection costs. It is likely that the City will need to hire a recycling coordinator. Until the State has issued all the requirements of compliance this should be considered a "best estimate" of SB 1383 compliance costs.

Table 31
Sanitation Fund Projected Cash Flow

Revenues and Expenses	Fiscal Year Ending					
	2020	**2021**	**2022**	**2023**	**2024**	**2025**
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Operating Revenues						
User Fees	$1,417,249	$1,447,085	$1,523,347	$1,611,369	$1,712,664	$1,825,271
Intergovernmental	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Fines & Forfeitures	$16,063	$16,545	$17,042	$17,553	$18,079	$18,622
Return on Use of Money	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Miscellaneous	$6,061	$6,061	$6,061	$6,061	$6,061	$6,061
Total Operating Revenues	**$1,449,374**	**$1,479,692**	**$1,556,450**	**$1,644,983**	**$1,746,804**	**$1,859,954**
Operating Expenses						
Contract Disposal Service	$1,061,895	$1,130,918	$1,204,428	$1,282,716	$1,366,092	$1,454,888
All Other	$273,046	$286,361	$300,393	$315,183	$330,773	$347,210
Total Operating Expenses	**$1,334,941**	**$1,417,279**	**$1,504,821**	**$1,597,898**	**$1,696,865**	**$1,802,098**
Equipment Purchase	$40,000	$41,400	$42,849	$44,349	$45,901	$47,507
Net Revenues (Deficit)	**$74,433**	**$21,013**	**$8,781**	**$2,736**	**$4,038**	**$10,349**
Beginning Cash Balance [1]	$1,043,552	$1,117,985	$1,035,998	$938,173	$830,573	$720,414
Net Revenues (Deficit)	$74,433	$21,013	$8,781	$2,736	$4,038	$10,349
Enhanced Services [2]		($103,000)	($106,605)	($110,336)	($114,198)	($118,195)
Ending Cash Balance	**$1,117,985**	**$1,035,998**	**$938,173**	**$830,573**	**$720,414**	**$612,567**
Target Minimum Cash [3]	$444,980	$472,426	$501,607	$532,633	$565,622	$600,699

Source: City of Livingston September 2019and HEC. flow

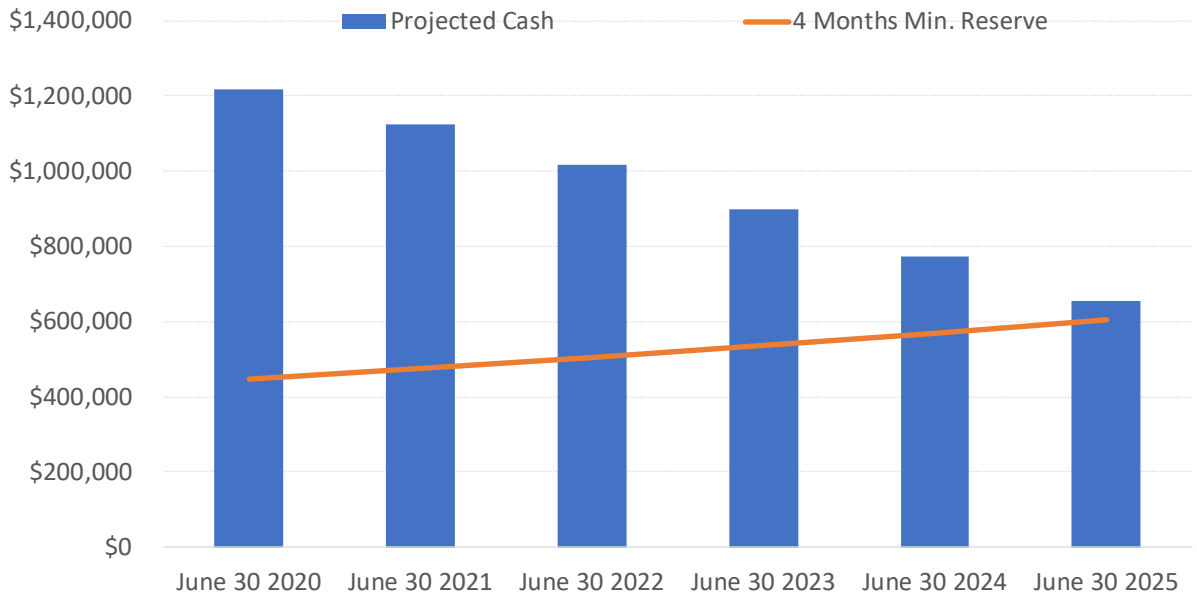
[1] Cash and cash equivalents; not necessarily the same as fund balance.

[2] Enhanced services costs increased 3.5% per year.

[2] Target minimum cash is 4 months of expenditures.

The projected ending fiscal year cash balances are illustrated in **Figure 26** on the next page.

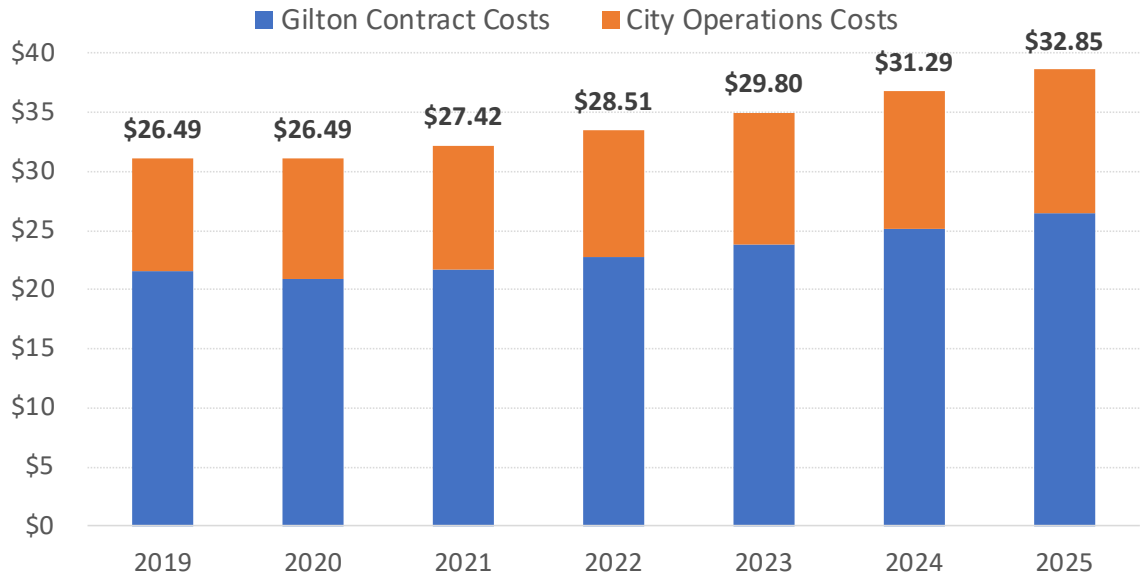
Figure 26
Projected Cash Flow and Fund Balance



4.5 BILL IMPACTS

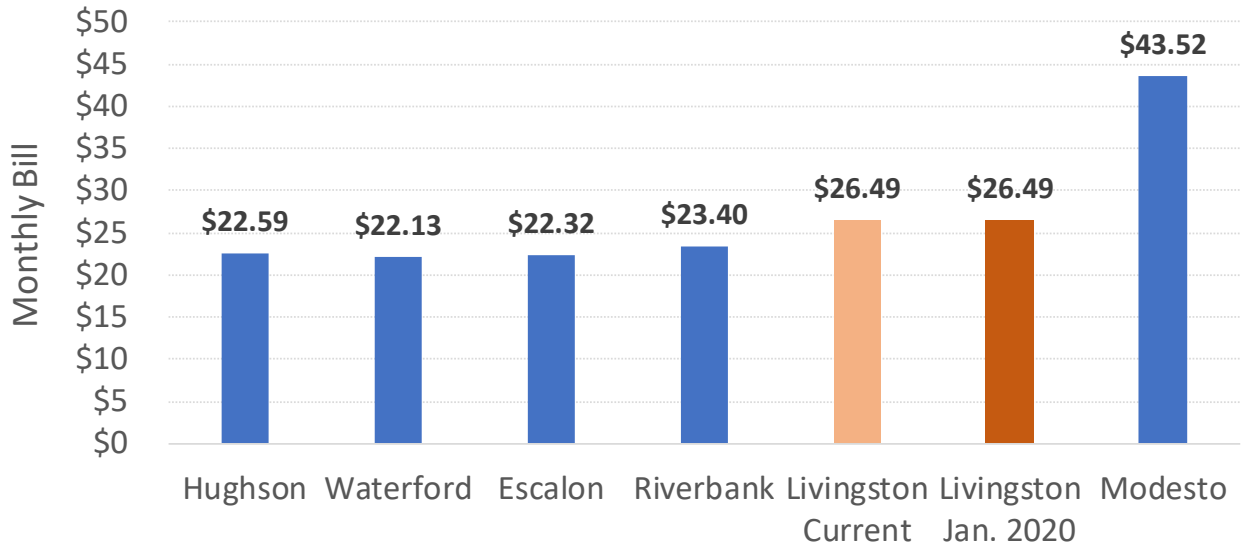
The projected five-year bill impacts for a single family home are shown in **Figure 27.** The monthly sanitation bill would increase from $26.49 to $32.85 over the five-year period.

Figure 27
Single Family Home Projected Bill Impact



In **Figure 28**, Livingston's two-can monthly rate is compared with Modesto, Riverbank, Escalon, Waterford, and Hughson, all of which contract with Gilton for service provision. The rates for all comparison communities include two cans (one for recycle items) although not all can sizes are the same and additional cans cost more in most other communities than in Livingston.

Figure 28
Comparison of Single Family Solid Waste Monthly Bills



APPENDIX A

WATER RATE STUDY

SUPPORT TABLES

Table A-1
City of Livingston 2019 Water Rates Update
Historical Water Fund Revenues **DRAFT**

Revenues	Fiscal Year Ending		
	2017	**2018**	**2019**
	actual	actual	actual
Intergovernmental Revenue	$0	$68,868	($3,035)
Charges for Services			
User Fees	$3,305,476	$3,360,495	$3,592,366
Connection Fees	$0	$25	$0
Meter Installation	$0	$75,563	$51,718
Meter Replacement Fees	$142,204	$148,077	$158,192
Subtotal Charges for Services	**$3,447,680**	**$3,584,161**	**$3,802,276**
Fines & Forfeitures	$21,204	$37,322	$17,980
Interest Income	$4,427	$26,788	$48,768
Miscellaneous Revenue	$10,916	$19,794	$7,959
Total Revenues	**$3,484,226**	**$3,736,933**	**$3,873,948**

Source: City of Livingston financials provided September 2019. revs

Table A-2
City of Livingston 2019 Water Rates Update
Historical Water Fund Expenses **DRAFT**

Expenses	Fiscal Year Ending 2017 actual	2018 actual	2019 actual
Personnel			
Salaries	$302,942	$348,123	$399,090
Benefits	$131,034	$326,910	$324,283
Medical	$0	$99	$0
Uniforms	$2,641	$3,956	$2,725
Subtotal Personnel	**$436,617**	**$679,088**	**$726,097**
Maintenance and Operations			
Professional Services	$67,097	$12,795	$9,632
Contract Services	$137,619	$117,483	$110,320
Reg. Tuition Training	$1,521	$1,503	$3,200
City Audit	$7,501	$7,600	$7,600
Computer Support Agreements	$24,764	$38,631	$28,947
Water Storage Tanks O&M	$0	$7,940	$3,348
Water Wells O&M	$330,266	$140,513	$284,608
Distribution O&M	$60,431	$33,708	$60,746
Utilities	$556,957	$600,424	$560,431
Vehicle O&M	$18,623	$35,258	$19,981
Equipment O&M	$5,625	$3,962	$6,855
Facilities O&M	$7,427	$3,306	$5,977
Insurance	$40,569	$36,274	$36,682
CommCell Phones	$5,368	$8,175	$6,638
Advertisement	$1,374	$1,073	$2,786
Printing	$3,246	$3,212	$3,375
Bank Service Fees	$5,176	$6,467	$7,496
Travel	$1,966	$992	$3,166
Small Tools & Equip.	$6,300	$11,411	$8,953
Office Supplies	$3,220	$2,540	$2,679
Postage	$8,453	$7,627	$8,105
Miscellaneous	$1,178	$1,270	($8,272)
Books/Subscriptions	$0	$66	$397
Dues/Memberships	$23,107	$22,549	$19,816
Reimbursements/Refunds	$0	$0	$1,017
SGMA Compliance Contrib.	$0	$0	$0
Water Meter Purchase	$0	$2,858	$0
Water Hydrant Maint.	$288	$0	$0
System Rehabilitation	($8,500)	$0	$0
Subtotal Maintenance and Operations	**$1,309,576**	**$1,107,636**	**$1,194,483**
Projects			
Infrastructure	$0	$0	$72,966
Water Tank Rehab.	$0	$0	$477,935
New Well #8	$0	$0	$10,094
Subtotal Projects	**$0**	**$0**	**$560,996**
Vehicles, Equip. & Improvements			
Equipment Purchase	$34,280	$11,872	$27,130
Vehicle Purchase	$0	$0	$38,229
Meter Replacement	$76,118	$133,057	$36,295
Furniture	$0	$498	$0
Subtotal Vehicles, Equip. & Improvements	**$110,399**	**$145,427**	**$101,655**
Total Expenses excl. Debt Service	**$1,856,591**	**$1,932,151**	**$2,583,231**
Transfers Out	$0	$1,773,333	$0
Debt Service	$11,812	$20,348	$78,778

Source: City of Livingston financials provided September 2019. exps

Table A-3
City of Livingston 2019 Water Rates Update

Historical Consumption **DRAFT**

Year	Water Used
	gallons
2013	2,372,789,000
2014	2,388,570,000
2015	2,101,135,349
2016	2,096,915,212
2017	2,074,911,951
2018	2,254,177,000
Average	**2,214,749,752**
Average last 3 Years	**2,142,001,388**

Source: City of Livingston September 2019. hist use

Table A-4
City of Livingston 2019 Water Rates Update

Well Production

DRAFT

Month	Calendar Year 2016	2017	2018		Annual Average	% Delivery by Month
		All Figures in Gallons				
Jan	149,052,000	160,517,162	149,314,098		152,961,087	7.1%
Feb	134,313,000	132,900,237	139,437,808		135,550,348	6.3%
Mar	160,004,000	157,806,860	142,435,778		153,415,546	7.1%
Apr	174,700,000	144,083,799	165,066,889		161,283,563	7.5%
May	194,107,000	189,298,693	208,602,845		197,336,179	9.2%
Jun	219,983,000	178,863,153	221,974,266		206,940,140	9.6%
Jul	235,689,000	197,205,625	267,180,750		233,358,458	10.9%
Aug	223,396,000	215,617,627	231,995,178		223,669,602	10.4%
Sep	202,670,000	188,491,756	199,879,868		197,013,875	9.2%
Oct	194,270,000	192,171,330	187,961,790		191,467,707	8.9%
Nov	150,548,912	145,490,025	148,353,782		148,130,906	6.9%
Dec	152,557,513	135,045,974	150,523,769		146,042,419	6.8%
Total	**2,191,290,425**	**2,037,492,241**	**2,212,726,821**	***A***	**2,147,169,829**	**100.0%**
Peaking Period (May through October inclusive)				***B***	1,249,785,960	58%
Base Monthly Flow				***C***	149,563,978	
Base Annual Flow				***D = C*12***	**1,794,767,737**	**84%**
Additional Flow				***E = A-D***	**352,402,092**	**16%**

Source: City of Livingston May 2019.

wells

Table A-5
City of Livingston 2019 Water Rates Update
Estimated Water Capital Improvement Plan Costs

DRAFT

Water Project	Funding Source	Fiscal Year Ending 2020 Year 1	2021 Year 2	2022 Year 3	2023 Year 4	2024 Year 5	2025 Year 6
Water CIP Projects							
Well 8 - New Well	Reserves		$1,000,000				
Well 9 - New Well	Reserves	$1,200,000					
Well 11 - New Well	Foster Farms	$1,200,000					
Well 12 Conveyance & Treatment	Reserves					$1,720,000	
Well 8 & 9 Conveyance & Treatment Plant	SRF Loan		$3,375,000				
	Connection Fees		$1,125,000				
Well 14 & 16 Conveyance & Treatment Plant - *secured loan*	SRF Loan	$4,000,000					
Well 13 & 17 Conveyance, Treatment Plant & Storage Tank	SRF Loan		$6,375,000				
	Connection Fees		$2,125,000				
Water Line Replacement Ph 4 (Walnut, Davis, White, N Main)	Reserves			$1,331,320			
Park Surface Water Irrigation	Reserves		$187,381				
	Grant		$172,619				
Server Upgrades	Reserves	$25,000					
Total Estimated Water Improvements Cost	**$23,836,320**	**$6,425,000**	**$14,360,000**	**$1,331,320**	**$0**	**$1,720,000**	**$0**
Funding Sources							
SRF Loan	**$13,750,000**	$4,000,000	$9,750,000	$0	$0	$0	$0
Reserves	**$5,463,701**	$1,225,000	$1,187,381	$1,331,320	$0	$1,720,000	$0
Connection Fees	**$3,250,000**	$0	$3,250,000	$0	$0	$0	$0
Grant	**$172,619**	$0	$172,619	$0	$0	$0	$0
Foster Farms	**$1,200,000**	$1,200,000	$0	$0	$0	$0	$0
Total Funding	**$23,836,320**	**$6,425,000**	**$14,360,000**	**$1,331,320**	**$0**	**$1,720,000**	**$0**
Estimated New O&M Costs from CIP Projects							
Well 8 & 9 GAC		$200,000		$200,000		$200,000	
Well 13 & 17 GAC						$200,000	
Well 13 Green Sand		$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Well 14 & 16 GAC				$200,000		$200,000	
Well 16 Green Sand		$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Well 17 Green Sand		$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Bulk Chemicals - Wells		$65,000	$65,000	$65,000	$65,000	$65,000	$65,000
Estimated New Media & Chemicals Cost		**$295,000**	**$95,000**	**$495,000**	**$95,000**	**$695,000**	**$95,000**

Source: City of Livingston November 2019.

cip

Table A-6
City of Livingston 2019 Water Rates Update
Inflated CIP

DRAFT

Water Project	Funding Source	TOTAL	Fiscal Year Ending 2020 Year 1	2021 Year 2	2022 Year 3	2023 Year 4	2024 Year 5	2025 Year 6
Water CIP Projects			*Costs inflated each year 3%*					
Well 8 - New Well	Reserves	$1,030,000	$0	$1,030,000	$0	$0	$0	$0
Well 9 - New Well	Reserves	$1,200,000	$1,200,000	$0	$0	$0	$0	$0
Well 11 - New Well	Foster Farms	$1,200,000	$1,200,000	$0	$0	$0	$0	$0
Well 12 Conveyance & Treatment	Reserves	$1,935,875	$0	$0	$0	$0	$1,935,875	$0
Well 8 & 9 Conveyance & Treatment Plant	SRF Loan	$4,635,000	$0	$4,635,000	$0	$0	$0	$0
Well 14 & 16 Conveyance & Treatment Plant - secured loan	SRF Loan	$4,000,000	$4,000,000	$0	$0	$0	$0	$0
Well 13 & 17 Conveyance, Treatment Plant & Storage Tank	SRF Loan	$8,755,000	$0	$8,755,000	$0	$0	$0	$0
Water Line Replacement Ph 4 (Walnut, Davis, White, N Main)	Reserves	$1,412,397	$0	$0	$1,412,397	$0	$0	$0
Park Surface Water Irrigation	Reserves	$370,800	$0	$370,800	$0	$0	$0	$0
Server Upgrades	Reserves	$25,000	$25,000	$0	$0	$0	$0	$0
Total Estimated Water Improvements Cost		**$24,564,073**	**$6,425,000**	**$14,790,800**	**$1,412,397**	**$0**	**$1,935,875**	**$0**
Funding Sources								
SRF Loan		$14,042,500	$4,000,000	$10,042,500	$0	$0	$0	$0
Reserves		$5,796,275	$1,225,000	$1,223,002	$1,412,397	$0	$1,935,875	$0
Connection Fees		$3,347,500	$0	$3,347,500	$0	$0	$0	$0
Grant		$177,798	$0	$177,798	$0	$0	$0	$0
Foster Farms		$1,200,000	$1,200,000	$0	$0	$0	$0	$0
Total Funding		**$24,564,073**	**$6,425,000**	**$14,790,800**	**$1,412,397**	**$0**	**$1,935,875**	**$0**
Estimated New O&M Costs from CIP Projects								
Well 8 & 9 GAC			$200,000	$0	$212,180	$0	$225,102	$0
Well 13 & 17 GAC			$0	$0	$0	$0	$225,102	$0
Well 13 Green Sand			$10,000	$10,300	$10,609	$10,927	$11,255	$11,593
Well 14 & 16 GAC			$0	$0	$212,180	$0	$225,102	$0
Well 16 Green Sand			$10,000	$10,300	$10,609	$10,927	$11,255	$11,593
Well 17 Green Sand			$10,000	$10,300	$10,609	$10,927	$11,255	$11,593
Bulk Chemicals - Wells			$65,000	$66,950	$68,959	$71,027	$73,158	$75,353
Estimated New Media & Chemicals Cost			**$295,000**	**$97,850**	**$525,146**	**$103,809**	**$782,229**	**$110,131**

Source: City of Livingston November 2019.

cip inf

Table A-7
City of Livingston 2019 Water Rates Update

SRF Financing Agreement for Well 13 **DRAFT**

Fiscal Year Ending	Principal	Interest	Total Payment	Ending Balance
Term	*20 years*		*Completed Project*	
Interest Rate	*1.6%*			
				$1,353,245
2017	$66,967	$11,811	$78,778	$1,286,278
2018	$58,430	$20,348	$78,778	$1,227,848
2019	$59,369	$19,409	$78,778	$1,168,479
2020	$60,323	$18,455	$78,778	$1,108,156
2021	$61,292	$17,486	$78,778	$1,046,864
2022	$62,276	$16,502	$78,778	$984,588
2023	$63,277	$15,501	$78,778	$921,311
2024	$64,293	$14,485	$78,778	$857,018
2025	$65,326	$13,452	$78,778	$791,692
2026	$66,375	$12,403	$78,778	$725,317
2027	$67,442	$11,336	$78,778	$657,875
2028	$68,525	$10,253	$78,778	$589,350
2029	$69,626	$9,152	$78,778	$519,724
2030	$70,744	$8,034	$78,778	$448,980
2031	$71,881	$6,897	$78,778	$377,099
2032	$73,035	$5,743	$78,778	$304,064
2033	$74,209	$4,569	$78,778	$229,855
2034	$75,401	$3,377	$78,778	$154,455
2035	$76,612	$2,166	$78,778	$77,843
2036	$77,843	$935	$78,778	($0)
TOTAL	**$1,353,245**	**$222,315**	**$1,575,560**	

Source: SRF Financing Agreement D15-02037 Exhibit C. srf other

Table A-8
City of Livingston 2019 Water Rates Update
SRF Financing Agreement for Wells 14 & 16 **DRAFT**

Fiscal Year Ending	Principal	Interest	Total Payment	Ending Balance
Term	*30 years*		*Est. Construction Completion:*	
Interest Rate	*1.8%*			*7/1/2020*
2020	$0	$60,758	$47,358	$3,224,618
2021	$105,048	$67,942	$172,989	$3,894,952
2022	$103,343	$69,646	$172,989	$3,971,609
2023	$105,212	$67,778	$172,989	$3,686,398
2024	$107,114	$65,875	$172,989	$3,579,284
2025	$109,051	$63,939	$172,989	$3,470,233
2026	$111,022	$61,967	$172,989	$3,359,211
2027	$113,030	$59,959	$172,989	$3,246,181
2028	$115,074	$57,916	$172,989	$3,131,107
2029	$117,154	$55,835	$172,989	$3,013,953
2030	$119,272	$53,717	$172,989	$2,894,681
2031	$121,429	$51,560	$172,989	$2,773,252
2032	$123,625	$49,365	$172,989	$2,649,627
2033	$125,860	$47,129	$172,989	$2,523,767
2034	$128,136	$44,854	$172,989	$2,395,632
2035	$130,452	$42,537	$172,989	$2,265,179
2036	$132,811	$40,178	$172,989	$2,132,368
2037	$135,212	$37,777	$172,989	$1,997,156
2038	$137,657	$35,332	$172,989	$1,859,499
2039	$140,146	$32,843	$172,989	$1,719,353
2040	$142,680	$30,309	$172,989	$1,576,672
2041	$145,260	$27,729	$172,989	$1,431,412
2042	$147,886	$25,103	$172,989	$1,283,526
2043	$150,560	$22,429	$172,989	$1,132,966
2044	$153,283	$19,707	$172,989	$979,683
2045	$156,054	$16,935	$172,989	$823,629
2046	$158,876	$14,114	$172,989	$664,753
2047	$161,748	$11,241	$172,989	$503,005
2048	$164,673	$8,316	$172,989	$338,332
2049	$167,650	$5,339	$172,989	$170,682
2050	$170,682	$2,308	$172,989	$0
TOTAL	**$4,000,000**	**$1,250,437**	**$5,237,037**	

Source: SRF Financing Agreement D18-02003 Exhibit C. srf 4M

Table A-9
City of Livingston 2019 Water Rates Update

Estimated New SRF Debt **DRAFT**

Item	Well 8 & 9 Conveyance & Treatment Plant	Well 13 & 17 Conveyance, Treatment Plant & Storage Tank
Estimated Completion Date	*2/1/2021*	*2/1/2021*
Construction Proceeds	$4,635,000	$8,755,000
Estimated Annual Debt Service	**$221,500**	**$418,300**
Operations Fund	$166,125	$313,725
Capital Fund	$55,375	$104,575
Total Payments	$6,645,000	$12,549,000
Estimated Total Financing Costs	$2,010,000	$3,794,000
DWSRF loan assumptions:		
Interest Rate [1]	2.5000%	2.5000%
Term (years)	30	30

Source: City of Livingston and HEC. new debt

[1] In 2019 the interest rate is 1.9%. The interest rate fluctuates year to year.

Table A-10
City of Livingston 2019 Water Rates Update

Meter Replacement Fee Calculation

DRAFT

Item	Assumption / Total	Meter Size 1"	1-1/2"	2"	3"	4"	6"	8"	10"
New Meter with Transponder [1]		$235	$554	$1,058	$1,320	$3,125	$5,400	$8,805	$11,363
Installation Costs [2]	25%	$59	$139	$265	$330	$781	$1,350	$2,201	$2,841
New Technology Fee [3]	25%	$73	$173	$331	$413	$977	$1,688	$2,752	$3,551
Administration Costs	5%	$18	$43	$83	$103	$244	$422	$688	$888
Total Cost per Meter		**$386**	**$909**	**$1,736**	**$2,166**	**$5,127**	**$8,859**	**$14,446**	**$18,642**
Total Number of Meters	3,332	3,220	12	72	11	13	3	0	1
Meter Cost Replacement	**$1,513,037**	**$1,241,461**	**$10,907**	**$124,976**	**$23,822**	**$66,650**	**$26,578**	**$0**	**$18,642**
Replacement Interval (years)		10	10	10	10	10	10	10	10
Cost per Meter per Year		$39	$91	$174	$217	$513	$886	$1,445	$1,864
Monthly Cost per Meter		**$3.21**	**$7.57**	**$14.46**	**$18.05**	**$42.72**	**$73.83**	**$120.38**	**$155.35**
Updated Annual Fee Revenue	**$151,304**	**$124,146**	**$1,091**	**$12,498**	**$2,382**	**$6,665**	**$2,658**	**$0**	**$1,864**

Source: City of Livingston and HEC.

meter prog

[1] Prices from City's meter vendor, May 2019.

[2] Actual installation costs vary by meter size as a percentage of meter cost.

[3] Estimated costs to keep meters up to date with new technology.

Table A-11
City of Livingston 2019 Water Rates Update

Estimated Meter Replacement Fee Program Revenue

DRAFT

Item	Fiscal Year Ending					
	2020 Year 1	**2021** Year 2	**2022** Year 3	**2023** Year 4	**2024** Year 5	**2025** Year 6
Projected New 1" or less Meters	0	25	25	25	25	25
Projected City Water Meters	**3,332**	**3,357**	**3,382**	**3,407**	**3,432**	**3,457**
Current Revenue Inflated	$151,304	$155,843	$160,518	$165,334	$170,294	$175,402
New Growth Revenue	$0	$993	$1,023	$1,053	$1,085	$1,117
Estimated Meter Replacement Fee Revenue	**$151,304**	**$156,836**	**$161,541**	**$166,387**	**$171,378**	**$176,520**

Source: City of Livingston and HEC.

meter rev

Table A-12
City of Livingston 2019 Water Rates Update

Functional Allocation of Plant In Service

DRAFT

Plant in Service	Customer	Capacity	Commodity (Use)	Total Cost	Customer	Capacity	Commodity (Use)
Pumps		80%	20%	$159,869	$0	$127,895	$31,974
Water Lines		80%	20%	$5,833,669	$0	$4,666,936	$1,166,734
Wells		80%	20%	$7,947,079	$0	$6,357,663	$1,589,416
Tanks		80%	20%	$833,822	$0	$667,058	$166,764
Equipment	45%	30%	25%	$280,794	$126,357	$84,238	$70,198
General	15%	85%		$556,209	$83,431	$472,777	$0
Total Plant in Service				**$15,611,442**	**$209,789**	**$12,376,567**	**$3,025,086**
Percentage of Plant in Service				**100%**	**1%**	**79%**	**19%**

Source: City of Livingston May 2019 and HEC.

plant

Table A-13
City of Livingston 2019 Water Rates Update

Functional Allocation of Operating Costs

DRAFT

Expenditures	ACTUAL FY 2018-19	Allocation Basis	Fixed Costs: Customer	Fixed Costs: Capacity	Variable Cost: Commodity (Use)	Unclassified
Personnel	$726,097	Avg. of Classified	0%	0%	0%	100%
Professional Services	$9,632	Avg. of Classified	0%	0%	0%	100%
Contract Services	$110,320	Avg. of Classified	0%	0%	0%	100%
Reg. Tuition Training	$3,200	Avg. of Classified	0%	0%	0%	100%
City Audit	$7,600	Avg. of Classified	0%	0%	0%	100%
Computer Support Agreements	$28,947	Avg. of Classified	0%	0%	0%	100%
Water Storage Tanks O&M	$3,348	Ratio Avg. to Peak Month	84%	0%	16%	0%
Water Wells O&M	$284,608	Ratio Avg. to Peak Month	84%	0%	16%	0%
Distribution O&M	$60,746	Ratio Avg. to Peak Month	84%	0%	16%	0%
Utilities	$560,431	Utilities	0%	0%	100%	0%
Vehicle O&M	$19,981	Plant In Service	1%	79%	19%	0%
Equipment O&M	$6,855	Plant In Service	1%	79%	19%	0%
Facilities O&M	$5,977	Plant In Service	1%	79%	19%	0%
Insurance	$36,682	Customers	100%	0%	0%	0%
CommCell Phones	$6,638	Customers	100%	0%	0%	0%
Advertisement	$2,786	Customers	100%	0%	0%	0%
Printing	$3,375	Customers	100%	0%	0%	0%
Bank Service Fees	$7,496	Customers	100%	0%	0%	0%
Travel	$3,166	Customers	100%	0%	0%	0%
Small Tools & Equip.	$8,953	Customers	100%	0%	0%	0%
Office Supplies	$2,679	Customers	100%	0%	0%	0%
Postage	$8,105	Customers	100%	0%	0%	0%
Miscellaneous	($8,272)	Avg. of Classified	0%	0%	0%	100%
Books/Subscriptions	$397	Customers	100%	0%	0%	0%
Dues/Memberships	$19,816	Avg. of Classified	0%	0%	0%	100%
Refunds/Reimb	$1,017	Customers	100%	0%	0%	0%
Equipment Purchase	$27,130	Plant In Service	1%	79%	19%	0%
Vehicle Purchase	$38,229	Plant In Service	1%	79%	19%	0%
Meter Replacement	$36,295	Customers	100%	0%	0%	0%
TOTAL OPERATING COSTS	**$2,022,235**		**$410,382**	**$77,829**	**$636,684**	**$897,340**
Reallocate Unclassified	$897,340		$327,365	$62,085	$507,889	
ALLOCATION OF OPERATING COSTS	**$2,022,235**		**$737,747**	**$139,915**	**$1,144,574**	
Existing Debt Service	$78,778	Plant In Service	1%	79%	19%	
Debt Service			$1,059	$62,454	$15,265	
TOTAL ALLOCATED COSTS [1]	**$2,101,013**		**$738,806**	**$202,369**	**$1,159,839**	
Percentage of Allocation			35%	10%	55%	
Fixed/Variable Allocation				**45%**	**55%**	

Source: City of Livingston and HEC, September 2019. func

[1] Excludes capital project costs in fiscal year 2018/19.

Table A-14
City of Livingston 2019 Water Rates Update
Number of Meters and Meter Equivalents **DRAFT**

Meter Size	Billing Meters	Flow (gpm)	Ratio	Meter Equivalents
< 1	3,220	50	1.0	3,220
1.5	12	100	2.0	24
2	72	160	3.2	230
3	11	350	7.0	77
4	13	600	12.0	156
6	3	1,250	25.0	75
8	0	2,400	48.0	0
10	1	3,800	76.0	76
Total	**3,332**			**3,858**

Source: City of Livingston September 2019. meters

Table A-15
City of Livingston 2019 Water Rates Update

Projection of Water Demand

DRAFT

Customer Category	Base	Fiscal Year Ending 2020 Year 1	2021 Year 2	2022 Year 3	2023 Year 4	2024 Year 5	2025 Year 6
Residential							
Single-Family	593,860,000	593,458,254	597,144,330	600,853,301	604,585,309	608,340,497	612,119,010
Multi-Family	68,351,000	68,295,513	68,295,513	68,295,513	68,295,513	68,295,513	68,295,513
Subtotal Residential	**662,211,000**	**661,753,766**	**665,439,842**	**669,148,813**	**672,880,822**	**676,636,010**	**680,414,522**
Non-Residential							
Commercial	81,815,000	81,704,304	83,477,401	85,288,977	87,139,866	89,030,922	90,963,017
Industrial	1,333,248,000	1,332,526,446	1,332,526,446	1,332,526,446	1,332,526,446	1,332,526,446	1,332,526,446
Irrigation	63,542,000	63,413,042	63,413,042	63,413,042	63,413,042	63,413,042	63,413,042
Other	1,185,000	1,185,000	1,185,000	1,185,000	1,185,000	1,185,000	1,185,000
Subtotal Non-Residential	**1,479,790,000**	**1,478,828,792**	**1,480,601,889**	**1,482,413,464**	**1,484,264,354**	**1,486,155,410**	**1,488,087,504**
Total Water Demand Est.	**2,142,001,000**	**2,140,582,558**	**2,146,041,731**	**2,151,562,278**	**2,157,145,175**	**2,162,791,420**	**2,168,502,027**
Total Water Demand Excl. Other	**2,140,816,000**	**2,139,397,558**	**2,144,856,731**	**2,150,377,278**	**2,155,960,175**	**2,161,606,420**	**2,167,317,027**

Source: City of Livingston and HEC 2019.

proj d

Table A-16
City of Livingston 2019 Water Rates Update

Price Elasticity Assumptions

DRAFT

Customer Type	Estimated Elasticity	Fiscal Year Ending 2020 Year 1	2021 Year 2	2022 Year 3	2023 Year 4	2024 Year 5	2025 Year 6
Rate Increase		4.25%	4.25%	4.25%	4.25%	4.25%	4.25%
Assumption for Inflation		2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Price Increase Adjusted for Inflation		**2.05%**	**2.05%**	**2.05%**	**2.05%**	**2.05%**	**2.05%**
Customer Type							
Attached Residential	-0.10	-0.21%	-0.21%	-0.21%	-0.21%	-0.21%	-0.21%
Detached Residential	-0.12	-0.25%	-0.25%	-0.25%	-0.25%	-0.25%	-0.25%
Commercial	-0.20	-0.41%	-0.41%	-0.41%	-0.41%	-0.41%	-0.41%
Industrial	-0.08	-0.16%	-0.16%	-0.16%	-0.16%	-0.16%	-0.16%
Irrigation	-0.30	-0.62%	-0.62%	-0.62%	-0.62%	-0.62%	-0.62%

Source: HEC.

elasticity

California CPI Change		
February	2009	222.181
February	2019	276.655
Total Change		54.47
Average Annual Change		**2.22%**

Table A-17
City of Livingston 2019 Water Rates Update

Projected Changes in Water Demand due to Price Changes

DRAFT

Customer Category	Fiscal Year Ending					
	2020	**2021**	**2022**	**2023**	**2024**	**2025**
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Residential	*Projected Growth each year is twenty SF units and five 1" commercial meters*					
Single-Family	593,860,000	597,548,571	601,260,053	604,994,588	608,752,318	612,533,388
Multi-Family	68,351,000	68,351,000	68,351,000	68,351,000	68,351,000	68,351,000
Subtotal Residential	**662,211,000**	**665,899,571**	**669,611,053**	**673,345,588**	**677,103,318**	**680,884,388**
Non-Residential						
Commercial	81,815,000	83,590,499	85,404,529	87,257,926	89,151,544	91,086,256
Industrial	1,333,248,000	1,333,248,000	1,333,248,000	1,333,248,000	1,333,248,000	1,333,248,000
Irrigation	63,542,000	63,542,000	63,542,000	63,542,000	63,542,000	63,542,000
Other	1,185,000	1,185,000	1,185,000	1,185,000	1,185,000	1,185,000
Subtotal Non-Residential	**1,479,790,000**	**1,481,565,499**	**1,483,379,529**	**1,485,232,926**	**1,487,126,544**	**1,489,061,256**
Total Water Demand Est.	**2,142,001,000**	**2,147,465,071**	**2,152,990,582**	**2,158,578,514**	**2,164,229,862**	**2,169,945,645**
Change in Demand due to Price						
Residential						
Single-Family	-401,746	-404,242	-406,752	-409,279	-411,821	-414,379
Multi-Family	-55,487	-55,487	-55,487	-55,487	-55,487	-55,487
Subtotal Residential	**-457,234**	**-459,729**	**-462,240**	**-464,766**	**-467,308**	**-469,866**
Non-Residential						
Commercial	-110,696	-113,098	-115,552	-118,060	-120,622	-123,240
Industrial	-721,554	-721,554	-721,554	-721,554	-721,554	-721,554
Irrigation	-128,958	-128,958	-128,958	-128,958	-128,958	-128,958
Other	0	0	0	0	0	0
Subtotal Non-Residential	**-961,208**	**-963,610**	**-966,065**	**-968,572**	**-971,134**	**-973,752**
Total Water Demand Est.	**-1,418,442**	**-1,423,339**	**-1,428,304**	**-1,433,338**	**-1,438,443**	**-1,443,618**

Source: HEC 2019. elas eff

[1] Change applied to summer months consumption only.

APPENDIX B

WASTEWATER RATE STUDY

SUPPORT TABLES

Table B-1
City of Livingston 2019 Wastewater Rates Update

Historical Wastewater Fund Revenue **DRAFT**

Revenues	Fiscal Year Ending 2017 actual	2018 actual	2019 actual
Intergovernmental			
FEMA Reimbursement	$0	$3,528	$0
SJVAPCD-Grnt Veh Purchase Rev	$0	$9,702	($3,035)
Total Intergovernmental	**$0**	**$13,230**	**($3,035)**
Charges for Services			
User Fees	$2,038,750	$2,075,866	$2,182,325
Connection Fees	$0	$0	$0
MS4 Review Fees	$0	$2,809	$16,464
Total Charges for Services	**$2,038,750**	**$2,078,675**	**$2,198,789**
Fines & Forfeits			
Penalty Fees	$24,803	$28,702	$22,417
Total Fines & Forfeits	**$24,803**	**$28,702**	**$22,417**
Return on Use of Money/Property			
Interest Income	$2,194	$7,976	$10,119
Rental Income	$12,000	$12,000	$12,000
Doms WW Land Lease Agmt	$2,500	$1,000	$0
Total Return on Use of Money	**$16,694**	**$20,976**	**$22,119**
Miscellaneous			
Miscellanous	$4,188	$19,281	$0
Reimbursements	$1,306	$1,642	$66,181
Other Revenue	$5,494	$20,923	$285
Total Miscellaneous	**$10,988**	**$41,847**	**$66,466**
Total Revenues	**$2,091,235**	**$2,183,429**	**$2,306,757**

Source: City of Livingston financials, provided September 2019. revs

Table B-2
City of Livingston 2019 Wastewater Rates Update

Historical Wastewater Fund Expenses **DRAFT**

Operating Expenses	Fiscal Year Ending 2017 actual	2018 actual	2019 actual
Personnel	**$422,346**	**$543,621**	**$630,284**
Maintenance and Operations			
Professional Services	$29,159	$2,627	$3,467
Contract Services	$170,414	$93,526	$84,263
RegistrationTuitionTraining	$1,653	$3,037	$2,923
City Audit	$7,420	$7,600	$7,600
Computer Support Agreements	$15,757	$21,453	$21,012
Distribution O & M	$6,147	$8,141	$6,214
Utilities	$219,906	$246,101	$237,325
Soccer Field Utilities	$1,907	$1,890	$1,933
Vehicle O & M	$16,190	$28,114	$22,432
Equipment O & M	$60,062	$13,349	$29,490
Facilities O & M	$48,438	$20,398	$47,757
Storm Drain O & M	$0	$0	$14,047
Wastewater Trtmnt Plant O&M	$5,116	$13,543	$51,286
RentsLeases	$8,600	$4,390	$5,736
Insurance	$59,012	$59,075	$61,562
CommCell PhonesTelephone	$4,641	$7,844	$7,185
Advertisement	$140	$1,671	$437
Printing	$463	$366	$1,121
Bank Service Fee Agreements	$5,176	$6,467	$7,496
TravelConferencesMeetings	$586	$520	$253
Lab Processing Expense	$16,288	$17,892	$26,802
Small Tools & Equipment	$7,748	$5,897	$7,997
Postage	$7,763	$7,233	$7,911
Miscellaneous Expenditures	$1,392	$831	$262
DuesMembershipFees	$27,150	$41,621	$43,554
Cost of Issuance-2016ARfndBond	$250,931	$0	$0
Amortizat. Exp 2016A Refunding	($4,548)	($6,822)	$0
Merced County Taxes	$11,106	$11,237	$11,342
Total Maintenance & Operations	**$978,618**	**$618,001**	**$711,411**
Supplies			
Office Supplies	$3,856	$2,741	$2,458
Total Supplies	**$3,856**	**$2,741**	**$2,458**
Vehicles, Equip & Improvements			
Equipment Purchase	$42,348	$9,976	$60,167
Vehicle Purchase	$0	$0	$81,879
Vehicle Replacement Fee	$0	$0	$0
FurnitureFixtureImprovements	$0	$500	$0
ImprovementsInfrastructure	$0	$53,802	$0
SJVAPCD Grnt Vehicle Purchase	$0	$0	$0
Vehicles, Equip & Improvements	**$42,348**	**$64,278**	**$142,046**
Debt Service			
Refnd Bond Ser.2016A-Principal	$0	$0	$180,000
USDA Series A - Interest	$31,470	$0	$0
USDA Series B - Interest	$28,553	$0	$0
Refund Bond Ser.2016A-Interest	$187,023	$271,950	$268,450
Debt Service	**$247,046**	**$271,950**	**$448,450**
Transfer Out	$0	$0	$148,566
Total Expenses	**$1,694,213**	**$1,500,591**	**$2,083,214**

Source: City of Livingston financials, provided September 2019. exps

Table B-3
City of Livingston 2019 Wastewater Rates Update
Current Number of Wastewater Accounts

DRAFT

Customer Code		Billing Cycle 1	2	3	4	999	TOTAL
Flat Monthly Charges							
SCOO	Commercial Base	3		113	3		119
SOUT	Residential Outside City	2		1			3
SRES	Residential	3,048	58	5	2		3,113
SMU	Multi Unit Residential		21	4			25
SC02	Churches/Temples/Comm Ctrs			16			16
SC16	Schools			5			5
SHM	Hotels /Motels			2			2
SCC2	Laudromat					1	1
TOTAL		**3,053**	**79**	**146**	**5**	**1**	**3,284**

Source: City of Livingston Utility Billing May 2019. accounts

Table B-4
City of Livingston 2019 Wastewater Rates Update

Wastewater Treatment Plant Flow **DRAFT**

Month	2016	2017	2018	Average	
				BOD	SS
	Millions of Gallons			Mg/L	Mg/L
Jan	31.27	35.02	35.24	288	346
Feb	28.38	33.80	32.14	425	1,115
Mar	31.61	32.85	35.69	288	368
Apr	30.32	34.64	33.33	250	177
May	31.28	34.60	33.77	200	155
Jun	30.40	31.65	33.12	350	403
Jul	32.26	32.38	34.11	313	320
Aug	32.20	36.66	35.00	353	630
Sep	30.08	35.31	35.14	280	353
Oct	30.39	35.38	33.98	265	440
Nov	32.55	33.60	31.39	310	411
Dec	32.89	33.62	31.26	263	193
Total	**373.63**	**409.51**	**404.17**	**299**	**409**
Avg. Flow per Day	**1.02**	**1.12**	**1.11**		

Source: City of Livingston treatment plant records. param

Table B-5
City of Livingston 2019 Wastewater Rates Update

Wastewater Capital Improvements Plan

DRAFT

Capital Project	Funding Source	Fiscal Year Ending 2020	2021	2022	2023	2024	2025
Treatment Plant							
Biosolids Dewatering Equipment	Rates	$300,000	$200,000				
SCADA Tower	Rates	$15,000					
Total Treatment Plant		**$315,000**	**$200,000**	**$0**	**$0**	**$0**	**$0**
Collection System							
Lift Station Rehabilitation (Singh & Burgandy)	Rates	$100,000	$100,000				
Sewer Line Replacement [1]	Grant		$2,800,000				
Additional Sewer Line Replacement	Rates			$200,000	$600,000	$650,000	$700,000
New Disc & Ripper Tractor	Rates		$215,000				
New Vac-On Sewer Truck	Rates			$350,000			
Total Collection System		**$100,000**	**$3,115,000**	**$550,000**	**$600,000**	**$650,000**	**$700,000**
Total Wastewater System	**$6,230,000**	**$415,000**	**$3,315,000**	**$550,000**	**$600,000**	**$650,000**	**$700,000**
Funded by Grants	$2,800,000	$0	$2,800,000	$0	$0	$0	$0
Funded by Rates	$3,430,000	$415,000	$515,000	$550,000	$600,000	$650,000	$700,000
Funded by Loan	$0	$0	$0	$0	$0	$0	$0

Source: City of Livingston Public Works May 2019. cip

[1] The City anticipates that this cost will be funded by a CDBG grant.

Table B-6
City of Livingston 2019 Wastewater Rates Update
2016A Sewer Revenue Refunding Bonds **DRAFT**

Fiscal Year Ending	Principal	Interest	Total Debt Service
2017	$220,000	$95,790	$315,790
2018	$175,000	$273,700	$448,700
2019	$180,000	$268,450	$448,450
2020	$190,000	$261,250	$451,250
2021	$195,000	$253,650	$448,650
2022	$200,000	$245,850	$445,850
2023	$210,000	$237,850	$447,850
2024	$220,000	$229,450	$449,450
2025	$230,000	$220,650	$450,650
2026	$240,000	$211,450	$451,450
2027	$250,000	$201,850	$451,850
2028	$260,000	$191,850	$451,850
2029	$265,000	$181,450	$446,450
2030	$280,000	$170,850	$450,850
2031	$290,000	$159,650	$449,650
2032	$300,000	$148,050	$448,050
2033	$315,000	$136,050	$451,050
2034	$325,000	$123,450	$448,450
2035	$335,000	$112,888	$447,888
2036	$345,000	$102,000	$447,000
2037	$355,000	$90,788	$445,788
2038	$365,000	$78,806	$443,806
2039	$385,000	$66,488	$451,488
2040	$395,000	$53,494	$448,494
2041	$410,000	$40,163	$450,163
2042	$420,000	$26,325	$446,325
2043	$360,000	$12,150	$372,150

Source: Revenue Bond documents. ref bonds

Table B-7
City of Livingston 2019 Wastewater Rates Update

Summary of Depreciation in Rates **DRAFT**

Facility Depreciation	Fiscal Year Ending 2020	2021	2022	2023	2024	2025
Existing System [1]	$391,005	$391,005	$391,005	$391,005	$391,005	$391,005
New Facilities	$12,800	$80,765	$120,936	$129,251	$138,575	$148,967
Total Depreciation	**$403,805**	**$471,770**	**$511,941**	**$520,256**	**$529,580**	**$539,972**
Percentage in Rates	0%	0%	0%	0%	0%	0%
Depreciation in Rates	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Source: City of Livingston May 2019 and HEC. depr

[1] Current annual depreciation:

Lift Stations	$30,424
Collection System	$12,516
Treatment Plant	$324,512
Equipment & Vehicles	$23,554
Total Annual Depreciation	**$391,005**

Table B-8
City of Livingston 2019 Wastewater Rates Update

Depreciation for New CIP

DRAFT

Wastewater System	Useful Life	Fiscal Year Ending 2020	2021	2022	2023	2024	2025
Treatment Plant	years						
Biosolids Dewatering Equipment	30	$10,000	$16,900	$16,900	$16,900	$16,900	$16,900
SCADA Tower	50	$300	$300	$300	$300	$300	$300
Total Treatment Plant		**$10,300**	**$17,200**	**$17,200**	**$17,200**	**$17,200**	**$17,200**
Collection System							
Lift Station Rehabilitation (Singh & Burgandy)	40	$2,500	$5,088	$5,088	$5,088	$5,088	$5,088
Sewer Line Replacement	80	$0	$36,225	$36,225	$36,225	$36,225	$36,225
Additional Sewer Line Replacement	80	$0	$0	$2,678	$10,993	$20,317	$30,709
New Disc & Ripper Tractor	10	$0	$22,253	$22,253	$22,253	$22,253	$22,253
New Vac-On Sewer Truck	10	$0	$0	$37,493	$37,493	$37,493	$37,493
Total Collection System		**$2,500**	**$63,565**	**$103,736**	**$112,051**	**$121,375**	**$131,767**
TOTAL		**$12,800**	**$80,765**	**$120,936**	**$129,251**	**$138,575**	**$148,967**

Source: City of Livingston capital improvement plan June 2019, and HEC.

new depr

Table B-9
City of Livingston 2019 Wastewater Rates Update **Year 1**
Projected Costs and Distribution between Collection and Treatment System **DRAFT** **Fiscal Year Ending 2020**

Expenditures	Projected Total	Allocation		Collection			Treatment		
		Collection	Treatment	Operations	Capital	Total	Operations	Capital	Total
Personnel	$668,101	20%	80%	$133,620		$133,620	$534,481		$534,481
Professsional & Contract Services	$98,190	20%	80%	$19,638		$19,638	$78,552		$78,552
Treatment Plant O&M	$53,081	20%	80%	$10,616		$10,616	$42,465		$42,465
Collection & Facilities O&M	$55,860	20%	80%	$11,172		$11,172	$44,688		$44,688
Utilities	$248,828	20%	80%	$49,766		$49,766	$199,063		$199,063
Facilities, Equipment & Other O&M	$68,278	20%	80%	$13,656		$13,656	$54,622		$54,622
Tools, Subscriptions, Supplies	$213,256	20%	80%	$42,651		$42,651	$170,605		$170,605
Series 2016A Refunding	$451,250	20%	80%		$90,250	$90,250		$361,000	$361,000
New Debt Service	$0	20%	80%		$0	$0		$0	$0
System Rehabilitation and New Projects	$465,000	20%	80%		$93,000	$93,000		$372,000	$372,000
Additional Collection for Depreciation	$0	20%	80%		$0	$0		$0	$0
Subtotal Costs	**$2,321,844**			**$281,119**	**$183,250**	**$464,369**	**$1,124,475**	**$733,000**	**$1,857,475**
Addition to Operating Reserve	$50,000								
Less Offsetting Credits	($54,000)								
Adjustment	$161,050								
Total	**$2,478,894**								

Source: City of Livingston financials, September 2019, and HEC. distr

Table B-10
City of Livingston 2019 Wastewater Rates Update **Year 1**
Unit Cost Determination **DRAFT** **Fiscal Year Ending 2020**

Cost Category	Allocated Costs	Percent Allocation: Flow	Percent Allocation: BOD	Percent Allocation: SS	Cost: Flow	Cost: BOD	Cost: SS	Total Influent: Flow MG	Total Influent: BOD Klbs	Total Influent: SS Klbs	Unit Cost Per: Mgal of Flow ($/Mgal)	Unit Cost Per: Klb of BOD ($/Klb)	Unit Cost Per: Klb of SS ($/Klb)
	(A)	*(B)*	*(C)*	*(D)*	*(E) = (A)*(B)*	*(F)=(A)*(C)*	*(G)=(A)*(D)*	*(H)*	*(I)*	*(J)*	*(K)=(E)/(H)*	*(L)=(F)/(I)*	*(M)=(G)/(J)*
Operating Costs													
Collection System Costs	$281,119	100%	0%	0%	$281,119	$0	$0	395	962	983	$712	$0	$0
Treatment Costs	$1,124,475	60%	20%	20%	$674,685	$224,895	$224,895	395	962	983	$1,709	$234	$229
Capital Costs													
Collection System Costs	$183,250	100%	0%	0%	$183,250	$0	$0	395	962	983	$464	$0	$0
Treatment Costs	$733,000	60%	20%	20%	$439,800	$146,600	$146,600	395	962	983	$1,114	$152	$149
Subtotal Collection Costs	**$464,369**	**100%**	**0%**	**0%**	**$464,369**	**$0**	**$0**				**$1,177**	**$0**	**$0**
Subtotal Treatment Costs	**$1,857,475**	**60%**	**20%**	**20%**	**$1,114,485**	**$371,495**	**$371,495**				**$2,824**	**$386**	**$378**
Subtotal Costs	**$2,321,844**	**68%**	**16%**	**16%**	**$1,578,854**	**$371,495**	**$371,495**				**$4,000**	**$386**	**$378**
Addition to Operating Reserve	$50,000	68%	16%	16%	$34,000	$8,000	$8,000	395	962	983	$86	$8	$8
Less Offsetting Credits	($54,000)	68%	16%	16%	($36,720)	($8,640)	($8,640)	395	962	983	($93)	($9)	($9)
Adjustment	$161,050	68%	16%	16%	$109,514	$25,768	$25,768	395	962	983	$277	$27	$26
TOTAL COSTS	**$2,428,894**				**$1,685,648**	**$396,623**	**$396,623**				**$4,271**	**$412**	**$404**

Source: City of Livingston financials, September 2019, and HEC. units

Table B-11
City of Livingston 2019 Wastewater Rates Update **Year 1**
Allocation of Costs to Flow, BOD and SS by Customer Category **DRAFT** **Fiscal Year Ending 2020**

Unit Cost / Customer Category	Flow MG/Yr	BOD Klb/Yr	SS Klb/Yr	Collection Flow $/Mgal	Treatment Flow $/Mgal	Treatment BOD $/Klb	Treatment SS $/Klb	Other Flow $/Mgal	Other BOD $/Klb	Other SS $/Klb	TOTAL
Unit Cost				***$1,177***	***$2,824***	***$386***	***$378***	***$271***	***$26***	***$26***	
Residential											
Detached	284.3	592.8	592.8	$334,547	$802,913	$229,020	$224,104	$76,938	$15,491	$15,158	$1,698,173
Attached	46.3	96.4	96.4	$54,421	$130,610	$37,255	$36,455	$12,516	$2,520	$2,466	$276,242
Non-Residential											
Churches/Temples/Comm. Ctrs.	1.7	2.2	2.4	$1,958	$4,700	$831	$892	$450	$56	$60	$8,948
Schools (with cafeteria)	13.3	25.6	18.4	$15,702	$37,685	$9,889	$6,942	$3,611	$669	$470	$74,967
Hotel/Motel	3.4	9.9	14.2	$3,994	$9,585	$3,828	$5,351	$919	$259	$362	$24,297
Light Industrial	8.8	73.1	58.4	$10,307	$24,737	$28,223	$22,094	$2,370	$1,909	$1,494	$91,135
Commercial	36.9	161.7	200.1	$43,440	$104,255	$62,448	$75,657	$9,990	$4,224	$5,117	$305,132
TOTAL	**394.7**	**961.6**	**982.7**	**$464,369**	**$1,114,485**	**$371,495**	**$371,495**	**$106,794**	**$25,128**	**$25,128**	**$2,478,894**

Source: City of Livingston financials, September 2019, and HEC. alloc

Table B-12

City of Livingston 2019 Wastewater Rates Update **DRAFT Year 1**

Calculated Cost per Thousand Gallons **Fiscal Year Ending 2020**

Customer Type	Allocated Cost	Percentage of Cost	Annual Flow (MG)	Cost per 1,000 Gallons
Residential				
Detached	$1,698,173	68.5%	284.34	$5.97
Attached	$276,242	11.1%	46.25	$5.97
Subtotal Residential	**$1,974,414**	**79.6%**	**330.59**	**$5.97**
Non-Residential				
Churches/Temples/Comm. Ctrs.	$8,948	0.4%	1.66	$5.38
Schools (with cafeteria)	$74,967	3.0%	13.35	$5.62
Hotel/Motel	$24,297	1.0%	3.39	$7.16
Light Industrial	$91,135	3.7%	8.76	$10.40
Commercial	$305,132	12.3%	36.92	$8.26
Subtotal Non-Residential	**$504,480**	**20.4%**	**64.08**	**$7.87**
TOTAL	**$2,478,894**	**100.0%**	**394.67**	**$6.28**

Source: City of Livingston financials, September 2019, and HEC. cos

Table B-13
City of Livingston 2019 Wastewater Rates Update

Projected Number of Billing Units

DRAFT

Customer Categories			**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
	Growth Rate [1] --->			*1.5%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*
Residential		Units	3,692	3,747	3,804	3,861	3,919	3,977
Non-Residential								
Churches/Temples/Comm. Ctrs.		Accounts	16	16	16	16	16	16
Schools (with cafeteria) [2]		Students	3,892	3,912	3,931	3,951	3,971	3,991
Hotel/Motel		Rooms	93	93	93	93	93	93
Light Industrial		Accounts	1	1	1	1	1	1
Commercial		Accounts	119	121	123	124	126	128
Flow Projection								
Light Industrial		Mgals	8.8	8.8	8.8	8.8	8.8	8.8
Commercial		Mgals	36.9	37.5	38.0	38.6	39.2	39.8

Source: City of Livingston customer records May 2019, and HEC.

services

[1] Growth rate applied to residential and commercial categories only.

[2] Uses growth rate of 0.5%.

APPENDIX C

SOLID WASTE RATE STUDY

SUPPORT TABLES

Table C-1
City of Livingston 2019 Solid Waste Rates Update
Historical Sanitation Fund Revenues

DRAFT

	Fiscal Year Ending		
Revenues	**2017**	**2018**	**2019**
	actual	actual	actual
Intergovernmental			
Grant Funds	$10,000	$5,000	$5,000
CMAQ Grant For CNG Sweeper	$0	$0	$0
SJVAPCD-Grnt Veh Purchase Rev	$0	$9,702	($3,035)
Subtotal Intergovernmental	**$10,000**	**$14,702**	**$1,965**
Charges for Services			
User Fees	$1,371,342	$1,386,815	$1,417,249
Developer Impact Fees	$0	$0	$0
Subtotal Charges for Services	**$1,371,342**	**$1,386,815**	**$1,417,249**
Fines & Forfeitures			
Penalty Fees	$15,229	$17,733	$15,595
Subtotal Fines & Forfeitures	**$15,229**	**$17,733**	**$15,595**
Return on Use of Money/Property			
True Value Parking Lot Maint	$0	$0	$0
Plaza Parking Lot Maint	$0	$0	$0
Interest Income	$1,476	$7,549	$10,875
Subtotal Return on Use of Money/Property	**$1,476**	**$7,549**	**$10,875**
Miscellaneous			
Reimbursements/Refunds	$3,080	$9,782	$5,991
Other Revenue	$407	$236	$71
RMA Insurance Refunds	$0	$0	$0
Subtotal Miscellaneous	**$3,487**	**$10,019**	**$6,061**
Total Revenues	**$1,401,534**	**$1,436,818**	**$1,451,745**

Source: City of Livingston financials November 2019. rev

Table C-2
City of Livingston 2019 Solid Waste Rates Update
Historical Sanitation Fund Expenses

DRAFT

	Fiscal Year Ending		
Expenses	**2017**	**2018**	**2019**
	actual	actual	actual
Personnel	**$91,307**	**$180,716**	**$177,295**
Maintenance and Operations			
Professional Services	$3,727	$1,123	$1,180
Contract Services	$54,788	$18,930	$17,060
Service Agreements	$0	$0	$0
Disposal Contract Services	$907,749	$919,518	$997,084
RegistrationTuitionTraining	$81	$0	$0
City Attorney	$0	$0	$0
City Audit	$7,420	$7,600	$8,000
Computer Support Agreements	$14,639	$22,009	$21,136
Plaza Parking Lot O & M	$0	$0	$0
Utilities	$0	$0	$0
Vehicle O & M	$2,807	$942	$5,050
Equipment O & M	$13	$39	$0
Facilities O & M	$810	$120	$0
True Value Parking Lot O & M	$0	$0	$0
RentsLeases	$0	$0	$0
Street Sweeper O & M	$0	$0	$0
Insurance	$5,594	$4,811	$4,831
CommCell PhonesTelephone	$134	$2,201	$2,447
Advertisement	$0	$0	$417
Printing	$463	$366	$507
Bank Service Fee Agreements	$5,176	$6,467	$7,496
Trustee Fees	$0	$0	$0
TravelConferencesMeetings	$586	$102	$146
Small Tools & Equipment	$351	$434	$82
Office Supplies	$3,230	$2,412	$2,178
Postage	$7,774	$7,192	$7,905
ReimbursementRefunds	$0	$0	$0
Miscellaneous Expenditures	$0	$78	($56)
BooksSubscriptionsPeriodical	$0	$0	$0
DuesMembershipFees	$2,088	$482	$732
RecycleLitter Grant Expense	($11,947)	$0	$12,698
Payment In Lieu Tax	$0	$0	$0
Bad Debt Write Offs	$0	$0	$0
Subtotal Maintenance and Operations	**$1,005,483**	**$994,826**	**$1,088,893**
Vehicles, Equip & Improvements			
Equipment Purchase	$788	$3,592	$0
Garbage Container Purchase	$0	$0	$0
Vehicle Purchase	$0	$0	$0
Vehicle Replacement Fee	$0	$0	$0
Purchase Street Sweeper	$0	$0	$0
FurnitureFixtureImprovements	$0	$199	$0
SJVAPCD Grant Vehicle Purchase	$0	$0	$0
Subtotal Vehicles, Equip. & Improvements	**$788**	**$3,791**	**$0**
Total Expenses	**$1,097,578**	**$1,179,333**	**$1,266,188**

Source: City of Livingston financials November 2019.

exp

Table C-3
City of Livingston 2019 Solid Waste Rates Update

Gilton Rates Fiscal Year 2019/20 **DRAFT**

	Rates Effective 1 July 2019				
Collections per Week	x1	x2	x3	x4	x5
Residential					
96 gal. cart	$17.05				
Add'l cart	$4.50				
96 gal. cart greenwaste	$0.90				
Add'l greenwaste cart	$4.50				
Multi-Family & Comm'l					
1 CY	$32.10	$63.64	$95.08	$126.59	$158.09
2 CY	$63.98	$126.82	$191.21	$254.57	$317.91
3 CY	$94.79	$179.29	$270.16	$355.47	$432.46
4 CY	$121.33	$236.43	$369.77	$452.14	$541.71
6 CY	$170.59	$332.35	$508.54	$634.08	$798.17
Organics Bin (New)	$179.04	$348.86			
Commercial - Compacting Bins					
3 CY	$329.63	$635.26	$1,271.80	$1,271.80	$1,589.74
4 CY	$418.11	$800.37	$1,695.72	$1,695.72	$2,119.67
Standard Recycle Bins					
4 CY	$48.39	$96.78	$193.58	$193.58	$241.96
6 CY	$48.39	$96.78	$193.58	$193.58	$241.96

Source: Letter 5/22/19 from Gilton Solid Waste Management, Inc. gilton

Table C-4
City of Livingston 2019 Solid Waste Rates Update

Projected Number of Sanitation Services

DRAFT

Customer Type	Current No. of Customers	Projected Number of Services					
		2020	2021	2022	2023	2024	2025
	Estimated Growth Rate -->	*0.0%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*
Residential							
96 gal. cart	3,082	3,082	3,128	3,175	3,223	3,271	3,320
Add'l cart	284	284	288	293	297	301	306
96 gal. cart greenwaste	3,055	3,055	3,101	3,147	3,195	3,242	3,291
Add'l greenwaste cart	7	7	7	7	7	7	8
Multi-Family & Comm'l - 1x / Week							
1 CY	7	7	7	7	7	7	8
2 CY	27	27	27	28	28	29	29
3 CY	13	13	13	13	14	14	14
4 CY	17	17	17	18	18	18	18
6 CY	7	7	7	7	7	7	8
Multi-Family & Comm'l - 2x/Week							
1 CY	0	0	0	0	0	0	0
2 CY	1	1	1	1	1	1	1
3 CY	4	4	4	4	4	4	4
4 CY	12	12	12	12	13	13	13
6 CY	9	9	9	9	9	10	10
Multi-Family & Comm'l - 3x/Week							
1 CY	0	0	0	0	0	0	0
2 CY	0	0	0	0	0	0	0
3 CY	0	0	0	0	0	0	0
4 CY	5	5	5	5	5	5	5
6 CY	3	3	3	3	3	3	3
TOTAL	**6,533**	**6,533**	**6,631**	**6,730**	**6,831**	**6,934**	**7,038**

Source: City of Livingston and HEC May 2019.

services