City of Courtenay 2022 Water and Sewer Rate Review

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EXECUTIVE SUMMARY

The City of Courtenay is located on the east coast of central Vancouver Island, within the traditional lands of the K'ómoks First Nation. The City has a population of over 28,000 people and the population growth rate averaged 10.8% in 2016-2021. The City is expecting rapid population growth to continue in the near future. InterGroup Consultants Ltd. ("InterGroup") was retained by the City in 2020 to develop water and sewer utility revenue requirements over the next 10 years and recommend fees and charges for 2024-2028 based on a cost of service study that will recover utility costs with the objective of providing sustainable and equitable service.

InterGroup's review involved the following steps for each utility:

1. **Develop Revenue Requirement**: A utility revenue requirement includes operations and maintenance expenses, and capital costs required to operate the utility. The revenue requirement also includes overhead and debt costs, where applicable. The analysis also considers sales and revenue forecasts at existing rates and the implications on reserve balances.
2. **Cost of Service Analysis**: A cost of service analysis examines the cost to provide utility service to each customer type. The cost-of-service analysis considers how each customer class contributes towards recovery of allocated costs.
3. **Rate Design**: Rates are designed to recover a utility's revenue requirement. Rates are designed to achieve a balance between providing revenue stability, reflecting cost drivers and providing price signals to customers for conservation through a combination of fixes and variable charges.
4. **Peer Municipality Comparison**: InterGroup undertook a comparison of existing bills for customers in other municipalities at existing and proposed rates to understand how the City's current and proposed utility rates compare to other municipalities.

Based on the review of the utility revenue requirements, cost-of-service analysis and discussion with City staff, proposed rates for each utility were designed based on the following criteria:

1. Ensure rates are sufficient to achieve target capital reserve provisions in each year.
2. Ensure rates are sufficient to recover the full utility revenue requirement by 2028.
3. To the extent feasible, have smooth year over year rate increases to avoid large fluctuations which can have a larger impact on customers.

The recommended rate proposal results in the following annual utility rate increases in 2024-2028:

- Water utility rates:
  - Residential class: 5.5% in 2024, reducing to 2.0% by 2028
  - Multi-family unmetered customer class: 6.7% in 2024, reducing to 3.2% by 2028

  - Parks: 16.2% in 2024, reducing to 12.7% by 2028
  - RD bulk/ Standpipe/ Playfields: 6.4% in 2024, reducing to 3.0% by 2028
  - Fire Protection: 7.7% in 2024, reducing to 4.3% by 2028
  - Commercial unmetered: 4.5% in 2024, reducing to 1.1% by 2028
  - Multi-family metered: 0%
  - Commercial metered: 0%
- Sewer utility rates:
  - Residential class: 8.0%
  - Commercial class: 10.2%
  - Institutional class: 4.8%

The combined effect of the rate proposals on water and sewer bills for average customers indicate that the City of Courtenay's utility bills will remain competitive relative to peer municipalities for majority of customer classes (either in the lower end or in the middle relative to peer municipalities). It is noted that for institutional customers the existing sewer rates are the highest among the reviewed peer municipalities, which has been considered in proposing lower annual sewer rate increase for this customer class (4.8% per year vs average rate increase of 8.1%).

As part of the current study, InterGroup also reviewed the current reserve provision levels for both utilities in order to determine alignment of the current reserve provisions with the long-term infrastructure investment for the utilities.

It is recommended the City adopt the following recommendations as a result of this study:

- City Council adopt the following water and sewer rates for 2024 through 2028 as presented in Section 5 of this report and provided in Appendix B to the report.
- InterGroup recommends that the City establishes a water utility capital reserve provision at $2.830 million based on on the current value of assets and anticipated service as per the Asset Management Plan.
- InterGroup recommends that the City establishes a sewer utility capital reserve provision at $2.560 million based on on the current value of assets and anticipated service as per the Asset Management Plan.

1.0 INTRODUCTION AND OVERVIEW

The City of Courtenay has a population of over 28,000 people and has had a rapid population increase of 10.8% in 2016-2021.[1]

The City's water distribution system has 8,847 connections.[2] Approximately 42% of institutional, commercial, industrial and agricultural customers, 20% of multi-family properties and all single-family residential properties are unmetered.[3] The City's 2022-2026 budget shows approximately 87% of Water Operating Fund revenue arises from Water Utility Fees (74%) and Water Frontage Tax (13%). Approximately 67% of the Water Utility Fees are collected from unmetered customers.[4]

The City's sewer utility infrastructure includes approximately 7,000 individual connections and wastewater from the City is piped to the Comox Valley Regional District (CVRD) collection system.[5] Similar to the Water Operating Fund Budget, in the 2020 Budget, about 82% of Sewer Operating Fund revenue arises from Sewer Utility Fees (59%) and Water Frontage Tax (23%). Approximately 83% of the Sewer Utility Fees are collected from residential customers.[6]

InterGroup Consultants Ltd. ("InterGroup") was retained by the City in 2020 to develop water and sewer utility revenue requirements over the next 10 years and recommend fees and charges for 2024-2028 based on a cost of service study that will recover utility costs with the objective of providing sustainable and equitable service. Rate proposals were developed to achieve a balance between the following objectives:

- Self sustaining utilities – rates were designed to ensure they are sufficient to recover the current and forecast future costs required to provide the water and sewer services.
- Accurately reflect the cost of providing the service to different customer classes.
- Consider competitive perspectives with peer municipalities.
- Rates should be easy to understand and administer.
- Consider customer perspectives on the overall level of rates and how rate changes affect affordability.

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[1] 2022-2026 Consolidated Financial Plan, p. 4.
[2] Ibid
[3] Water & rates Review Request for Proposal, Terms of Reference.
[4] 2022–2026 Water Fund Financial Plan, pdf page 11 of 14, available online: https://www.courtenay.ca/assets/Departments/Finance/2022-2026~Financial~Plan/2022-2026%20Water%20Fund%20Financial%20Report.pdf.
[5] The City of Courtenay webpage: https://www.courtenay.ca/EN/main/departments/public-works/sewer.html.
[6] 2022–2026 Sewer Fund Financial Plan, pdf page 11 of 14, available online: https://www.courtenay.ca/assets/Departments/Finance/2022-2026~Financial~Plan/2022-2026%20Sewer%20Fund%20Financial%20Report.pdf.

InterGroup's review involved the following steps for each utility:

1. **Develop Revenue Requirement**: A utility revenue requirement includes operations and maintenance expenses, and capital costs required to operate the utility. The revenue requirement also includes overhead and debt costs, where applicable. The analysis also considers sales and revenue forecasts at existing rates and the implications on reserve balances.
2. **Cost of Service Analysis**: A cost of service analysis examines the cost to provide utility service to each customer type. The cost-of-service analysis considers how each customer class contributes towards recovery of allocated costs.
3. **Rate Design**: Rates are designed to recover a utility's revenue requirement. Rates are designed to achieve a balance between providing revenue stability, reflecting cost drivers and providing price signals to customers for conservation through a combination of fixes and variable charges.
4. **Peer Municipality Comparison**: InterGroup undertook a comparison of existing bills for customers in other municipalities at existing and proposed rates to understand how the City's current and proposed utility rates compare to other municipalities.

The report summarizes the results of the review in the following sections:

- Section 2 discusses capital reserve provision requirements analysis for the water and sewer utilities to determine alignment of the current reserve provisions with the long-term infrastructure investment for the utilities.
- Sections 3 and 4 summarize the review of the revenue requirement and cost of service analysis for each utility.
- Section 5 provides proposed rates for each utility and the impact of the proposed rates.
- Section 6 provides peer municipality comparisons of monthly bills for water and sewer services for average residential, commercial, and institutional customers.
- Section 7 provides a summary of recommendations.

2.0 CAPITAL RESERVE PROVISION ANALYSIS

The last utility rates review for the City was conducted by an independent consultant in 2010 (AquaVic Water Solutions Inc.). The 2010 Rate Review included a review of annual capital contributions for infrastructure renewal and concluded that an annual cost to owning and renewing the infrastructure should be set aside each year to cover the costs of wear and tear on the system, which should be considered when reviewing and setting rates. The 2010 Rate Review recommended the City establish a reserve provision of $0.8 million per year for capital renewals starting in 2011 and increased by 3.5% per year thereafter in order to build up the reserve fund balance.

As part of the current study, InterGroup reviewed the current reserve provision levels for both utilities in order to determine alignment of the current reserve provisions with the long-term infrastructure investment for the utilities.

2.1 WATER UTILITY CAPITAL RESERVE PROVISION

The City's current water utility reserve provisions total approximately $0.4 million, which include:

- $0.3 million per year for Asset Management Reserve;
- $0.06 million per year for Water Utility Reserve; and
- $$0.03 million for Water Machinery and Equipment Reserve, and small amounts for MFA Reserve Fund and Carbon Offsets Reserve.

The Asset Management Reserve is used as a funding source for the replacement of the City's infrastructure. The replacement value of the Water System is $232.9 million as per the City's most recent Asset Management Plan prepared in 2022-2023.

Aging infrastructure is a critical issue for all utilities, which are expected to provide uninterrupted service every day. Accordingly, the level of reserves maintained by a utility is an important component of a utility's financial management and is a key consideration in the rate determination process.

The City currently does not have a minimum balance on the water reserve funds. The projected water reserve funds continuity from the City's financial plan shows a quickly declining reserve balance – from $3.1 million in 2021 to $1.9 million in 2026, as shown in Table 2-1.

Table 2-1: Water Reserves Continuity Forecast

Water Reserves and Surplus Table

WATER Surplus, Reserves and DCC Summary Estimated Closing Balances	Estimated 2021	Budget 2022	Proposed Budget 2023	2024	2025	2026
Water Fund Surplus						
Prior Year Surplus (unallocated)	3,801,100	3,887,200	3,405,000	2,802,000	2,384,100	2,084,000
Surplus Reserve for Future Expenditures (Unspent Capital 2021)	170,000	-	-	-	-	-
	3,971,100	3,887,200	3,405,000	2,802,000	2,384,100	2,084,000
Water Capital Reserves						
Water Reserve	1,725,700	1,555,700	1,386,500	1,217,900	1,050,000	882,800
Asset Management Reserve	1,037,000	1,237,000	937,000	637,000	837,000	537,000
Water Machinery and Equipment	311,400	341,400	371,400	401,400	431,400	461,400
	3,074,100	3,134,100	2,694,900	2,256,300	2,318,400	1,881,200
Total Water Surplus and Reserves	**7,045,200**	**7,021,300**	**6,099,900**	**5,058,300**	**4,702,500**	**3,965,200**
Total Water DCC Bylaw #2426/2755	**376,400**	**376,400**	**376,400**	**376,400**	**376,400**	**376,400**

Industry guidelines state that all utilities should establish formal or informal financial policies relative to reserves. Such policies should articulate how these balances are established, their use, and how the adequacy of each respective reserve fund balance is determined.

Generally, there are three methods of establishing an appropriate amount of capital reserves to maintain:

- Based on asset management plan;
- Based on current value of assets and anticipated service life; and
- Based on a utility's annual depreciation expense.

The minimum capital reserve amounts based on each of these methods is discussed below.

Water Utility Minimum Reserve Balance Based on Asset Management Plan

The City's Asset Management Plan indicates a $2.8 million annual water infrastructure renewal estimate based on the long-term water system infrastructure forecast spending, suggesting a significant gap in the current reserve provision of $0.4 million, as evidenced by the declining reserve balance projection in the 2022-2026 financial plan.

Water Utility Minimum Reserve Balance Based on Asset Values and Service Life

The minimum water reserve funds balance based on the current value of assets and anticipated service is about $2.8 million as shown below. This is aligned with the Asset Management Plan average annual capital spending forecast. This is illustrated in Table 2-2.

Table 2-2: Water Utility Minimum Reserve Balance Calculation

Asset	Quantity	Replacement Value	Weighted Average Useful Life	Annual Replacement Estimate
Mains	173.3 kms	194,878,000	87 years	2,265,785
Hydrants	804 ea.	5,065,000	65 years	73,962
Pump Station	1 ea.	350,000	65 years	308
Sampling Stations	11 ea.	31,000	60 years	3,500
Valves	2,923 ea.	31,221,000	60 years	431,914
Meters	718 ea.	1,399,000	20 years	55,976

Recommended minimum reserve balance **2,831,445**

Water Utility Minimum Reserve Balance Based on Annual Depreciation Expense

Water utility annual depreciation expense is projected at $0.5 million. However, while this estimate is higher than the current provision of $0.4 million, the reserve policy guidelines note that this method less accurately represents the true replacement and renewal costs of the water infrastructure, as compared to the Asset Management Plan and the current value of assets methods.

This is because the depreciation expense reflects assets installation costs, not current replacement cost.

The 2010 Rate Review included a reserve provision of $800k/year recommended to be set aside for capital renewals starting in 2011 and increased by 3.5% per year thereafter in order to build up the reserve fund balance.

It is recommended that the reserve provision in the forecast revenue requirement is established at $2.830 million based on on the current value of assets and anticipated service as per the Asset Management Plan.

2.2 SEWER UTILITY CAPITAL RESERVE PROVISION

The City's current sewer utility reserve provisions also total approximately $0.4 million, which include:

- $0.3 million per year for Asset Management Reserve; and
- $$0.08 million for Sewer Machinery and Equipment Reserve, and small amounts for MFA Reserve Fund and Carbon Offsets Reserve.

The replacement value of the Sewer System is $264.8 million as per the City's most reset Asset Management Plan prepared in 2022-2023.

The City currently does not have a minimum balance on the sewer reserve funds. The projected sewer reserve funds continuity from the City's financial plan shows an overall decline in the reserve balance – from $3.2 million in 2021 to $2.0 million in 2026, as shown in Table 2-3.

Table 2-3: Sewer Reserves Continuity Forecast

Sewer Reserves and Surplus Table

SEWER Surplus, Reserves and DCC Summary Estimated Closing Balance	Estimated Actual 2021	Budget 2022	Proposed Budget 2023	2024	2025	2026
Sewer Fund Surplus						
Prior Year Surplus (unallocated)	1,949,500	1,068,600	1,319,200	804,600	1,180,800	1,407,100
Surplus Reserve For Future Expenditure (Unspent Capital 2021)	1,339,600	-	-	-	-	-
	3,289,100	1,068,600	1,319,200	804,600	1,180,800	1,407,100
Sewer Capital Reserves						
Sewer Reserve	566,700	566,700	566,700	566,700	566,700	566,700
Asset Management Reserve	1,940,100	749,000	1,049,000	849,000	649,000	349,000
Sewer Machinery and Equipment	721,200	796,200	871,200	946,200	1,021,200	1,096,200
	3,228,000	2,111,900	2,486,900	2,361,900	2,236,900	2,011,900
Total Sewer Surplus and Reserves	**6,517,100**	**3,180,500**	**3,806,100**	**3,166,500**	**3,417,700**	**3,419,000**
Sewer Development Cost Charges (DCC)						
Sewer DCC Bylaw #1638/2755	3,500	3,500	3,500	3,500	3,500	3,500
Sewer DCC Bylaw #2426/2755	801,400	801,400	801,400	801,400	801,400	801,400
Total Sewer DCC	**804,900**	**804,900**	**804,900**	**804,900**	**804,900**	**804,900**

The minimum capital reserve amounts based on each of the methods discussed in Section 2.1 indicate the following provision amounts.

Sewer Utility Minimum Reserve Balance Based on Asset Management Plan

The City's Asset Management Plan indicates a $2.6 million annual sewer infrastructure renewal estimate based on the long-term sewer system infrastructure forecast spending, suggesting a significant gap in the current reserve provision of $0.4 million, as evidenced by the declining reserve balance projection in the 2022-2026 financial plan.

Sewer Utility Minimum Reserve Balance Based on Asset Values and Service Life

The minimum sewer reserve funds balance based on the current value of assets and anticipated service is about $2.6 million as shown below. This is aligned with the Asset Management Plan average annual capital spending forecast. This is illustrated in Table 2-4.

Table 2-4: Sewer Utility Minimum Reserve Balance Calculation

Asset	Quantity	Replacement Value	Weighted Average Useful Life	Annual Replacement Estimate
Gravity Mains	158.5 km	231,500,000	149 years	1,982,522
Force Mains	6.3 km	7,710,000	120 years	17,456
Valves	28	266,000	40 years	5,320
Lift Stations	10	18,200,000	45 years	469,500
Manholes	2,032	7,112,000	80 years	86,170

Recommended minimum reserve balance **2,560,968**

Sewer Utility Minimum Reserve Balance Based on Annual Depreciation Expense

Sewer utility annual depreciation expense is projected at $0.5 million. However, while this estimate is higher than the current provision of $0.4 million, the reserve policy guidelines note that this method less accurately represents the true replacement and renewal costs of the sewer infrastructure, as compared to the Asset Management Plan and the current value of assets methods.

This is because the depreciation expense reflects assets installation costs, not current replacement cost.

The 2010 Rate Review included a reserve provision of $800k/year recommended to be set aside for capital renewals starting in 2011 and increased by 3.5% per year thereafter in order to build up the reserve fund balance.

It is recommended that the reserve provision in the forecast revenue requirement is established at $2.560 million based on on the current value of assets and anticipated service as per the Asset Management Plan.

3.0 WATER UTILITY

3.1 CUSTOMER AND RATE CLASSES AND CURRENT RATES

The City maintains rate classes for the water utility based on customer class and a mixture of flat rates for unmetered customers and volumetric rates for metered customers. Table 3-1 summarizes the existing water rates.[7]

Table 3-1: Water Utility Existing Rates

	2023 Approved rates		
	Unmetered, $/year	Metered	
		For the first 48 m^3 ($)	Over 48.1 m^3 ($/m3)
Flat Rates			
Single Family Dwelling	536.82		
Multiple Family Dwelling -per unit	453.44		
Commercial	513.00		
Outside Commercial Users	926.20		
Outside Residential Users	926.20		
Sandwick - summer only	536.82		
Metered Rates			
Commercial		88.80	1.85
Multi Family		88.80	1.85
Outside users Multi Family Metered		115.44	2.41
Outside users Commercial Metered		115.44	2.41
Regional District bulk ($/m3)		1.85	1.85
Regional Standpipe, Playfields ($/m3)		2.41	2.41

3.2 SALES FORECASTS

A sales forecast for the water utility was prepared based on a forecast number of customers and consumption by rate class. The forecasts are based on 2021 water balance estimate (based on available information at the time of preparation of sales forecast) and bulk water purchases. The sales forecast assumes an average annual demand growth of 1% from 2022 to 2026, which is based on a budgeted bulk purchase growth rate. Number of customers was estimated using

[7] Bylaw No. 3089, 2023.

2022 numbers and population growth (1% for single family dwellings and 0.5% for all other customer classes).

Reasonableness of calculated revenues was cross-checked against the 2022-2026 budget, where variances were largely explained by the CVRD volume increase (not accounted for in the budget).

3.3 REVENUE REQUIREMENT

There are six major components of the revenue requirement for the water utility:

- Bulk water supply costs for purchases from Comox Valley Regional District;
- Transmission and Distribution operating and maintenance costs;
- Capital costs, for capital expenditures in each year including new infrastructure and replacements;
- Debt Service costs, related to capital investment that are recovered over a longer term;
- Overhead costs for services provided by the City to the water utility such as revenue collection, information technology, and financial reporting; and
- Reserve provisions to build capital reserve balance as discussed in Section 2.1.

Future revenues from rates were forecast based on the following conditions:

1. Gradually improve utility reserve balances over the forecast period;
2. Achieve annual revenues by 2028 to recover all operating costs and fund a capital reserve provision;
3. Fund major capital expansion projects with new long-term debt; and
4. Reserve provisions to build capital reserve balance will be funded by frontage fees revenue. This will require about 19% annual increase in water frontage fee revenue in 2025-2028.

Table 3-2 summarizes the forecast revenue requirements for 2023 to 2028.

The forecast revenue requirement indicates that the following average rate increases are required for the water utility for the period from 2024 to 2028:

- 2024: 4.5%
- 2025: 3.0%
- 2026: 1.5%
- 2027-2028: 1.1% per year.

Table 3-2: Forecast Water Utility Revenue Requirement ($000's) 2023-2028

Line	Component	2023	2024	2025	2026	2027	2028
1	Comox Valley Regional District - Supply Costs	$5,195	$5,247	$5,299	$5,352	$5,623	$5,908
	Comox Valley Regional District - Rate Increases	15.7%	0.0%	0.0%	0.0%	4.1%	4.1%
2	Transmission and Distribution	$1,417	$1,432	$1,456	$1,482	$1,497	$1,512
3	General Administration	$1,924	$1,920	$1,999	$1,986	$2,006	$2,026
4	Debt Costs	$75	$267	$271	$283	$254	$254
5=Sum(5a:5f)	Capital Expenditures [net cash needs]	$565	$615	$550	$550	$550	$550
5a	*Renewal*	*$1,265*	*$1,315*	*$1,395*	*$1,250*	*$1,250*	*$1,250*
5b	*New Infrastructure*	*$3,500*	*$0*	*$0*	*$0*	*$0*	*$0*
5c	*Funded by reserves*	*-$700*	*-$700*	*-$200*	*-$700*	*-$700*	*-$700*
5d	*Funded by reserve for future expenditures*						
5e	*Funded by grants*	*$0*	*$0*	*-$345*	*$0*		
5f	*Funded through financing*	*-$3,500*	*$0*	*-$300*	*$0*		
6=Sum(1:5)	**Total Operating and Capital Costs**	**$9,175**	**$9,481**	**$9,575**	**$9,654**	**$9,930**	**$10,250**
7	Water Machinery and Equipment Reserve	$30	$70	$90	$100	$105	$109
8=Sum(8a:8d)	Reserve Provisions Funded by Frontage Tax	$362	$1,461	$1,733	$2,057	$2,441	$2,896
8a	*Asset Management Reserve*	*$300*	*$1,398*	*$1,669*	*$1,991*	*$2,375*	*$2,830*
8b	*Water Utility Reserve*	*$62*	*$63*	*$65*	*$66*	*$66*	*$66*
8c	*MFA Reserve Fund*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
8d	*Carbon Offsets Reserve*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
9=6+7+8	**Gross Revenue Requirement**	**$9,567**	**$11,012**	**$11,399**	**$11,811**	**$12,476**	**$13,255**
10	Other Revenues [Contributions, Permits]	$107	$107	$107	$107	$107	$107
11	Revenues from Frontage Tax	$1,231	$1,461	$1,733	$2,057	$2,441	$2,896
12	Revenues from Parcel Tax	$8	$8	$8	$8	$8	$0
13=9-10-11-12	**Net Revenue Required from Rates**	**$8,221**	**$9,436**	**$9,550**	**$9,639**	**$9,920**	**$10,252**
14	Total Revenues at 2023 Rates (existing rates)	$8,707	$8,945	$9,004	$9,064	$9,125	$9,186
14a	*Rate Revenues [flat, metered, meter rental]*	*$8,518*	*$8,577*	*$8,636*	*$8,696*	*$8,757*	*$8,818*
14b	*Revenues from Parks*	*$126*	*$168*	*$168*	*$168*	*$168*	*$168*
14c	*Revenues from Fire Protection*	*$62*	*$200*	*$200*	*$200*	*$200*	*$200*
15=14-13	Revenue Surplus/(Shortfall)	$485	-$491	-$546	-$575	-$796	-$1,066
16	Required Annual Average Rate Increase	0.0%	4.5%	3.0%	1.5%	1.1%	1.1%
16a	*Increase related to CVRD Cost Increases*		*0.6%*	*0.6%*	*0.6%*	*3.1%*	*3.2%*
16b	*Courtenay internal O&M and capital cost*		*3.9%*	*2.4%*	*0.9%*	*-2.0%*	*-2.2%*
17	**Revenues after Rate Increase**	**$8,707**	**$9,347**	**$9,691**	**$9,902**	**$10,076**	**$10,252**
18=17-13	Revenue Surplus/(Shortfall) after Increase	$485	-$89	$141	$263	$155	$0
	Utility Reserves						
19	**Opening Balance**	**$3,709**	**$3,891**	**$4,639**	**$6,411**	**$8,140**	**$10,154**
20=18	Surplus/(Shortfall)	$485	-$89	$141	$263	$155	$0
21=7+8	Reserve Provisions	$392	$1,531	$1,823	$2,157	$2,546	$3,005
22=5c	Capital funded by Reserves	-$700	-$700	-$200	-$700	-$700	-$700
23	Interest on Reserve Balance	$6	$6	$7	$10	$12	$15
24=Sum(19:23)	**Closing Balance**	**$3,891**	**$4,639**	**$6,411**	**$8,140**	**$10,154**	**$12,474**

Appendix A provides forecast water utility revenue requirement through 2031 based on a 10-year financial model developed for this Rate Review.

3.4 COST OF SERVICE

The relative levels of rates charged to the various customer classes of a utility are ideally developed based on principles related to the **cost of service**, or the cost to provide the service to these customers. Key cost drivers for water utility costs include:

1) the water demand (at peak day and peak hour);
2) the water consumption; and
3) the number of customers served in each rate class.

A Cost of Service Analysis (COSA) starts with a utility's revenue requirement, consistent with Manual of American Water Works Association, M1 Principles of Water Rates, Fees and Charges ("AWWA Manual"). The COSA has three key steps:

1) **Functionalization** - the revenue requirement is separated according to function or role that the costs relate to, such as supply, transmission and distribution, administration, and general costs.
2) **Classification** - in this step the functionalized costs are classified into cost components according to the AWWA Manual approach (base costs, extra capacity, which includes maximum day and peak hour demands, and customer related costs.
3) **Allocation** - this step involves allocation of the costs to each customer class based on customer class characteristics (residential, commercial, industrial, etc.).

Upon completion of this analysis, a determination can be made with respect to system costs and the different customer classes that are paying for these system costs. This is referred to as the **Revenue to Cost Coverage Ratio (RCC)**. The RCC is calculated by dividing revenues from a customer class by the costs to serve that customer class. A RCC ratio over 100% indicates that revenues exceed costs and that customers in that class are paying rates higher than the costs to serve them. A RCC ratio of less than 100% indicates that revenues do not fully recover that costs to serve that class of customers.

With respect to the RCC, and with utility costs and revenue recovery generally, there are diminishing returns from trying to allocate every single line-item cost to individual customer classes. As such, consistent with best practices, utilities aim for a range of reasonableness with respect to the RCC of between 90 percent and 110 percent.

A detailed COSA for the water utility was prepared for the City based on the revenue requirement forecast for 2028 and required average rate increases.

Table 3-3 provides a summary of the water utility RCC ratio by customer class based on the COSA results. Additional details of the water utility COSA can be found in **Appendix B**, Cost of Service Study Methods and Results.

Table 3-3: Forecast 2028 Water Utility Revenue to Cost Coverage Ratios

Customer Type	Number of Customers	2028 Forecast		
		Revenue Forecast with Equal % Rate Increase ($000)	COS Results ($000)	RCC Ratio
		A	B	C=A/B
Residential	8,777	5,273	6,070	87%
Multi-Family unmetered	554	280	342	82%
Multi-Family metered	4,788	2,121	1,344	158%
Commercial unmetered	473	271	231	118%
Commercial metered	1,809	1,848	1,390	133%
Parks	1	187	536	35%
RD bulk/ Standpipe/ Playfields	2	48	53	91%
Fire Protection		223	286	78%
Total	**16,404**	**10,252**	**10,252**	**100%**

Table 3-3 reflects the following results from the COSA:

- Single family residential class revenues are slightly below the 90-110% RCC range of reasonableness.
- Multi-Family unmetered customer class RCC ratio is about 82% which is below the 90-110% range of reasonableness and indicates the rates for this class are lower than the cost to serve.
- Multi-Family metered customer class RCC ratio is very high at 158% and indicates the rates for this class are higher than the cost to serve.
- Similarly, commercial unmetered and commercial metered customer class RCC ratios are also high at 118% and 133%, respectively, indicating their rates will are also higher than the cost of service if applied an average rate of increase per year.
- RD bulk/ Playfields class RCC ratios have greatly improved due to a large rate adjustment in 2023 (91%) and is currently within RCC zone of reasonableness.
- Fire Protection revenue has an improved RCC ratio reflecting recent rate adjustment, however, at 78% it is still below RCC zone of reasonableness.
- Parks revenue however shows very low RCC ratio (35%) even with the recent rate adjustment, reflecting the fact that they have very high peaking factor (use large quantity of water in a short period of time; and annual consumption is very low). Accordingly, this class will require higher than average rate adjustment per year.

4.0 SEWER UTILITY

4.1 CUSTOMER AND RATE CLASSES AND CURRENT RATES

The City maintains rate classes for the sewer utility based on customer class, which are charged flat annual rates for sewer service.[8] The existing rate for sever service are summarized below.

- Residential user rates: $398.76 per annum.
- Commercial and institutional user rates range based on business type:
  - Most commercial and institutional customers pay in the range of $398.76 to $797.51 per annum.
  - Unit and service site-based rates for specific customers ranging from $82.85 to $160.57 per annum.
  - Larger customers have specific rates ranging from $3,187.38 per annum for Laundry business customers to $31,732.94 per annum for Regional Recreation Complex.

4.2 SALES FORECASTS

A sales forecast for the sewer utility was prepared based on forecast increase in number of customers for the water utility. The corresponding user rates were then applied to forecast number of customers for the sewer utility by customer class to derive the annual revenue for each year of forecast.

4.3 REVENUE REQUIREMENT

There are six major components of the revenue requirement for the sewer utility:

- Comox Valley Regional District Sewer Requisition;
- Sewer Collection operating and maintenance costs;
- Capital costs, for capital expenditures in each year including new infrastructure and replacements;
- Debt Service costs, related to capital investment that are recovered over a longer term;
- Overhead costs for services provided by the City to the water utility such as revenue collection, information technology, and financial reporting; and
- Reserve provisions to build capital reserve balance as discussed in Section 2.2.

Future revenues from rates were forecast based on the following conditions:

1. Gradually improve utility reserve balances over the forecast period.

[8] Bylaw No. 3088, 2023.

2. Achieve annual revenues by 2028 to recover all operating costs and fund a capital reserve provision.
3. Fund major capital expansion projects with new long-term debt.
4. Reserve provisions to build capital reserve balance will be funded by frontage fees revenue. This will require about 21% increase in sewer frontage fee revenue in 2024.

Table 4-1 summarizes the forecast revenue requirements for 2023 to 2028.

The forecast revenue requirement indicates that an average rate increase of 8.1% per year is required for the sewer utility for the period from 2024 to 2028.

Table 4-1: Forecast Sewer Utility Revenue Requirement ($000's) 2023-2028

Line	Component	2023	2024	2025	2026	2027	2028
1	Comox Valley Regional District Sewer Requisition	$5,272	$5,758	$5,758	$5,758	$5,966	$6,182
	CVRD Rate increases %	5.6%	9.2%	0.0%	0.0%	3.6%	3.6%
2	Collection	$732	$739	$750	$752	$760	$767
3	General Administration	$1,495	$1,531	$1,573	$1,580	$1,596	$1,612
4	Debt Costs	$290	$466	$655	$751	$751	$751
5=Sum(5a:5f)	Capital Expenditures Provision [net cash needs]	$540	$540	$540	$540	$500	$500
5a	*Renewal*	*$2,732*	*$4,200*	*$2,645*	*$1,100*	*$1,100*	*$1,100*
5b	*New Infrastructure*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
5c	*Funded by reserves*	*$0*	*-$500*	*-$500*	*-$600*	*-$600*	*-$600*
5d	*Funded through financing*	*-$2,500*	*-$3,000*	*-$1,800*	*$0*	*$0*	*$0*
5e	*Funded by reserve for future expenditures*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
5f	*Funded through Fed / Prov Funding*	*$0*	*$0*	*-$345*	*$0*	*$0*	*$0*
6=Sum(1:5)	**Total Operating and Capital Costs**	**$8,328**	**$9,034**	**$9,275**	**$9,381**	**$9,573**	**$9,812**
7	Sewer Machinery and Equipment Reserve	$75	$125	$150	$160	$165	$171
8=Sum(8a:8c)	Reserve Provisions Funded by Frontage Tax	$301	$2,561	$2,561	$2,561	$2,561	$2,561
8a	*Asset Management Reserve*	*$300*	*$2,560*	*$2,560*	*$2,560*	*$2,560*	*$2,560*
8b	*MFA Reserve Fund*	*$1*	*$1*	*$1*	*$1*	*$1*	*$1*
8c	*Carbon Offsets Reserve*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
9=6+7+8	**Gross Revenue Requirements**	**$8,704**	**$11,720**	**$11,985**	**$12,102**	**$12,299**	**$12,544**
10	Other Revenues [Connection Fee and Contributions]	$61	$61	$61	$61	$61	$61
11	Revenues from Frontage Tax	$2,115	$2,561	$2,561	$2,561	$2,561	$2,561
12	Revenues from Parcel Tax	$12	$12	$12	$12	$12	$12
13=9-10-11-12	**Net Revenue Required from Rates**	**$6,516**	**$9,087**	**$9,352**	**$9,469**	**$9,666**	**$9,911**
14	Total Revenues at 2023 Rates (existing rates)	$6,476	$6,525	$6,573	$6,623	$6,673	$6,723
15=14-13	Revenue Surplus/(Shortfall)	-$40	-$2,562	-$2,779	-$2,846	-$2,993	-$3,188
16	Required Annual Average Rate Increase	0.0%	8.1%	8.1%	8.1%	8.1%	8.1%
16a	*Increase related to CVRD Cost Increases*		*7.4%*	*0.0%*	*0.0%*	*3.1%*	*3.2%*
16b	*Courtenay internal O&M and capital cost*		*0.6%*	*8.1%*	*8.1%*	*4.9%*	*4.9%*
17	**Revenues after Rate Increase**	**$6,476**	**$7,051**	**$7,677**	**$8,359**	**$9,102**	**$9,911**
18=17-13	Revenue Surplus/(Shortfall) after Increase	-$40	-$2,035	-$1,675	-$1,109	-$563	$0
	Utility Reserves						
19	**Opening Balance**	**$2,247**	**$2,587**	**$2,741**	**$3,281**	**$4,297**	**$5,866**
20=18	Surplus/(Shortfall)	-$40	-$2,035	-$1,675	-$1,109	-$563	$0
21=7+8	Reserve Provisions	$376	$2,686	$2,711	$2,721	$2,726	$2,732
22=5c	Capital funded by Reserves	$0	-$500	-$500	-$600	-$600	-$600
23	Interest	$3	$4	$4	$5	$6	$9
24=Sum(19:23)	**Closing Balance**	**$2,587**	**$2,741**	**$3,281**	**$4,297**	**$5,866**	**$8,006**

Appendix A provides forecast sewer utility revenue requirement through 2031 based on a 10-year financial model developed for this Rate Review.

4.4 COST OF SERVICE

The sewer utility COSA was developed in the same manner as the water service COSA, and consistent with the AWWA manual.

After the costs were functionalized, they were classified and subsequently allocated to the appropriate customer class.

In almost all jurisdictions the sewer flows are not metered (except in cases where the customers have effluent meters). Therefore, sewer flows are estimated based on water usage and return factors (not all water used is returned to the sewer system).

The return factor recognizes that a portion of customers' water consumption does not return to the sewer collection system. The City of Courtenay Sewer Master Plan provides base sanitary flow calibration and conversion rates (return factors) by customer class, which were used in the COSA.

Table 4-2 provides a summary of the RCC ratios by customer class based on the COSA results for 2028 and average rate increase of 8.1% per year. As with the water utility, additional detail on the sewer services COSA can be found in Appendix B.

Table 4-2: Forecast 2028 Sewer Utility Revenue to Cost Coverage Ratios

Customer Type	Number of Customers	2028 Forecast		
		Revenue Forecast with Equal % Rate Increase ($000)	COS Results ($000)	RCC Ratio
		A	B	C=A/B
Residential Users	14,147	8,316	7,650	109%
Commercial Users	1,949	1,099	1,886	58%
Institutional Users	570	496	376	132%
Total	**16,666**	**9,911**	**9,911**	**100%**

Table 4-2 reflects the following results from the COSA:

- Residential class revenues are within the 90-110% RCC range of reasonableness.
- Commercial class RCC ratio is at about 58% which is well below the range of reasonableness (indicates the rates for this class is lower than the cost to serve). The review shows that lower RCC ratio is primarily due to the following:

  - Most commercial customers currently get charged the same rates as residential customers ($/customer), but they use more water than residential customers and as such cost more to serve per customer (have higher use per customer).
  - A return factor is higher for commercial customers, i.e., they return a much greater volume of water to the sewer system than residential customers, which also makes a cost to serve them higher than residential customers.

- Industrial class RCC ratio is at about 132% which above the range of reasonableness (rates for this class is higher than the cost to serve). Note that institutional class rates are high compared to other customer classes, which was also confirmed by reviewing the rates in other peer municipalities (e.g., the rate for schools for City of Courtenay is $60/month per classroom vs $21-$32/month in reviewed municipalities).

5.0 PROPOSED RATES

Rate design is the method by which utilities set rates to recover the costs of providing services to customers. Rate design seeks to balance a number of objectives that sometimes compete with each other. The objective in a rate design study is to calculate rates that represent a reasonable balance between different rate design objectives.

Based on the review of the cost-of-service analysis and discussion with City staff, proposed rates for each utility were designed based on the following criteria:

1. Ensure rates are sufficient to achieve target capital reserve provisions in each year;
2. Ensure rates are sufficient to recover the full utility revenue requirement by 2028; and
3. To the extent feasible, have smooth year over year rate increases to avoid large fluctuations which can have a larger impact on customers.

5.1 WATER UTILITY RATES

The rate design reflecting the average annual rate increases and rate rebalancing objectives based on the water utility cost of service study results targeted the following objectives:

- Residential, Multi-Family unmetered, and Fire Protection customer classes which are below the 90-110% RCC zone of reasonableness reach the lower threshold of 90% of RCC ratio (i.e. higher than average rate increase per year).
- Regional District Bulk and Playfield rates target 100% RCC ratio (higher than average rate increase per year).
- Considering a much larger gap in the RCC ratio of Parks revenue, apply a phased approach targeting RCC ratio of 60% in the first 5-year period (2024-2028).
- Maintain flat rates (i.e. zero rate increase) for Multi-Family metered and Commercial metered rate classes until their RCC ratios are reduced to below 120% from the current high levels.
- Commercial unmetered class target to remain at 118% RCC ratio (average rate adjustment per year).

The recommended rate proposal results in the following annual rate increases in 2024-2028:

- Residential class: 5.5% in 2024, reducing to 2.0% by 2028
- Multi-family unmetered customer class: 6.7% in 2024, reducing to 3.2% by 2028
- Parks: 16.2% in 2024, reducing to 12.7% by 2028
- RD bulk/ Standpipe/ Playfields: 6.4% in 2024, reducing to 3.0% by 2028
- Fire Protection: 7.7% in 2024, reducing to 4.3% by 2028

- Commercial unmetered: 4.5% in 2024, reducing to 1.1% by 2028
- Multi-family metered: 0%
- Commercial metered: 0%

The resulting 2028 RCC ratios at the recommended rate adjustments are illustrated in Table 5-1.

Table 5-1: Forecast 2028 Water Utility Cost Coverage Ratios at Recommended Rates

	2028 Forecast -Recommended Rates		
	Revenue Forecast with COS Rate Increase ($000)	COS Results ($000)	RCC Ratio
	D	E	F=D/E
Residential	5,527	6,070	91%
Multi-Family unmetered	311	342	91%
Multi-Family metered	1,901	1,344	141%
Commercial unmetered	271	231	118%
Commercial metered	1,656	1,390	119%
Parks	321	536	60%
RD bulk/ Standpipe/ Playfields	53	53	100%
Fire Protection	261	286	91%
	10,300	**10,252**	**100%**

Appendix C provides detailed water utility recommended rates by customer class for 2024 through 2028.

5.2 SEWER UTILITY RATES

An average rate increase of 8.1% per year is proposed for the sewer utility for the period from 2024 through 2028. The rate design reflecting this average annual rate increase and rate rebalancing objectives based on the sewer utility cost of service study results targeted the following objectives:

- Residential customer classes, which are within 90-110% RCC ratio, receive an average rate increase per year.
- Commercial customer classes, which are below the 90-110% RCC zone of reasonableness, see rate adjustments above an average rate increase per year in order to bring those closer to the lower threshold of 90%. Considering a large gap in the commercial class RCC ratio, apply a phased approach targeting RCC ratio of 65% in the first 5-year period (2024-2028).

- Institutional customer class see rate adjustments below an average rate increase per year in order to bring those closer to the upper threshold of 110%.

The recommended rate proposal results in the following annual rate increases in 2024-2028:

- Residential class: 8.0%
- Commercial class: 10.2%
- Institutional class: 4.8%

The resulting 2028 RCC ratios at the recommended rate adjustments are illustrated in Table 5-2.

Table 5-2: Forecast 2028 Sewer Utility Cost Coverage Ratios at Recommended Rates

	2028 Forecast- Recommended Rate Option		
	Revenue Forecast with COS Rate Increase ($000)	COS Results ($000)	RCC Ratio
Residential Users	8,272	7,650	108%
Commercial Users	1,226	1,886	65%
Institutional Users	413	376	110%
	9,911	**9,911**	**100%**

Appendix C provides detailed sewer utility recommended rates by customer class for 2024 through 2028.

5.3 ALTERNATIVE SEWER RATE OPTION ANALYSIS

As part of the utility rate review, InterGroup was also requested to analyze a volumetric rate option for the sewer utility. For this purpose, InterGroup reviewed the 2018-2022 water consumption meter reads provided by the City, which indicates the following:

- In total there are about 700 metered accounts with sewer connections of the approximately 16,700 total accounts (note that some metered accounts may have multiple units that are charged flat rates).
- Total metered water consumption is about 1,300,000 m3 per year.
- Metered accounts with sewer connections vary by customer type:
    - Multi-Family dwellings show about 300 metered accounts with a consumption of about 550,000 m3 per year.

- Hotels/Motels shows about 18 metered accounts with a consumption of about 70,000 m3 per year.
- Mobile Home Parks show only one location with 12,000 m3 consumption.
- Trailer Park Campsite shows one account with a very high consumption (about 9,500 m3 per year).
- Smaller commercial accounts (wholesale/retail stores; business/professional offices; pool room; machine chop; barber, etc.) show approximately 300 accounts with a consumption of about 430,000 m3.
- Larger commercial accounts (café and restaurants; Bank, Beverage Room; Department Store; Supermarket; Other users not enumerated) a consumption of about 170,000 m3 per year. However, only a small portion of accounts are metered for Banks (4 out of 15); Beverage Room (2 out of 13); Department Store (2 out of 8); and Supermarket (1 out of 7).
- Laundry and Cheese Processing Plant do not show any metered consumption.
- Of Institutional customers, only Utility Office and RD Admin Office are fully metered; Church and Schools are partially metered.

Based on the conducted analysis, InterGroup identified several challenges with volumetric sewer charge structure option at the current time:

- This option cannot be implemented for the largest billing class (single family dwelling) as majority of accounts are not metered;
- This option cannot be implemented for a number of commercial and institutional billing classes, requiring to maintain individual rates for those customers; and
- There will be significant bill impacts (over 30%) to Café / Restaurants, while other larger commercial accounts are expected to have significant bill reductions creating additional administrative challenges.

Accordingly, sewer volumetric rate option currently does not appear to be practically feasible and is not recommended for the City's consideration.

6.0 PEER MUNICIPALITIES BILL COMPARISONS

InterGroup reviewed bills for peer municipalities in the province of British Columbia that have similar attributes as the City of Courtenay (such as geographical location, and population).

The reviewed municipalities include Fort St. John, Penticton, White Rock, Salmon Arm, Squamish, Port Moody, North Cowichan, Campbell River, and Cranbrook. The bills are for combined water and sewer utilities and reflect the current rates (exclude frontage charges and taxes).

The following assumptions are used for peer municipality bill comparisons. Commercial bill comparisons are provided for office and restaurant businesses considering variance in sewer charges.

- **Residential bill comparisons**
    - **Residential single family** – the maximum of bill based on flat charge or average monthly usage of 30 m3 [for the municipalities with variable rate].
    - Residential multi family – the maximum of bill based on flat charge or average monthly usage of 20 m3 [for the municipalities with variable rate].
- **Commercial bill comparisons**
    - **Commercial office** – the maximum of bill based on flat charge or average monthly usage of 30 m3 [for the municipalities with variable rate].
    - Restaurants – the maximum of bill based on flat charge or average monthly usage of 100 m3 [for the municipalities with variable rate].
- **Institutional bill comparisons** – sewer only for schools per classroom

All comparisons are adjusted for monthly bills (i.e. if an annual charge, then divided by 12).

The bill comparisons by customer class are provided in Figures 6-1 through 6-5. The figures indicate:

- The total residential single family water and sewer monthly bill for City of Courtenay at existing rates is below seven out of nine peer municipalities reviewed ($79), and below the comparator median bill of $95.
- The total residential multi family water and sewer monthly bill for City of Courtenay at existing rates is in the middle of the peer municipalities reviewed ($72), and below the comparator median bill of $79.
- The total commercial office water and sewer monthly bill at existing rates for City of Courtenay is below six out of nine peer municipalities reviewed ($98), and below the comparator median bill of $129.

- The total average restaurant water and sewer monthly bill for City of Courtenay at existing rates is in the middle of the peer municipalities reviewed ($261) and somewhat above the comparator median bill of $251 (driven by very low bill amount for Cranbrook).
- Majority of the institutional sewer revenues come from schools. The review shows that City of Courtenay sewer rates per school classroom is the highest of the peer municipalities reviewed. The recommended sewer rate increase for institutional class is below average (4.8% vs 8.1% / year).

The bill comparisons also include City of Courtenay bills for 2024 after proposed utility rate increases. The 2024 bills were included for information purposes and indicates there is practically no change in the relative standing of proposed City of Courtenay bills compared to existing (2023) rates for other municipalities. Note that it is likely that utility rates in other municipalities will also increase in 2024, and accordingly the figures show a conservative relative standing of the City's 2024 bills compared to other municipalities.

Figure 6-1: Average Monthly Bill Comparison – Single Family

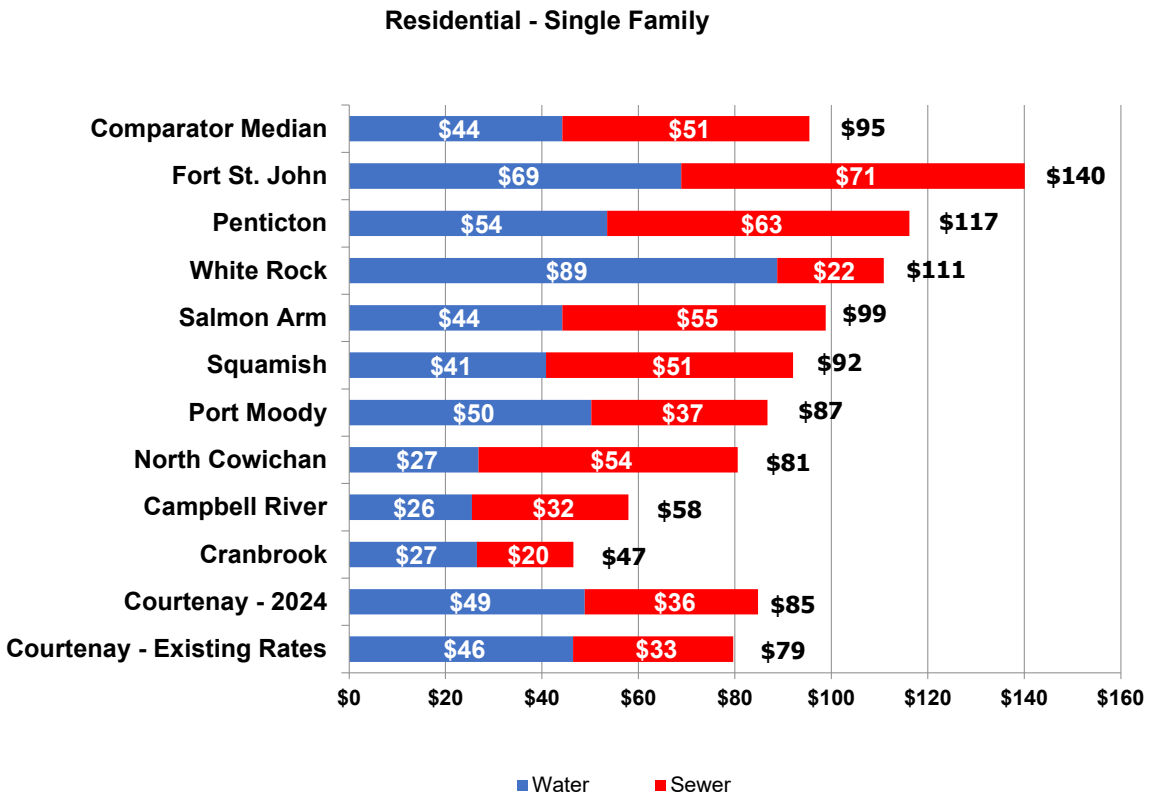


Figure 6-2: Average Monthly Bill Comparison – Multi-Family

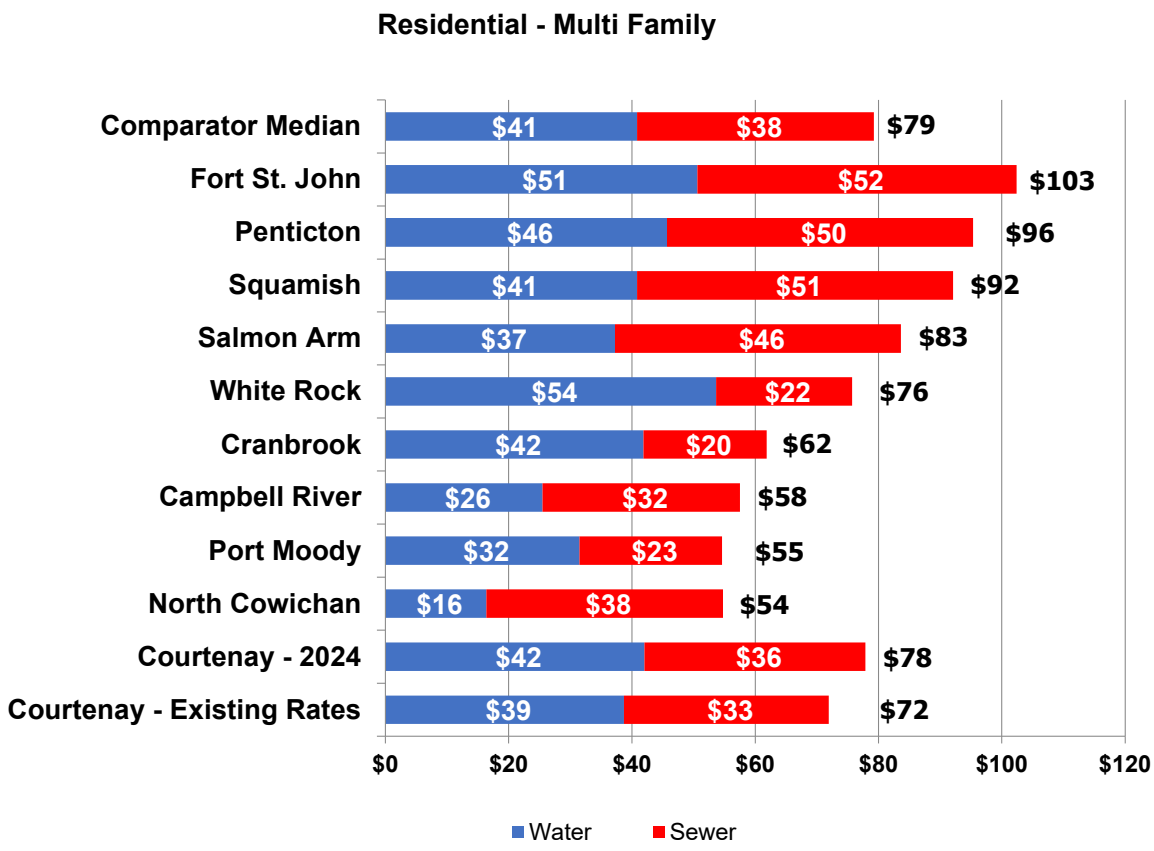


Figure 6-3: Average Monthly Bill Comparison – Office

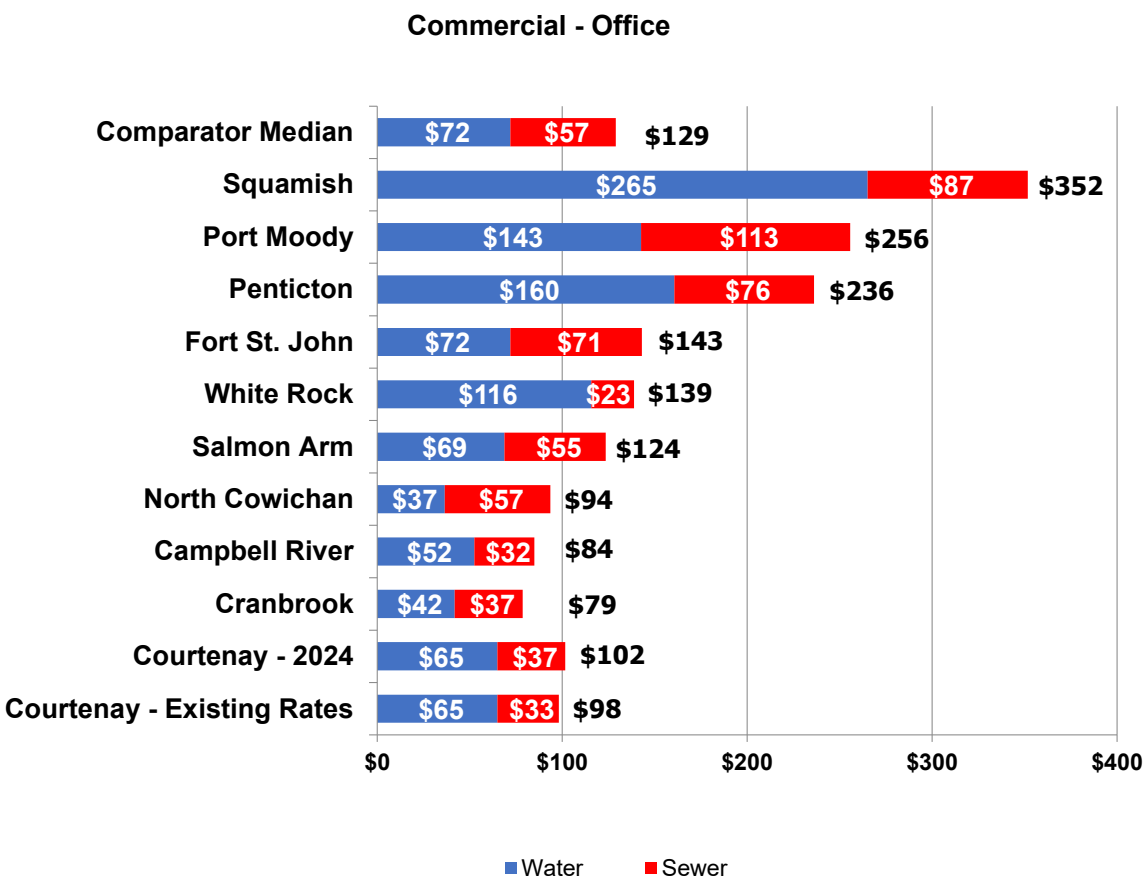


Figure 6-4: Average Monthly Bill Comparison – Restaurant

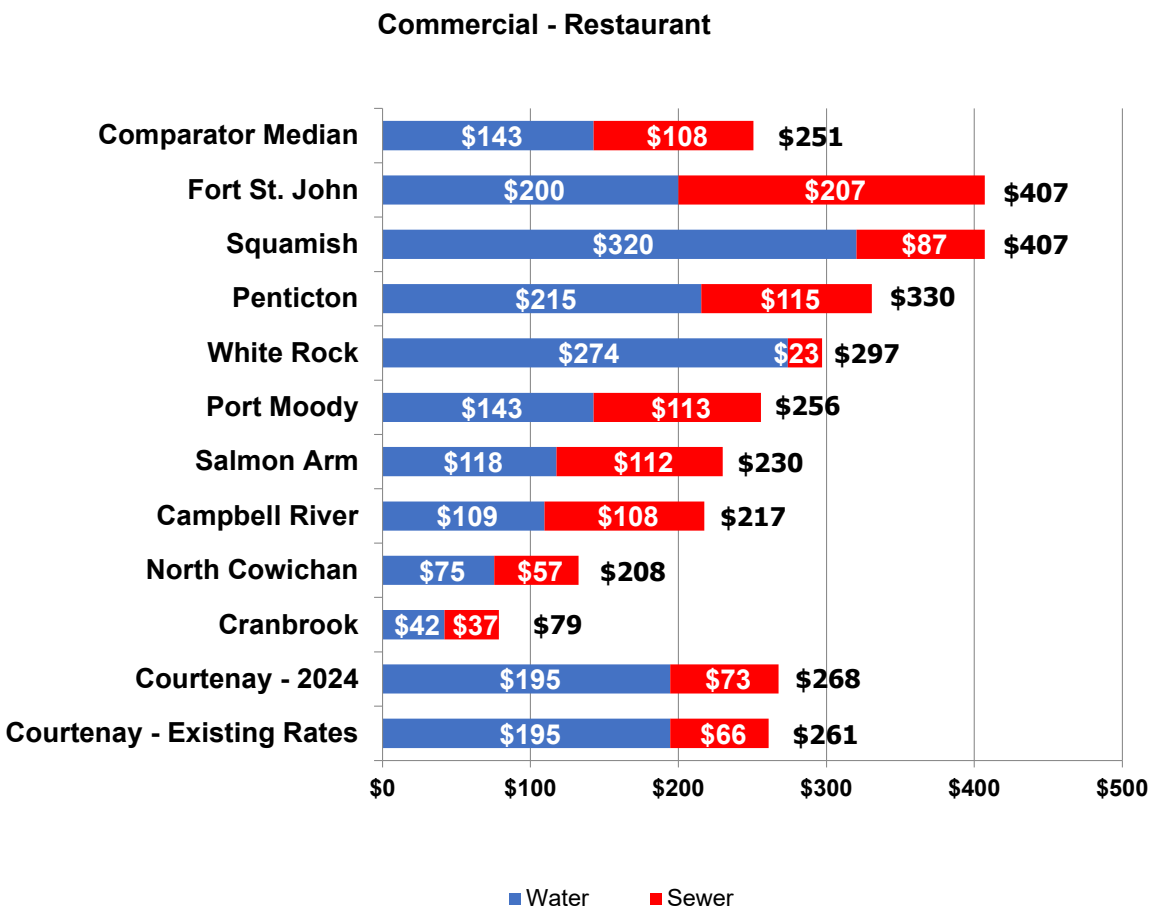
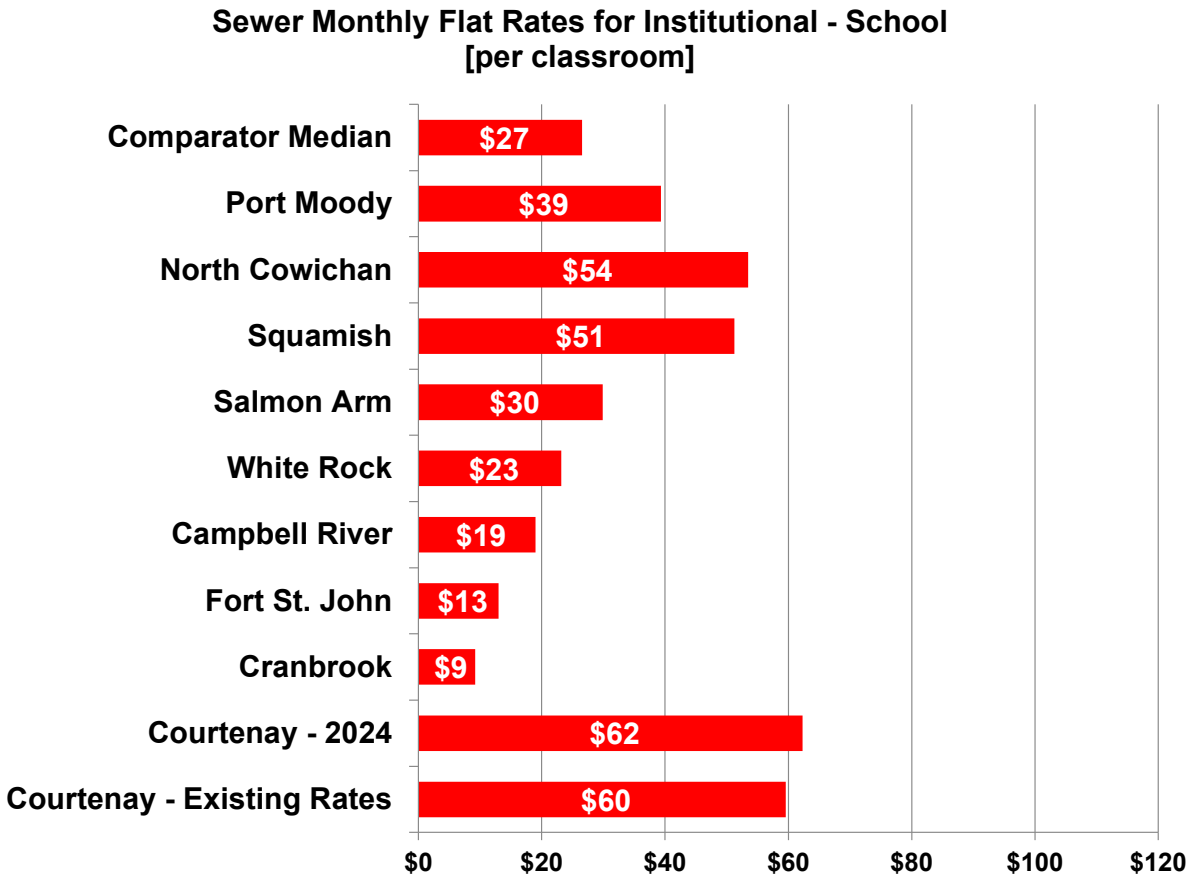


Figure 6-5: Average Sewer Monthly Bill Comparison – School



7.0 SUMMARY OF RECOMMENDATIONS

It is recommended the City adopt the following recommendations as a result of this study:

- City Council adopt the following water and sewer rates for 2024 through 2028 as presented in Section 5 of this report and provided in Appendix C to the report.
- InterGroup recommends that the City establishes a water utility capital reserve provision at $2.830 million based on on the current value of assets and anticipated service as per the Asset Management Plan.
- InterGroup recommends that the City establishes a sewer utility capital reserve provision at $2.560 million based on on the current value of assets and anticipated service as per the Asset Management Plan.

APPENDIX A:
Utility Revenue Requirements

City of Courtenay Water and Sewer Rates Review

Water Utility 10-Year Forecast Revenue Requirement ($000)

Line	Component	2023	2024	2025	2026	2027	2028	2029	2030	2031
1	Comox Valley Regional District - Supply Costs	$5,195	$5,247	$5,299	$5,352	$5,623	$5,908	$6,207	$6,521	$6,852
	Comox Valley Regional District - Rate Increases	15.7%	0.0%	0.0%	0.0%	4.1%	4.1%	4.1%	4.1%	4.1%
2	Transmission and Distribution	$1,417	$1,432	$1,456	$1,482	$1,497	$1,512	$1,527	$1,542	$1,558
3	General Administration	$1,924	$1,920	$1,999	$1,986	$2,006	$2,026	$2,046	$2,067	$2,088
4	Debt Costs	$75	$267	$271	$283	$254	$254	$254	$254	$254
5=Sum(5a:5f)	Capital Expenditures [net cash needs]	$565	$615	$550	$550	$550	$550	$550	$550	$550
5a	*Renewal*	*$1,265*	*$1,315*	*$1,395*	*$1,250*	*$1,250*	*$1,250*	*$1,250*	*$1,250*	*$1,250*
5b	*New Infrastructure*	*$3,500*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
5c	*Funded by reserves*	*-$700*	*-$700*	*-$200*	*-$700*	*-$700*	*-$700*	*-$700*	*-$700*	*-$700*
5d	*Funded by reserve for future expenditures*									
5e	*Funded by grants*	*$0*	*$0*	*-$345*	*$0*					
5f	*Funded through financing*	*-$3,500*	*$0*	*-$300*	*$0*					
6=Sum(1:5)	**Total Operating and Capital Costs**	**$9,175**	**$9,481**	**$9,575**	**$9,654**	**$9,930**	**$10,250**	**$10,585**	**$10,935**	**$11,301**
7	Water Machinery and Equipment Reserve	$30	$70	$90	$100	$105	$109	$109	$109	$109
8=Sum(8a:8d)	Reserve Provisions Funded by Frontage Tax	$362	$1,461	$1,733	$2,057	$2,441	$2,896	$2,896	$2,896	$2,896
8a	*Asset Management Reserve*	*$300*	*$1,398*	*$1,669*	*$1,991*	*$2,375*	*$2,830*	*$2,830*	*$2,830*	*$2,830*
8b	*Water Utility Reserve*	*$62*	*$63*	*$65*	*$66*	*$66*	*$66*	*$66*	*$66*	*$66*
8c	*MFA Reserve Fund*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
8d	*Carbon Offsets Reserve*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
9=6+7+8	**Gross Revenue Requirement**	**$9,567**	**$11,012**	**$11,399**	**$11,811**	**$12,476**	**$13,255**	**$13,589**	**$13,939**	**$14,306**
10	Other Revenues [Contributions, Permits]	$107	$107	$107	$107	$107	$107	$107	$107	$107
11	Revenues from Frontage Tax	$1,231	$1,461	$1,733	$2,057	$2,441	$2,896	$2,896	$2,896	$2,896
12	Revenues from Parcel Tax	$8	$8	$8	$8	$8	$0	$0	$0	$0
13=9-10-11-12	**Net Revenue Required from Rates**	**$8,221**	**$9,436**	**$9,550**	**$9,639**	**$9,920**	**$10,252**	**$10,587**	**$10,937**	**$11,303**
14	Total Revenues at 2023 Rates (existing rates)	$8,707	$8,945	$9,004	$9,064	$9,125	$9,186	$10,209	$10,276	$10,344
14a	*Rate Revenues [flat, metered, meter rental]*	*$8,518*	*$8,577*	*$8,636*	*$8,696*	*$8,757*	*$8,818*	*$9,805*	*$9,873*	*$9,940*
14b	*Revenues from Parks*	*$126*	*$168*	*$168*	*$168*	*$168*	*$168*	*$187*	*$187*	*$187*
14c	*Revenues from Fire Protection*	*$62*	*$200*	*$200*	*$200*	*$200*	*$200*	*$217*	*$217*	*$217*
15=14-13	Revenue Surplus/(Shortfall)	$485	-$491	-$546	-$575	-$796	-$1,066	-$378	-$661	-$959
16	Required Annual Average Rate Increase	0.0%	4.5%	3.0%	1.5%	1.1%	1.1%	3.0%	3.0%	3.0%
16a	*Increase related to CVRD Cost Increases*		*0.6%*	*0.6%*	*0.6%*	*3.1%*	*3.2%*			
16b	*Courtenay internal O&M and capital cost*		*3.9%*	*2.4%*	*0.9%*	*-2.0%*	*-2.2%*			
17	**Revenues after Rate Increase**	**$8,707**	**$9,347**	**$9,691**	**$9,902**	**$10,076**	**$10,252**	**$10,515**	**$10,902**	**$11,303**
18=17-13	Revenue Surplus/(Shortfall) after Increase	$485	-$89	$141	$263	$155	$0	-$72	-$35	$0
	Utility Reserves									
19	**Opening Balance**	**$3,709**	**$3,891**	**$4,639**	**$6,411**	**$8,140**	**$10,154**	**$12,474**	**$14,726**	**$17,018**
20=18	Surplus/(Shortfall)	$485	-$89	$141	$263	$155	$0	-$72	-$35	$0
21=7+8	Reserve Provisions	$392	$1,531	$1,823	$2,157	$2,546	$3,005	$3,005	$3,005	$3,005
22=5c	Capital funded by Reserves	-$700	-$700	-$200	-$700	-$700	-$700	-$700	-$700	-$700
23	Interest on Reserve Balance	$6	$6	$7	$10	$12	$15	$19	$22	$26
24=Sum(19:23)	**Closing Balance**	**$3,891**	**$4,639**	**$6,411**	**$8,140**	**$10,154**	**$12,474**	**$14,726**	**$17,018**	**$19,348**

City of Courtenay Water and Sewer Rates Review

Sewer Utility 10-Year Forecast Revenue Requirement ($000)

Line	Component	2023	2024	2025	2026	2027	2028	2029	2030	2031
1	Comox Valley Regional District Sewer Requisition	$5,272	$5,758	$5,758	$5,758	$5,966	$6,182	$6,406	$6,637	$6,878
	CVRD Rate increases %	5.6%	9.2%	0.0%	0.0%	3.6%	3.6%	3.6%	3.6%	3.6%
2	Collection	$732	$739	$750	$752	$760	$767	$775	$783	$791
3	General Administration	$1,495	$1,531	$1,573	$1,580	$1,596	$1,612	$1,628	$1,644	$1,661
4	Debt Costs	$290	$466	$655	$751	$751	$751	$751	$751	$751
5=Sum(5a:5f)	Capital Expenditures Provision [net cash needs]	$540	$540	$540	$540	$500	$500	$500	$500	$500
5a	*Renewal*	*$2,732*	*$4,200*	*$2,645*	*$1,100*	*$1,100*	*$1,100*	*$1,100*	*$1,100*	*$1,100*
5b	*New Infrastructure*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
5c	*Funded by reserves*	*$0*	*-$500*	*-$500*	*-$600*	*-$600*	*-$600*	*-$600*	*-$600*	*-$600*
5d	*Funded through financing*	*-$2,500*	*-$3,000*	*-$1,800*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
5e	*Funded by reserve for future expenditures*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
5f	*Funded through Fed / Prov Funding*	*$0*	*$0*	*-$345*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
6=Sum(1:5)	**Total Operating and Capital Costs**	**$8,328**	**$9,034**	**$9,275**	**$9,381**	**$9,573**	**$9,812**	**$10,060**	**$10,316**	**$10,580**
7	Sewer Machinery and Equipment Reserve	$75	$125	$150	$160	$165	$171	$171	$171	$171
8=Sum(8a:8c)	Reserve Provisions Funded by Frontage Tax	$301	$2,561	$2,561	$2,561	$2,561	$2,561	$2,561	$2,561	$2,561
8a	*Asset Management Reserve*	*$300*	*$2,560*	*$2,560*	*$2,560*	*$2,560*	*$2,560*	*$2,560*	*$2,560*	*$2,560*
8b	*MFA Reserve Fund*	*$1*	*$1*	*$1*	*$1*	*$1*	*$1*	*$1*	*$1*	*$1*
8c	*Carbon Offsets Reserve*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
9=6+7+8	**Gross Revenue Requirements**	**$8,704**	**$11,720**	**$11,985**	**$12,102**	**$12,299**	**$12,544**	**$12,791**	**$13,047**	**$13,312**
10	Other Revenues [Connection Fee and Contributions]	$61	$61	$61	$61	$61	$61	$61	$61	$61
11	Revenues from Frontage Tax	$2,115	$2,561	$2,561	$2,561	$2,561	$2,561	$2,561	$2,561	$2,561
12	Revenues from Parcel Tax	$12	$12	$12	$12	$12	$12	$12	$12	$12
13=9-10-11-12	**Net Revenue Required from Rates**	**$6,516**	**$9,087**	**$9,352**	**$9,469**	**$9,666**	**$9,911**	**$10,158**	**$10,414**	**$10,679**
14	Total Revenues at 2023 Rates (existing rates)	$6,476	$6,525	$6,573	$6,623	$6,673	$6,723	$9,985	$10,059	$10,133
15=14-13	Revenue Surplus/(Shortfall)	-$40	-$2,562	-$2,779	-$2,846	-$2,993	-$3,188	-$173	-$355	-$546
16	Required Annual Average Rate Increase	0.0%	8.1%	8.1%	8.1%	8.1%	8.1%	1.8%	1.8%	1.8%
16a	*Increase related to CVRD Cost Increases*		*7.4%*	*0.0%*	*0.0%*	*3.1%*	*3.2%*	*2.2%*	*2.3%*	*2.4%*
16b	*Courtenay internal O&M and capital cost*		*0.6%*	*8.1%*	*8.1%*	*4.9%*	*4.9%*	*-0.5%*	*-0.5%*	*-0.6%*
17	**Revenues after Rate Increase**	**$6,476**	**$7,051**	**$7,677**	**$8,359**	**$9,102**	**$9,911**	**$10,161**	**$10,417**	**$10,679**
18=17-13	Revenue Surplus/(Shortfall) after Increase	-$40	-$2,035	-$1,675	-$1,109	-$563	$0	$3	$3	$0
	Utility Reserves									
19	**Opening Balance**	**$2,247**	**$2,587**	**$2,741**	**$3,281**	**$4,297**	**$5,866**	**$8,006**	**$10,152**	**$12,301**
20=18	Surplus/(Shortfall)	-$40	-$2,035	-$1,675	-$1,109	-$563	$0	$3	$3	$0
21=7+8	Reserve Provisions	$376	$2,686	$2,711	$2,721	$2,726	$2,732	$2,732	$2,732	$2,732
22=5c	Capital funded by Reserves	$0	-$500	-$500	-$600	-$600	-$600	-$600	-$600	-$600
23	Interest	$3	$4	$4	$5	$6	$9	$12	$15	$18
24=Sum(19:23)	**Closing Balance**	**$2,587**	**$2,741**	**$3,281**	**$4,297**	**$5,866**	**$8,006**	**$10,152**	**$12,301**	**$14,451**

APPENDIX B:
Cost of Service Analysis for Water and Sewer Utilities

1.0 INTRODUCTION

The purpose of the Cost of Service Analysis ("COS" or "COS analysis") is to develop a method to fairly allocate the revenue requirement among the different customer classes served by a utility. While there are many potential allocation methods, the primary objective is to allocate costs to the customer classes consistent with principles of cost causation based on customer characteristics such as consumption and demand.

There is no absolute right or wrong allocation method, as each utility's operating circumstances and cost drivers are different. The objective for the utility is to select methods which best represent cost causation and the equitable sharing of costs among customers.

A COS is commonly used as an analytical tool in the ratemaking process. A COS analysis can provide useful information such as unit costs to serve different customers (such as $/kWh or $/cubic feet and $/customer/month) and revenue to cost coverage ratios. However, any COS analysis involves estimation and a degree of professional judgement and therefore the results cannot be considered exact. Further, the appropriate allocation methods for a COS analysis will change over time as the utility's operating environment and cost drivers change.

To provide services to its customers, the utility must receive sufficient revenues to recover its costs. Adequate cost recovery is a necessary condition for maintaining reliable service by the utility. For the purpose of cost-of-service analysis forecast costs for 2028 have been used.

2.0 COST OF SERVICE ANALYSIS

2.1 WATER UTILITY

2.1.1 Water Utility COS Analysis

The cost of service analysis for the water utility includes three steps:

1. Functionalization.
2. Allocation to Cost Components.
3. Distribution of Costs to Rate Classes.

This is consistent with the Manual of American Water Works Association, M1 Principles of Water Rates, Fees and Charges, 7th Edition ("AWWA Manual"). The following provides details of each step of COS for the water utility:

1. **Functionalization**: In this step each revenue requirement item is separated according to function. In this step, the revenue requirement cost items are separated to the functions included in the AWWA Manual based on past discussion with City staff. The functions used in the water utility COS include:
    i. **Source of Supply**: This function includes costs related to the bulk water purchases from Comox Valley Regional District.
    ii. **Transmission and Distribution**: This function includes the operating and maintenance, as well as capital costs related to water main maintenance, renewal, improvement/upgrade and replacement projects.
    iii. **Customer Accounting**: This function includes the operating and maintenance costs related to meter maintenance, replacement, and other customer-service related costs.
    iv. **Admin General**: This function includes the operating and maintenance, as well as capital costs related to perform general duties, including costs for master plans, tools, and other general operating and maintenance expenses that cannot be apportioned to other functions. This function also includes debt service costs and corporate administrative costs.
2. **Allocation to Cost Components**: the next step of the cost of services process involves allocating the functionalized costs into cost components according to the AWWA Manual approach (Base, Extra Capacity, which includes Maximum Day and Peak Hour demands, and customer related). Consistent with the AWWA Manual, the costs related to Source of Supply function are fully allocated to Base cost component as the costs associated with maintenance of the source of supply do not change with the level of consumption. Transmission and Distribution are allocated to Base, Maximum Day and Peak Hour Demand, Customer Accounting function costs directly assigned to customer cost

component and general admin costs based on weighted percentages for all other functions. Table B-1 provides allocation factors based on the water demand design criteria for the City of Courtenay.

Table B-1: Allocation Factors between Base, Maximum Day, and Peak Hour

	City Bylaw litre/ca/day	When Allocated to Base and MD	When Allocated to Base, MD and
Average Day Demand (ADD), Base	635	30.2%	21.2%
Maximum Day Demand (MDD)	2,100	69.8%	48.8%
Peak Hour Demand (PHD)	3,000		30.0%

Allocation to cost components involves the following categories:

i. **Base**: Per AWWA Manual this cost component includes the costs associated with service customers under average load conditions without the elements of cost incurred to meet water use variations and resulting peak demands.

ii. **Maximum Day**: Per the AWWA Manual this cost component includes the costs associated with meeting maximum day peak demand rate of use requirements in excess of average base use.

iii. **Peak Hour**: Per the AWWA Manual this cost component includes the costs associated with meeting maximum hourly peak demand rate of use requirements.

iv. **Customer Related**: Per the AWWA Manual this cost component includes the costs associated with serving customers regardless of the use of water.

3. **Distribution of Costs to Rate Classes**: The final step of the cost of service process involves distributing the cost components to each customer class. Cost allocation factors are developed based on customer characteristics appropriate for each type of classified cost. In this step Base component costs are allocated to customer classes based on consumption level for each meter size (i.e., rate class), maximum day and peak hour demand costs based on share of peak and customer related costs based on number of customers adjusted to equivalent meter size ratio based on the AWWA Manual.

Water consumption is metered. Therefore, Base allocation factors are available based on load forecast for each meter size. The information on number of customers is also available based on number of connections for each meter size. However, Maximum Day and Peak Hour peaks are not metered and require the use of estimated peak numbers available from the previous studies and/or from other water utilities. Based on data from the City of Courtenay's 2017 Water Smart Action Plan, it is estimated that Maximum Day peaking factor for residential rate class is about

195%.[1] The remaining peaking factors used for the COS are from the AWWA Manual. The calculation of Base, Maximum Day and Peak Hour allocation factors are provided in Exhibit 4 of the COS for water utility in Attachment A1.

2.1.2 Water Utility COS Results

Table B-2 provides summary of the COS results for the water utility for revenue required for 2028. The results show that by 2028 the RCC ratio for residential, multi-family unmetered, parks and fire hydrants will be below 90% of the cost recovery, whereas revenue from multi-family metered and commercial customers will be above 110% cost recovery.

Table B-2: City of Courtenay Water Utility Revenue to Cost Ratio for 2028

Customer Type	Number of Customers	2028 Forecast		
		Revenue Forecast with Equal % Rate Increase ($000)	COS Results ($000)	RCC Ratio
		A	B	C=A/B
Residential	8,777	5,273	6,070	87%
Multi-Family unmetered	554	280	342	82%
Multi-Family metered	4,788	2,121	1,344	158%
Commercial unmetered	473	271	231	118%
Commercial metered	1,809	1,848	1,390	133%
Parks	1	187	536	35%
RD bulk/ Standpipe/ Playfields	2	48	53	91%
Fire Protection		223	286	78%
Total	**16,404**	**10,252**	**10,252**	**100%**

The water utility Cost of Service Analysis is provided in Attachment B1.

2.2 SEWER UTILITY

2.2.1 Sewer Utility COS Analysis

Sewer Utility cost of service study also includes a three-step process:

1. Functionalization.
2. Classification to Cost Components.
3. Allocation of Costs to Rate Classes.

[1] Calculated from Table 2-4 (2017 water balance) of the City of Courtenay Water Smart Action Plan.

The following provides details of each step of COS for Sewer Utility:

1. **Functionalization**: In this step the revenue requirement is separated to functions similar to the Water Utility based on discussions with the City staff.

   The functions used in Sewer Utility COS are:

   i. **Sewer Requisition:** These are costs related to the bulk water purchases from Comox Valley Regional District.

   ii. **Collection:** This function includes operating and maintenance, as well as capital costs related to sewer collection maintenance, renewal, improvement/upgrade and replacement projects.

   iii. **General Admin:** This function includes operating and maintenance as well as capital costs related to perform general duties, including costs for master plans, tools, and other general operating and maintenance expenses that cannot be apportioned to the other functions.

2. **Classification to Cost Components**: The next step in the cost of service process is to allocate the functionalized costs into cost components. This step includes allocating functionalized costs to the Base Charge component (volume based) and to Customer related cost component.

3. **Allocation of Costs to Rate Classes**: The final step of the cost of service process involves allocating the cost components to each customer class based on the volume and customer weighting ratios.

   The volume based component costs were allocated to customer classes based on an ADD and return factors by customer class provided in the City of Courtenay Sewer Master Plan. The resulting allocation factors are shown in Table B-3.

Table B-3: Sewer Utility Demand Allocation Factors

	2028 Base Units			
	Annual ADD, m^3/day	Return Factor	Adjusted ADD, m^3	Share
Residential Users	9,714	42.0%	4,080	76.6%
Commercial Users	2,085	50.0%	1,043	19.6%
Institutional Users	407	50.0%	203	3.8%
Total	**12,206**		**5,326**	**100.0%**

2.2.2 Sewer Utility COS Results

Table B-4 provides summary of the COS results for the sewer utility for revenue required for 2028. The results show that by 2028, at a required average annual rate increase, the RCC ratio for residential users will be within the 90-110% range of reasonableness. However, commercial users RCC ratio will be significantly below the range of reasonableness at only 58%, whereas RCC ratio institutional users will be materially above the range of reasonableness at 132% of the cost recovery.

Table B-4: City of Courtenay Sewer Utility Revenue to Cost Ratio for 2028

Customer Type	Number of Customers	2028 Forecast		
		Revenue Forecast with Equal % Rate Increase ($000)	COS Results ($000)	RCC Ratio
		A	B	C=A/B
Residential Users	14,147	8,316	7,650	109%
Commercial Users	1,949	1,099	1,886	58%
Institutional Users	570	496	376	132%
Total	**16,666**	**9,911**	**9,911**	**100%**

The Sewer Utility Cost of Service Study is provided in Attachment B2.

Attachment B1:
Water Utility Cost of Service

City of Courtenay: Water Utility **2028**
COST OF SERVICE
Exhibit 1 - Functionalization & Classification of Revenue Requirements

Expense Description	Total	Base	Extra Capacity		Customer Related	Public Fire Protection
			Maximum Day	Peak Hour		
		Base	*MD*	*PH*	*CUS*	*Fire Hydrants*
Source of Supply						
CVRD - Supply Costs	$5,907,884	$5,907,884	$0	$0	$0	$0
Subtotal	$5,907,884	$5,907,884	$0	$0	$0	$0
Transmission and Distribution						
Operating Costs	$1,038,360	$219,728	$507,513	$311,119	$0	$0
Capital Cost, Cost of Debt and Reserve Provisions	$3,718,332	$786,838	$1,817,387	$1,114,107	$0	$0
Subtotal	$4,756,692	$1,006,566	$2,324,900	$1,425,226	$0	$0
Customer Accounting						
Operating Costs	$254,413	$0	$0	$0	$254,413	$0
Capital Cost, Cost of Debt and Reserve Provisions	$18,998	$0	$0	$0	$18,998	$0
Subtotal	$273,411	$0	$0	$0	$273,411	$0
Fire Hydrants						
Operating Costs	$219,322	$0	$0	$0	$0	$219,322
Capital Cost, Cost of Debt and Reserve Provisions	$71,370	$0	$0	$0	$0	$71,370
Subtotal	$290,691	$0	$0	$0	$0	$290,691
Admin General						
Operating Costs	$2,026,225	$1,247,718	$419,530	$257,183	$49,337	$52,455
Capital Cost, Cost of Debt and Reserve Provisions	$0	$0	$0	$0	$0	$0
Subtotal	$2,026,225	$1,247,718	$419,530	$257,183	$49,337	$52,455
Total Revenue Requirement	**$13,254,903**	**$8,162,168**	**$2,744,430**	**$1,682,409**	**$322,749**	**$343,147**
Other Revenues	$3,002,600	$1,848,956	$621,689	$381,112	$73,111	$77,732
Total Net Revenue Requirement	**$10,252,303**	**$6,313,213**	**$2,122,741**	**$1,301,297**	**$249,637**	**$265,414**

City of Courtenay: Water Utility **2028**
COST OF SERVICE
Exhibit 2 - Functionalization & Classification
of Revenue Requirements

Expense Description	Base	MD	PH	CUS	Fire Hydrants	Basis of Classification
Source of Supply						
CVRD - Supply Costs	1.000	0.000	0.000	0.000	0.000	100% Base based on AWWA
Subtotal	1.000	0.000	0.000	0.000	0.000	
Transmission and Distribution						
Operating Costs	0.212	0.489	0.300	0.000	0.000	Based on Water Demand Criteria for the City [AWWA
Capital Cost, Cost of Debt and Reserve Provisions	0.212	0.489	0.300	0.000	0.000	approach]
Subtotal	0.212	0.489	0.300	0.000	0.000	
Customer Accounting						
Operating Costs	0.000	0.000	0.000	1.000	0.000	Customer Related
Capital Cost, Cost of Debt and Reserve Provisions	0.000	0.000	0.000	1.000	0.000	Customer Related
Subtotal	0.000	0.000	0.000	1.000	0.000	
Fire Hydrants						
Operating Costs	0.000	0.000	0.000	0.000	1.000	Direct Assigned
Capital Cost, Cost of Debt and Reserve Provisions	0.000	0.000	0.000	0.000	1.000	Direct Assigned
Subtotal	0.000	0.000	0.000	0.000	1.000	
Admin General						
Operating Costs	0.616	0.207	0.127	0.024	0.026	Based on total Revenue Requirement excluding
Capital Cost, Cost of Debt and Reserve Provisions	0.616	0.207	0.127	0.024	0.026	Admin General
Subtotal	0.616	0.207	0.127	0.024	0.026	
Total Revenue Requirement	0.616	0.207	0.127	0.024	0.026	
Other Revenues	0.616	0.207	0.127	0.024	0.026	Follows total revenue requirement
Total Revenue Requirement	0.616	0.207	0.127	0.024	0.026	

City of Courtenay: Water Utility **2028**
COST OF SERVICE
Exhibit 3 - Analysis of Load Data

	Consump. Forecast, m3	*Alloc. Factor %*	# of Customers	Customer Weighting Ratio	Customer Alloc. Factor *% of total*		*2028 Rate Revenues*	*% of Total*
Residential	2,807,103	59.9%	8,777	1.0	8,777	54%	5,273,007	51.43%
Multi-Family unmetered	168,223	3.6%	554	1.0	554	3%	280,369	2.73%
Multi-Family metered	657,691	14.0%	4,788	1.0	4,788	29%	2,121,187	20.69%
Commercial unmetered	116,593	2.5%	473	1.0	473	3%	271,280	2.65%
Commercial metered	705,719	15.1%	1,809	1.0	1,809	11%	1,848,048	18.03%
Parks	205,042	4.4%	1	1.0	1	0%	187,150	1.83%
RD bulk/ Standpipe/ Playfields	20,177	0.4%	2	1.0	2	0%	48,042	0.47%
Fire Protection	8,056.8	0.2%					223,219	2.18%
Total	4,688,605	100%	16,404		16,404	100%	$10,252,303	100%

	Design Criteria Litre/sec	Design Criteria litre/ca/day	Allocation	Allocation
Average Day Demand (ADD)	226	635	21.2%	30.2%
Maximum Day Demand (MDD)	748	2,100	48.9%	69.8%
Peak Hour Demand (PHD)	1,068	3,000	30.0%	

City of Courtenay: Water Utility **2028**
COST OF SERVICE
Exhibit 4 - Demand Allocation Factor

	Base Units		Maximum Day Units				Peak Hour Units			
	ADD, m^3	Share	Peaking Factor %	Total Capacity, m^3	Extra Capacity, m^3	Share	Peaking Factor %	Total Capacity, m^3	Extra Capacity, m^3	Share
Residential	7,691	59.9%	195%	15,009	7,318	62.8%	400%	30,763	15,754	63.3%
Multi-Family unmetered	461	3.6%	159%	731	270	2.3%	400%	1,844	1,113	4.5%
Multi-Family metered	1,802	14.0%	144%	2,598	797	6.8%	400%	7,208	4,609	18.5%
Commercial unmetered	319	2.5%	170%	542	222	1.9%	325%	1,038	497	2.0%
Commercial metered	1,933	15.1%	174%	3,360	1,427	12.2%	325%	6,284	2,924	11.7%
Parks	562	4.4%	354%	1,986	1,424	12.2%	354%	1,986	0	0.0%
RD bulk/ Standpipe/ Playfields	55	0.4%	354%	195	140	1.2%	354%	195	0	0.0%
Fire Protection	22	0.2%	354%	78	56	0.5%	354%	78	0	0.0%
Total	**12,845**	**100.0%**		**24,499**	**11,654**	**100.0%**		**49,395**	**24,896**	**100.0%**

City of Courtenay: Water Utility **2028**
COST OF SERVICE
Exhibit 5 - Allocation of Net Revenue Requirements

	Total Plant	Residential	Multi-Family unmetered	Multi-Family metered	Commercial unmetered	Commercial metered	Parks	RD bulk/ Standpipe/ Playfields	Fire Protection	Basis of Allocation
Extra Capacity										
Maximum Day	$2,122,741	$1,333,074	$49,124	$145,099	$40,460	$259,842	$259,420	$25,528	$10,193	MD
Peak Hour	$1,301,297	$823,428	$58,174	$240,913	$25,957	$152,825	$0	$0	$0	PH
Total Extra Capacity	$3,424,039	$2,156,502	$107,298	$386,012	$66,417	$412,667	$259,420	$25,528	$10,193	
Base	$6,313,213	$3,779,767	$226,513	$885,581	$156,993	$950,252	$276,089	$27,169	$10,848	Base
Customer Related	$249,637	$133,569	$8,431	$72,864	$7,198	$27,529	$15	$30	$0	CUS
Fire Hydrants	$265,414								$265,414	Direct
Total Net Revenue Requirement	$10,252,303	$6,069,838	$342,242	$1,344,458	$230,608	$1,390,448	$535,524	$52,728	$286,456	

Exhibit 6 - Summary of Allocation

	Total	Residential	Multi-Family unmetered	Multi-Family metered	Commercial unmetered	Commercial metered	Parks	RD bulk/ Standpipe/ Playfields	Fire Protection
2026 Rate Revenues	$10,252,303	$5,273,007	$280,369	$2,121,187	$271,280	$1,848,048	$187,150	$48,042	$223,219
Allocated Rev. Req.	$10,252,303	$6,069,838	$342,242	$1,344,458	$230,608	$1,390,448	$535,524	$52,728	$286,456
Balance	$0	($796,832)	($61,873)	$776,729	$40,673	$457,600	($348,374)	($4,685)	($63,238)
RCC ratio	100.0%	86.9%	81.9%	157.8%	117.6%	132.9%	34.9%	91.1%	77.9%

City of Courtenay: Water Utility **2028**
COST OF SERVICE
Exhibit 7 - Average Unit Costs

	Total	Residential	Multi-Family unmetered	Multi-Family metered	Commercial unmetered	Commercial metered	Parks	RD bulk/ Standpipe/ Playfields	Fire Protection
Base Monthly Charge - $/Cust/Month		$57.63	$51.48	$7.99	$40.63	$20.28	$44,626.99	$1,064.96	$23,871.36
Consumption Charge - $/cubic meter		0.00	0.00	134.65	0.00	134.65	0.00	134.65	0.00
Billing Data:									
Annual Consumption (cubic meters)				657,691		705,719		20,177	
Number of Customers		8,777	554	4,788	473	1,809	1	2	1
Revenue Check:									
Base Monthly Charge	$8,389,301	$6,069,838	$342,242	$458,877	$230,608	$440,197	$535,524	$25,559	$286,456
Variable Consumption	$1,863,002	$0	$0	$885,581	$0	$950,252	$0	$27,169	$0
Total	$10,252,303	$6,069,838	$342,242	$1,344,458	$230,608	$1,390,448	$535,524	$52,728	$286,456

Attachment B2:
Sewer Utility Cost of Service

City of Courtenay: Sewer Utility **2028**
COST OF SERVICE
Exhibit 1 - Functionalization & Classification of Revenue Requirements

Expense Description	Total	Volume	Customer Related
		Volume	*CUS*
Sewer Requisition			
CVRD Sewer Requisition	$6,182,016	$6,182,016	$0
Subtotal	$6,182,016	$6,182,016	$0
Collection			
Operation costs	$767,319	$0	$767,319
Capital Cost, Cost of Debt and Reserve Provisions	$3,982,600	$3,982,600	$0
Subtotal	$4,749,919	$3,982,600	$767,319
Admin General			
Supplies and Services	$1,612,064	$1,498,912	$113,152
Capital Cost, Cost of Debt and Reserve Provisions	$0	$0	$0
Subtotal	$1,612,064	$1,498,912	$113,152
Total Revenue Requirement	**$12,544,000**	**$11,663,529**	**$880,471**
Other Revenues	$2,633,000	$2,448,188	$184,812
Total Net Revenue Requirement	**$9,911,000**	**$9,215,341**	**$695,659**

City of Courtenay: Sewer Utility **2028**
COST OF SERVICE
Exhibit 2 - Functionalization & Classification
of Revenue Requirements

	Basis of Classification		
Expense Description	*Volume*	*CUS*	
Sewer Requisition			
CVRD Sewer Requisition	1.000	0.000	CVRD Sewer Requisition costs are based on volume
Subtotal	1.000	0.000	
Collection			
Operation costs	0.000	1.000	Operating costs mostly relate to serve customers
Capital Cost, Cost of Debt and Reserve Provisions	1.000	0.000	Capital investments are tied to volume of flows
Subtotal	0.838	0.162	
Admin General			
Supplies and Services	0.930	0.070	Based on total Revenue Requirement excluding
Capital Cost, Cost of Debt and Reserve Provisions	0.930	0.070	Admin General
Subtotal	0.930	0.070	
Total Revenue Requirement	0.930	0.070	
Other Revenues	0.930	0.070	Follows total revenue requirement
Total Revenue Requirement	0.930	0.070	

City of Courtenay: Sewer Utility **2028**
COST OF SERVICE
Exhibit 3 - Analysis of Load Data

	Average Daily Demand, m3	Consump. Forecast, m3	# of Customer	Customer Weighting Ratio	Customer Alloc. Factor *% of total*		*2028 Rate Revenues*	*% of Total*
Residential Users	9,714	*1,489,182*	14,147	1.0	14,147	85%	8,316,389	83.91%
Commercial Users	2,085	*380,600*	1,949	1.0	1,949	12%	1,098,618	11.08%
Institutional Users	407	*74,230*	570	1.0	570	3%	495,993	5.00%
Total	12,206	1,944,011	16,666		16,666	100%	$9,911,000	100%

City of Courtenay: Sewer Utility **2028**
COST OF SERVICE
Exhibit 4 - Demand Allocation Factor

	2028 Base Units			
	Annual ADD, m^3/day	**Return Factor**	**Adjusted ADD, m^3**	**Share**
Residential Users	9,714	42.0%	4,080	76.6%
Commercial Users	2,085	50.0%	1,043	19.6%
Institutional Users	407	50.0%	203	3.8%
Total	**12,206**		**5,326**	**100.0%**

City of Courtenay: Sewer Utility **2028**
COST OF SERVICE
Exhibit 5 - Allocation of Net Revenue Requirements

	Total Plant	Residential Users	Commercial Users	Institutional Users	Basis of Allocation
Base	$9,215,341	$7,059,280	$1,804,185	$351,876	Volume
Customer Related	$695,659	$590,513	$81,354	$23,792	CUS
Total Net Revenue Requirement	$9,911,000	$7,649,793	$1,885,538	$375,668	

Exhibit 6 - Summary of Allocation

	Total	Residential Users	Commercial Users	Institutional Users
2028 Rate Revenues	$9,911,000	$8,316,389	$1,098,618	$495,993
Allocated Rev. Req.	$9,911,000	$7,649,793	$1,885,538	$375,668
Balance	($0)	$666,596	($786,921)	$120,324
RCC ratio	100.0%	108.7%	58.3%	132.0%

City of Courtenay: Sewer Utility
COST OF SERVICE
Exhibit 7 - Average Unit Costs

	Total	Residential Users	Commercial Users	Institutional Users
Base Monthly Charge - $/Cust/Month		$45.06	$80.62	$54.92
Consumption Charge - $/cubic meter		$0.00	$0.00	$0.00
Billing Data:				
Annual Consumption (cubic meters)				
Number of Customers		14,147	1,949	570
Revenue Check:				
Base Monthly Charge	$9,911,000	$7,649,793	$1,885,538	$375,668
Variable Consumption	$0	$0	$0	$0
Total	$9,911,000	$7,649,793	$1,885,538	$375,668

Appendix C:
Proposed Rate Schedules

Table C-1: Proposed Rates for Water Utility 2024-2028

	2024		2025		2026		2027		2028	
	Rates	Rate Inc.	Rates	Rate Inc.	Rates	Rate Inc.	Rates	Rate Inc.	Rates	Rate Inc.
Residential ($/year)	566.16	5.5%	588.60	4.0%	603.11	2.5%	615.41	2.0%	627.95	2.0%
Multi-Family unmetered ($/year)	483.69	6.7%	508.70	5.2%	527.38	3.7%	544.50	3.2%	562.17	3.2%
Commercial unmetered ($/year)	536.09	4.5%	552.17	3.0%	560.45	1.5%	566.47	1.1%	572.56	1.1%
Outside Commercial Users ($/year)	967.88	4.5%	996.92	3.0%	1,011.87	1.5%	1,022.74	1.1%	1,033.73	1.1%
Outside Residential Users ($/year)	976.81	5.5%	1,015.54	4.0%	1,040.57	2.5%	1,061.79	2.0%	1,083.44	2.0%
Sandwick - summer only ($/year)	566.16	5.5%	588.60	4.0%	603.11	2.5%	615.41	2.0%	627.95	2.0%
Metered ($/m3)										
Regional District bulk	1.97	6.4%	2.07	4.9%	2.14	3.4%	2.20	3.0%	2.27	3.0%
Regional Standpipe, Playfields	2.56	6.4%	2.69	4.9%	2.78	3.4%	2.86	3.0%	2.95	3.0%
Commercial - (0-48 m3)	88.80	0.0%	88.80	0.0%	88.80	0.0%	88.80	0.0%	88.80	0.0%
48.1 - 556.0 m3	1.85	0.0%	1.85	0.0%	1.85	0.0%	1.85	0.0%	1.85	0.0%
Greater than 556.0 m3	1.85	0.0%	1.85	0.0%	1.85	0.0%	1.85	0.0%	1.85	0.0%
Multi Family - (0-48 m3)	88.80	0.0%	88.80	0.0%	88.80	0.0%	88.80	0.0%	88.80	0.0%
48.1 - 556.0 m3	1.85	0.0%	1.85	0.0%	1.85	0.0%	1.85	0.0%	1.85	0.0%
Greater than 556.0 m3	1.85	0.0%	1.85	0.0%	1.85	0.0%	1.85	0.0%	1.85	0.0%
Outside users Multi Family Metered - (0-48 m3)	115.44	0.0%	115.44	0.0%	115.44	0.0%	115.44	0.0%	115.44	0.0%
48.1 - 556.0 m3	2.41	0.0%	2.41	0.0%	2.41	0.0%	2.41	0.0%	2.41	0.0%
Greater than 556.0 m3	2.41	0.0%	2.41	0.0%	2.41	0.0%	2.41	0.0%	2.41	0.0%
Outside users Commercial Metered - (0-48 m3)	115.44	0.0%	115.44	0.0%	115.44	0.0%	115.44	0.0%	115.44	0.0%
48.1 - 556.0 m3	2.41	0.0%	2.41	0.0%	2.41	0.0%	2.41	0.0%	2.41	0.0%
Greater than 556.0 m3	2.41	0.0%	2.41	0.0%	2.41	0.0%	2.41	0.0%	2.41	0.0%
Fire Protection (Annual Revenue Increase)		7.7%		6.2%		4.7%		4.3%		4.3%
Parks (Annual Revenue Increase)		16.2%		14.7%		13.2%		12.7%		12.7%

Table C-2: Proposed Rates for Sewer Utility 2024-2028

	Code	2024 Rate $/year	2025 Rate $/year	2026 Rate $/year	2027 Rate $/year	2028 Rate $/year	2028 Annual Rate Inc.
Part 1 - Residential Users							
Single Family Dwelling (Ut Side)	101	430.49	464.74	501.72	541.63	584.73	8.0%
Single Family Dwelling (Tax Side)		430.49	464.74	501.72	541.63	584.73	8.0%
Multiple Family Dwelling -per unit	102	430.49	464.74	501.72	541.63	584.73	8.0%
Mobile Home Park -per space	103	430.49	464.74	501.72	541.63	584.73	8.0%
Kiwanis Village -per unit	104	430.49	464.74	501.72	541.63	584.73	8.0%
Part 2 - Commercial Users							
Hotels and Motels -per unit	201	176.92	194.93	214.77	236.64	260.73	10.2%
Trailer Park and Campsite -per serviced sit	202	91.28	100.58	110.82	122.10	134.53	10.2%
Wholesale and Retail Stores	203	439.35	484.08	533.36	587.66	647.49	10.2%
Car Wash	204	439.35	484.08	533.36	587.66	647.49	10.2%
Bus Depot	205	439.35	484.08	533.36	587.66	647.49	10.2%
Funeral Parlour	206	439.35	484.08	533.36	587.66	647.49	10.2%
Garage	207	439.35	484.08	533.36	587.66	647.49	10.2%
Machine Shop and Repair Shop	208	439.35	484.08	533.36	587.66	647.49	10.2%
Bakery	209	439.35	484.08	533.36	587.66	647.49	10.2%
Photographer	210	439.35	484.08	533.36	587.66	647.49	10.2%
Business Office - per office	211	439.35	484.08	533.36	587.66	647.49	10.2%
Professional Office -per office	212	439.35	484.08	533.36	587.66	647.49	10.2%
Barber and Hairdresser	213	439.35	484.08	533.36	587.66	647.49	10.2%
Pool Room and Recreation Facility	214	439.35	484.08	533.36	587.66	647.49	10.2%
Theatre	215	878.70	968.15	1,066.71	1,175.31	1,294.96	10.2%
Department Store	216	878.70	968.15	1,066.71	1,175.31	1,294.96	10.2%
Supermarket	217	878.70	968.15	1,066.71	1,175.31	1,294.96	10.2%
Bowling Alley	218	878.70	968.15	1,066.71	1,175.31	1,294.96	10.2%
Bank	219	878.70	968.15	1,066.71	1,175.31	1,294.96	10.2%
Nursing Home	220	878.70	968.15	1,066.71	1,175.31	1,294.96	10.2%
Cafe and Restaurant (including drive-in or	221	878.70	968.15	1,066.71	1,175.31	1,294.96	10.2%
Dry Cleaner	222	878.70	968.15	1,066.71	1,175.31	1,294.96	10.2%
Beverage Room	223	878.70	968.15	1,066.71	1,175.31	1,294.96	10.2%
Laundry and Coin Laundry	224	3,511.86	3,869.38	4,263.30	4,697.31	5,175.51	10.2%
Sawmill	225	4,377.01	4,822.60	5,313.56	5,854.49	6,450.50	10.2%
Dairy Product Processing Plant	226	30,896.36	34,041.69	37,507.23	41,325.57	45,532.63	10.2%
Other Commercial Users	227	878.70	968.15	1,066.71	1,175.31	1,294.96	10.2%
Cheese Processing Plant	228	7,283.00	8,024.43	8,841.34	9,741.42	10,733.12	10.2%
Part 3 - Institutional Users							
Church	301	439.35	484.08	533.36	587.66	647.49	10.2%
Public Hall	302	439.35	484.08	533.36	587.66	647.49	10.2%
Utility Office	303	878.70	968.15	1,066.71	1,175.31	1,294.96	10.2%
School -per classroom	304	749.00	784.95	822.63	862.12	903.51	4.8%
Regional Recreation Complex	305	33,256.23	34,852.64	36,525.69	38,279.05	40,116.57	4.8%
Regional District Administrative Office	306	8,935.03	9,363.94	9,813.44	10,284.52	10,778.21	4.8%
Hospital per patient room		168.28	176.36	184.82	193.69	202.99	4.8%
Hospital per staff room		417.90	437.96	458.99	481.02	504.11	4.8%

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