






Subject: **Water and Wastewater Review**  
 Meeting Date: Tuesday, February 18, 2025  
 Prepared By: Ushba Khalid, Municipal Intern  
 Presented By: Ushba Khalid, Municipal Intern

**STRATEGIC PLAN ALIGNMENT: (Check all that apply)**

	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>
High Quality Infrastructure		Economic Resilience		Quality of Life		Effective Leadership		Level of Service	

**RELEVANT LEGISLATION:**

**Provincial (cite)-** Municipal Government Act S.382-387, S.391-409, S.648.

**Council Bylaw/Policy (cite)-** Bylaw #1912 – Master Rates Bylaw

**BACKGROUND/PROPOSAL:**

**Assumptions/Disclaimer:**

As directed by the Council, Administration has conducted a high-level review of the County’s water and wastewater systems. While the data presented may have a small margin for error due to current limitations in capacity and precise calculation systems, it represents the most accurate figures achievable with available resources. Looking ahead, the County is committed to expanding its use of asset management, which will refine operational and capital data, enhance infrastructure maintenance tracking, and ultimately reduce operational losses. The operational revenue and expenses for both systems are sourced from Microsoft GP (Diamond), but does not include amounts related to organizational functions such as: the safety program, and office building utilities and maintenance. The estimated subsidy is determined by subtracting the revenue from expenses, yielding the amount in dollar value.

This review analyzes the utility system, as a whole, rather than the 13 water systems operated individually by the County.

**Background:**

The primary function of the County's water system is to deliver safe, reliable, and potable water to residents through daily compliance checks, routine maintenance, and prompt responses to issues. Regular water quality testing ensures compliance with Canadian Drinking Water Guidelines. The system serves about 50% of the County, covering rural areas and the hamlets of Huxley, Swalwell, Torrington, and Wimborne. It includes 900 kilometers of pipelines, 9 reservoirs, 9 pumphouses, and 2 booster stations. Huxley and Wimborne are on groundwater well systems; the other water sources come through some form of regional distribution. The County monitors a total of 843 utility accounts and 567 bulk water accounts to ensure proper coverage and accurate billing.

Recent upgrades include the Churchill Pumphouse and Reservoir, electronic upgrades to the Mt. Vernon Booster Station, and connecting Torrington to the rural waterline. Maintenance and infrastructure management address challenges like aging infrastructure and compliance with new guidelines through capital projects and improved procedures.

The system’s average daily distribution is 615 m<sup>3</sup>, with an average annual distribution of 224,575 m<sup>3</sup>, representing combined water usage across all serviced areas.



**Proposal:**

This review aims to assess the extent to which the water and wastewater system is subsidized through general taxes. It outlines the current state of the County’s utility systems to inform Council's discussion on potential future directions. In 2024, the total utility system generated \$1,331,484 in operational revenue, while operational expenses totaled \$2,133,015. As a result, considering the 2024 utility rates, the County had to subsidize \$801,531, or 38% of the system, to cover the shortfall. At present, the County’s water and wastewater systems are operating at a loss, requiring continued County support through taxes. This is a typical challenge for rural areas, where the costs of infrastructure and service delivery are spread across fewer residents. To mitigate this, the County is investigating various measures, including collecting and analyzing utility data through this report.

To address the shortfall, the operational revenue needs to be increased. Currently, the system's operational revenue comes from monthly fees billed to customers and penalties, fees, and contract services. To better align operational revenue with expenses and close the existing gap, the Administration assessed a universal rate of \$6.63 per m<sup>3</sup>, which would be required to achieve approximate cost recovery. This adjustment would more accurately reflect the true costs of running the system, helping to achieve full cost recovery. For wastewater, the Administration explored a model with both a monthly service fee and a usage-based fee to cover the expenses of the wastewater system and ensure its financial sustainability.

**DISCUSSION/OPTIONS/BENEFITS/DISADVANTAGES/OTHER CONSIDERATIONS:**

**Discussion:** Data has been compiled for the four-year period of 2020 to 2024.

Present Situation of Kneehill County Water and Wastewater

*Water*

According to the Federation of Canadian Municipalities, water loss can vary significantly, with well-managed systems losing less than 10% and older systems experiencing losses over 50%. Environment Canada estimates the average loss to be 13%. These losses typically arise from leaks, infrastructure use, and operational challenges. In this report, Administration is accounting for a 10% loss. The County is taking proactive steps to address water loss by planning asset management strategies.

<b>Total Water Distributed (m<sup>3</sup>)</b>					
	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
Total Water Systems	216,619	220,146	207,921	236,160	242,030
Total Systems with ~10% Loss	194,957	198,131	187,129	212,544	217,827
Loss Amount in m <sup>3</sup>	21,662	22,015	20,792	23,616	24,203
<b>Total Bulk Water Distributed (m<sup>3</sup>)</b>					
	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
Total Bulk Water Systems	27,455	40,172	62,832	66,658	59,525
<b>Combined Total Water Volume (m<sup>3</sup>)</b>					
	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
Total Systems	244,074	260,318	270,753	302,818	301,555

\*No loss amount for Bulk Water as the water is transported directly from the bulk water station.



The County’s water supply comes from four sources: the Three Hills distribution, Aqua 7, the Churchill water system, and groundwater wells.

Revenue is generated from water billed to customers, as well as penalties, fees, and contract services. It is important to note that the revenue includes a \$62.00 flat maintenance fee, charged bimonthly for all service connections. This fee helps maintain and enhance the utility infrastructure, supports meter readings, and covers administrative costs. Both the flat rate and usage fees contribute to the general water revenue.

Expenses include purchased water, salaries, utilities (power and heat), testing, training, maintenance, repairs, fuel, telephones, software, and engineering services. The total expenses encompass both water distribution and bulk water costs. However, a detailed breakdown by system is not accessible at this time due to the complexity and integration of these expenses.

<b>Total Revenue from Water Distribution Sales</b>							
2020	2021	2022	2023	2024			
\$794,962	\$844,491	\$858,654	\$938,046	\$952,906			
<b>Total Revenue from Bulk Water Sales</b>							
2020	2021	2022	2023	2024			
\$124,558	\$179,716	\$319,382	\$303,931	\$270,071			
<b>Total Water System Revenue</b>							
2020	2021	2022	2023	2024			
\$1,004,871	\$1,106,198	\$1,257,359	\$1,326,154	\$1,316,992			
<b>Total Water System Expenses</b>							
2020	2021	2022	2023	2024			
\$1,669,102	\$1,879,572	\$1,959,673	\$2,061,299	\$1,999,313			
<b>Total Water System Subsidy</b>							
2020	2021	2022	2023	2024			
\$664,231 40%	\$773,374 41%	\$702,314 36%	\$735,145 36%	\$682,321 34%			
<b>Water System Per M<sup>3</sup> Cost and Subsidy Analysis</b>							
Year	Total Revenue	Total Expenses	Combined Total Water Volume (m <sup>3</sup> )	Revenue per m <sup>3</sup>	Cost per m <sup>3</sup>	Subsidy per m <sup>3</sup>	Total Subsidy
2020	\$1,004,871	\$1,669,102	244,074	\$4.12	\$6.84	\$2.72	\$664,231
2021	\$1,106,198	\$1,879,572	260,318	\$4.25	\$7.22	\$2.97	\$773,374
2022	\$1,257,359	\$1,959,673	270,753	\$4.64	\$7.24	\$2.59	\$702,314
2023	\$1,326,154	\$2,061,299	302,818	\$4.38	\$6.81	\$2.43	\$735,145
2024	\$1,316,992	\$1,999,313	301,555	\$4.37	\$6.63	\$2.26	\$682,321

### Wastewater

Kneehill County has four wastewater systems: Huxley, Swalwell, Torrington, and Wimborne. Administration has compiled the total operational revenues and expenses for all sanitary systems to determine the overall subsidy amount that the County contributes through taxes to sustain the wastewater system. The revenue includes monthly fees, while the expenses account for salaries, sewer main flushing, Acti-zyme, fuel, lab testing, etc.



Total Sanitary System Revenue							
2020	2021	2022	2023	2024			
\$14,526	\$14,451	\$14,419	\$14,467	\$14,492			
Total Sanitary System Expenses							
2020	2021	2022	2023	2024			
\$99,583	\$143,880	\$124,478	\$131,623	\$133,702			
Total Sanitary System Subsidy							
2020	2021	2022	2023	2024			
\$85,057 85%	\$129,428 90%	\$110,059 88%	\$117,157 89%	\$119,210 89%			
Wastewater System Per M <sup>3</sup> Cost and Subsidy Analysis							
Year	Total Revenue	Total Expenses	Wastewater Treated (m <sup>3</sup> )	Revenue per m <sup>3</sup>	Cost per m <sup>3</sup>	Subsidy per m <sup>3</sup>	Total Subsidy
2020	\$14,526	\$99,583	34,487	\$0.42	\$2.89	\$2.47	\$85,057
2021	\$14,451	\$143,880	38,608	\$0.37	\$3.73	\$3.35	\$129,429
2022	\$14,419	\$124,478	30,685	\$0.47	\$4.06	\$3.59	\$110,059
2023	\$14,467	\$131,623	34,253	\$0.42	\$3.84	\$3.42	\$117,156
2024	\$14,492	\$133,702	32,707	\$0.44	\$4.09	\$3.64	\$119,210

Not all water used enters the wastewater collection system. The proportion of water used that is returned to the system is called the wastewater return factor. Industry standards suggest that 80%-90% of water returns to the wastewater system. In the County, it is assumed that the Water Department treats approximately 90% of the water distributed. The 'Wastewater Treated' amount equals 90% of the combined total water volume.

### Total Utility System

Total Utility System Revenue							
2020	2021	2022	2023	2024			
\$1,019,397	\$1,120,649	\$1,271,778	\$1,340,620	\$1,331,484			
Total Utility System Expenses							
2020	2021	2022	2023	2024			
\$1,768,685	\$2,023,452	\$2,084,151	\$2,192,922	\$2,133,014			
Total Utility System Subsidy							
2020	2021	2022	2023	2024			
\$749,288 42%	\$902,803 45%	\$812,373 39%	\$852,302 39%	\$801,530 38%			
Total System Per M <sup>3</sup> Cost and Subsidy Analysis							
Year	Total Revenue	Total Expenses	Combined Total Water + Wastewater (m <sup>3</sup> )	Revenue per m <sup>3</sup>	Cost per m <sup>3</sup>	Subsidy per m <sup>3</sup>	Total Subsidy
2020	\$1,019,397	\$1,768,685	278,561	\$3.66	\$6.35	\$2.69	\$749,288
2021	\$1,120,649	\$2,023,452	298,926	\$3.75	\$6.77	\$3.02	\$902,803
2022	\$1,271,778	\$2,084,151	301,438	\$4.22	\$6.91	\$2.69	\$812,373
2023	\$1,340,620	\$2,192,922	337,071	\$3.98	\$6.51	\$2.53	\$852,302
2024	\$1,331,484	\$2,133,015	334,262	\$3.98	\$6.38	\$2.40	\$801,530



**Considerations:**

1) On January 28th, 2025, Council passed the Master Rates Bylaw #1912, introducing new water rates across the County.

Currently, the water rate differs by system: the general water distribution system charges \$4.05/m<sup>3</sup>, the Huxley and Wimborne systems charge \$2.55/m<sup>3</sup>, and bulk water stations charge \$5.15/m<sup>3</sup>, plus a \$10 minimum fee per monthly bill.

The scenario below aims to set a single rate across all systems to cover the total cost of operating Kneehill County's water systems, which was \$1,999,313 in 2024. The unified rate of \$6.630011/m<sup>3</sup> would balance operational revenue and expenses for the entire water system, taking the system from a subsidy model to a cost recovery model, if Council so chooses.

Optimized Rate Scenario			
2024 Total Water Volume (m <sup>3</sup> )	Total Expenses	Rate for Cost Recovery	Total Revenue
301,555	\$1,999,313	\$6.630011/m <sup>3</sup>	\$1,999,313

2) Wastewater rates have remained relatively unchanged for the past few years. Administration has explored a wastewater fee system based on water usage, with a rate of \$2.51/m<sup>3</sup>, while incorporating a fixed monthly wastewater service charge. This dual-fee structure is designed to more accurately reflect the cost of collecting and treating wastewater in the County and has been incorporated by other municipalities such as the City of Calgary. With this example, the projected annual revenue would be around \$133,830, covering the 2024 total sanitary system operating expense of \$133,702.

Monthly Wastewater Usage Charge				
	Monthly Water Volume Used (m <sup>3</sup> )	Volume entering Collection System (m <sup>3</sup> )	Wastewater Rate/m <sup>3</sup>	Wastewater Charge
Huxley	443	398	\$2.51	\$1,000
Swalwell	708	638	\$2.51	\$1,600
Torrington	1,615	1,454	\$2.51	\$3,649
Wimborne	196	177	\$2.51	\$443
Mobile Home Parks	Included with Torrington			

\*The "Monthly Water Volume Used" amount is multiplied by 0.9 to reflect that, on average, 90% of treated water is returned to the wastewater system over 12 months. This is the "Volume entering the Collection System" amount.

Monthly Wastewater Service Charge		
	Number of Users	Monthly Flat Fee (@ \$20)
Huxley	43	\$860
Swalwell	53	\$1,060
Torrington	103	\$2,060
Wimborne	24	\$480
Mobile Home Parks	Included with Torrington	

Monthly Revenue	
Huxley	\$1,860
Swalwell	\$2,660
Torrington	\$5,709
Wimborne	\$923
Mobile Home Parks	Included with Torrington

Total Monthly Revenue	\$11,152
Totally Yearly Revenue	\$133,830



### 3) Special Tax/Levies and Local Improvement Tax

Imposing a special levy or local improvement tax is another option for Council to achieve its cost recovery goal for the utility system.

MGA Section	Purpose
Special Tax/Levies (S.382-S.387)	Outline the process by which municipal councils can levy special taxes to fund broad municipal services or purposes that benefit the entire municipality, such as waterworks and sewer systems projects. Councils must pass a special tax bylaw annually, specifying the service or purpose, the area of the municipality benefiting from the tax, estimated costs, and the tax rate. The tax can be imposed on all properties that benefit from the specific service or purpose, but it can also apply more broadly to the entire municipality, depending on the specific bylaw. The revenue must be used for the designated purpose, and any excess funds must be advertised for their intended use.
Local Improvement Tax (S.391-S.409)	Local Improvement Taxes fund targeted infrastructure projects like water and sewer systems, sidewalks, or streetlights. These taxes are charged to properties directly benefiting from the improvements and can be spread over a set period. Once a local improvement is proposed, a detailed plan must be prepared, outlining the scope, cost, and funding details, including how the tax will be imposed. The municipality must send notices to the affected property owners, and if sufficient objections are filed, the project may proceed. This approach is more specific, as only the properties receiving the benefit are taxed, such as those gaining from utility upgrades like water or sewer main extensions.
Off-Site Levies (S.648)	Municipalities can charge developers levies to fund infrastructure required for new developments, such as water, sewage, stormwater management, and roads. These fees, paid as a condition of development approval, must be used exclusively for capital projects benefiting the development in accordance with the specific purposes outlined in the levy bylaw. Levies can apply to all utility users or target new developments through impact fees. Municipalities must consult with stakeholders during the planning process, and the levies are subject to periodic review.

**FINANCIAL & STAFFING IMPLICATIONS:**

As this report is for information, there are no staffing or financial implications. All tasks are incorporated into existing staff work plans.

**ATTACHMENTS:**

**RECOMMENDATION:**

That the Committee of the Whole accept this report for information.

**APPROVAL(S):**

Mike Haugen, Chief Administrative Officer

Approved-

