Town of Morinville:
Stormwater Utility Rates Review

Version 3.0
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Document Information

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1	July 19th, 2018	Draft: created by CORVUS Business Advisors
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3	September 14th, 2018	Final

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1 Introduction

The stormwater services provided by the Town of Morinville to its residents include drainage and flood mitigation via infrastructure such as catch basins, manholes, mains, storm ponds, pumping stations, etc. Town residents currently pay for these stormwater services via taxes.

The Town initiated this review of stormwater rates with the intention of establishing a stormwater utility (and associated rates) similar to how water and sewer services are currently managed. In so doing, the Town wants to establish rates that are equitable, financially sustainability, and promote environmental stewardship.

Specifically, the scope of this review includes the establishment of stormwater rates for in-boundary customers (residential, non-residential). Other charges such as service fees or beyond-boundary charges were not considered during this review.

2 Generally Accepted Methods

There are two generally accepted methods for determining revenue requirements of stormwater systems. These methods are:

1) The Utility (Full Cost) Approach, and
2) The Cash Needs Approach.

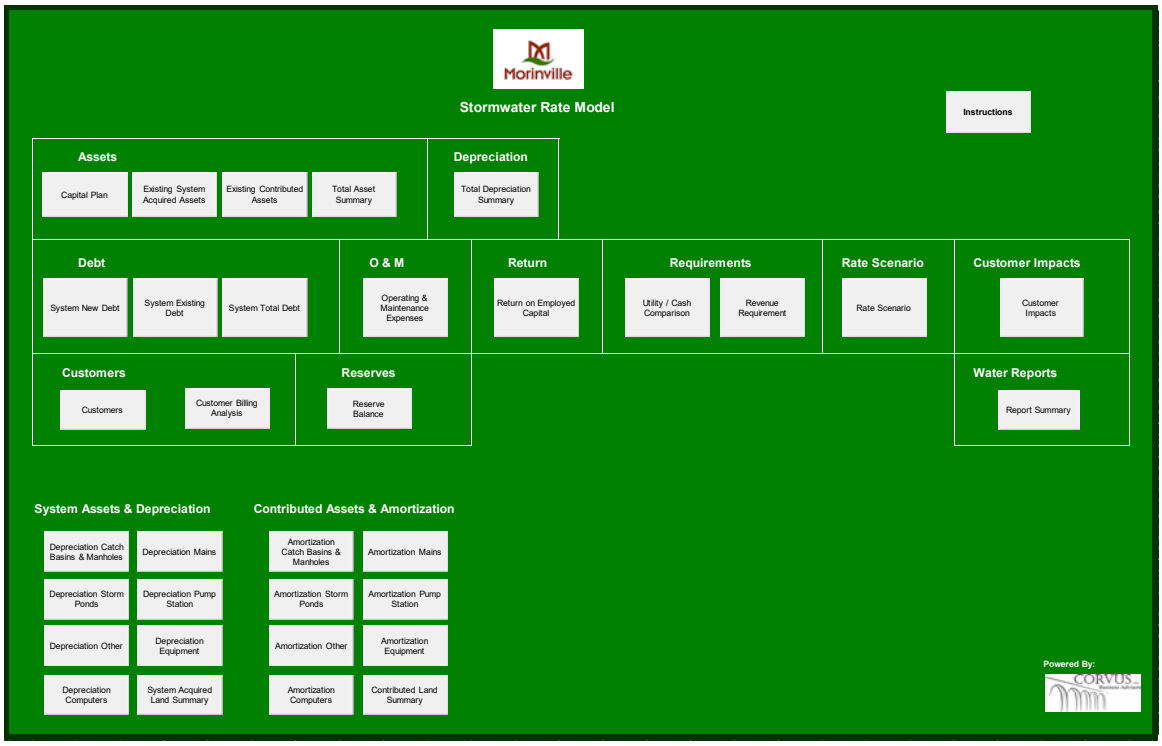
Though each method provides for short and long-term stormwater system program costs, the *utility (full cost) approach* results in greater rate stability. Under the *cash needs approach*, revenue requirements can fluctuate dramatically with cash demands that result from large capital expenditures. The *utility (full cost) approach*, however, develops revenue requirements not based on what is being spent today but rather on the assets that are consumed in service delivery (depreciation) and through financial returns on stormwater system assets (asset base) that will sustain the service in the future. Depreciation and return represent non-cash provisions that, when placed in reserve, may be used to defray the impact of large capital expenditures or, alternatively, may be drawn upon to cover cash needs when decision makers wish to smooth the impact of rate changes over a number of years.

This study uses the *utility (full cost) approach* to establish stormwater revenue requirements.

3 Utility Rate Model and Key Information

The development of full cost utility rates described in this study is supported by the CORVUS Utility Rate Model. The model forecasts rate requirements and rate impacts for a 10-year planning period. In all cases, information used in the model was either developed by, or vetted with, Town staff. A snapshot of the model's control panel is shown below, and a description of the elements contained in the model is provided in Appendix A.

CORVUS Utility Rate Model



4 Stormwater Rate Analysis

In this section, existing charges and related rate structures are analyzed. Specifically, this section describes:

- Key components of the Town's stormwater revenue requirements from 2018 to 2027 (the funds that stormwater rates must generate).
- Modern stormwater rate structures.
- Existing stormwater charges.

4.1 Stormwater Revenue Requirements

Revenue requirements represent the costs that stormwater rates must recover for the utility to be self-sustaining. The following are the key elements used to determine the Town's stormwater revenue requirements.

Existing Stormwater Infrastructure – Stormwater infrastructure that is "in service" is used as a base upon which a rate of return is generated. This rate of return is used to make debt payments associated with creation of the infrastructure and to rehabilitate or replace assets when they reach the end of their economic life.

The table below summarizes the original and residual book value of assets currently in service. Assets in service are classified into two groups: (1) those acquired by the Town (acquired assets), and (2) those contributed to the Town through grants, local improvements, third party contributions and development levies (contributed assets). Each of these two asset classes earn different rates of return, which is described later in this section.

As demonstrated, stormwater assets are at 43% of their life on average (57% remaining). It is important that reserves be accumulated for future asset rehabilitation and reconstruction.

Net Book Value of Existing Assets

Description	Gross Cost	Accumulated Depreciation	Net Book Value	Remaining % of Asset
System Acquired Assets				
Catch Basins & Manholes	$ 2,195,395	$ 1,083,368	$ 1,112,027	51%
Mains	$28,974,229	$12,075,290	$16,898,939	58%
Storm Ponds	$ 898,686	$ 356,725	$ 541,961	60%
Pump Stations	$ 3,796,874	$ 1,973,429	$ 1,823,445	48%
Other	$ -	$ -	$ -	0%
Equipment	$ -	$ -	$ -	0%
Computers	$ -	$ -	$ -	0%
Land	$ -	$ -	$ -	0%
Total Acquired	**$35,865,184**	**$15,488,812**	**$20,376,372**	**57%**

Notes:

1. Land is not a depreciable asset.
2. The Town's historical tangible capital asset listing may be incomplete as it makes no provision for historical assets that may have been contributed to the Town.

Capital Plan Stormwater Asset Additions – The tables below provide details of the capital expenditures that are planned for the Town's stormwater system. These assets will be placed into service in the year of construction. As with existing assets in service, when capital assets are placed into service, they will earn a rate of return for any debt obligations that have arisen during their creation, and for the assets' eventual rehabilitation and replacement.

Summary of Capital Plan by Asset Class

Year	Catch Basins & Manholes	Mains	Storm Ponds	Pump Stations	Other	Equipment	Computers	Land	Grand Total
2018	$ -	$ 55,620	$ -	$ -	$ 36,565	$ 42,724	$ -	$ -	$ 134,909
2019	$ -	$ 49,332	$ 109,803	$ -	$ 31,827	$ 35,328	$ -	$ -	$ 226,290
2020	$ -	$ 50,812	$ -	$ -	$ 32,782	$ 38,245	$ -	$ -	$ 121,839
2021	$ -	$ 7,316	$ -	$ -	$ 33,765	$ 17,896	$ -	$ -	$ 58,977
2022	$ -	$ 7,535	$ -	$ -	$ 34,778	$ 47,298	$ -	$ -	$ 89,611
2023	$ -	$ 7,761	$ -	$ -	$ 35,822	$ 81,554	$ -	$ -	$ 125,137
2024	$ -	$ 499,944	$ -	$ -	$ 36,896	$ 64,568	$ -	$ -	$ 601,408
2025	$ -	$ 8,234	$ -	$ -	$ 1,190,764	$ 31,669	$ -	$ -	$ 1,230,667
2026	$ -	$ 8,481	$ -	$ -	$ 39,143	$ 52,191	$ -	$ -	$ 99,815
2027	$ -	$ 8,735	$ -	$ -	$ 40,317	$ 53,757	$ -	$ -	$ 102,809
Total	$ -	$ 703,770	$ 109,803	$ -	$ 1,512,659	$ 465,230	$ -	$ -	$ 2,791,462

Capital Plan & Financing

		Inflation	3.00%	Allocation of Cost		System Acquired Financing		Contributed Assets		
Addition Description	Current Cost	Year	Future Cost	System Acquired	Contributed	Debenture	Reserves	Grants	Developer	Other
Asset Management Implementation	$ 10,000	2019	$ 10,609	$ 10,609	$ -	$ 10,609	$ -	$ -	$ -	$ -
Road Rehabilitation and Neighborhood Revitalization	$ 35,500	2018	$ 36,565	$ 36,565	$ -	$ -	$ 36,565	$ -	$ -	$ -
Road Rehabilitation and Neighborhood Revitalization	$ 30,000	2019	$ 31,827	$ 31,827	$ -	$ -	$ 31,827	$ -	$ -	$ -
Road Rehabilitation and Neighborhood Revitalization	$ 30,000	2020	$ 32,782	$ 32,782	$ -	$ -	$ 32,782	$ -	$ -	$ -
Road Rehabilitation and Neighborhood Revitalization	$ 30,000	2021	$ 33,765	$ 33,765	$ -	$ -	$ 33,765	$ -	$ -	$ -
Road Rehabilitation and Neighborhood Revitalization	$ 30,000	2022	$ 34,778	$ 34,778	$ -	$ -	$ 34,778	$ -	$ -	$ -
Road Rehabilitation and Neighborhood Revitalization	$ 30,000	2023	$ 35,822	$ 35,822	$ -	$ -	$ 35,822	$ -	$ -	$ -
Road Rehabilitation and Neighborhood Revitalization	$ 30,000	2024	$ 36,896	$ 36,896	$ -	$ -	$ 36,896	$ -	$ -	$ -
Road Rehabilitation and Neighborhood Revitalization	$ 30,000	2025	$ 38,003	$ 38,003	$ -	$ -	$ 38,003	$ -	$ -	$ -
Road Rehabilitation and Neighborhood Revitalization	$ 30,000	2026	$ 39,143	$ 39,143	$ -	$ -	$ 39,143	$ -	$ -	$ -
Road Rehabilitation and Neighborhood Revitalization	$ 30,000	2027	$ 40,317	$ 40,317	$ -	$ -	$ 40,317	$ -	$ -	$ -
Stormwater Pond Aerating Fountain	$ 103,500	2019	$ 109,803	$ 109,803	$ -	$ 109,803	$ -	$ -	$ -	$ -
East Boundary Road - Cardiff Road to Manawan Canal	$ 660,000	2025	$ 836,068	$ 418,034	$ 418,034	$ 418,034	$ -	$ -	$ 418,034	$ -
100 St - Final Upgrade of 100 st - CN Tracks to Cardiff Road	$ 250,000	2025	$ 316,693	$ 158,347	$ 158,347	$ 158,347	$ -	$ -	$ 158,347	$ -
Utilities Upgrades	$ 14,000	2018	$ 14,420	$ 14,420	$ -	$ -	$ 14,420	$ -	$ -	$ -
Utilities Upgrades	$ 6,500	2019	$ 6,896	$ 6,896	$ -	$ -	$ 6,896	$ -	$ -	$ -
Utilities Upgrades	$ 6,500	2020	$ 7,103	$ 7,103	$ -	$ -	$ 7,103	$ -	$ -	$ -
Utilities Upgrades	$ 6,500	2021	$ 7,316	$ 7,316	$ -	$ -	$ 7,316	$ -	$ -	$ -
Utilities Upgrades	$ 6,500	2022	$ 7,535	$ 7,535	$ -	$ -	$ 7,535	$ -	$ -	$ -
Utilities Upgrades	$ 6,500	2023	$ 7,761	$ 7,761	$ -	$ -	$ 7,761	$ -	$ -	$ -
Utilities Upgrades	$ 6,500	2024	$ 7,994	$ 7,994	$ -	$ -	$ 7,994	$ -	$ -	$ -
Utilities Upgrades	$ 6,500	2025	$ 8,234	$ 8,234	$ -	$ -	$ 8,234	$ -	$ -	$ -
Utilities Upgrades	$ 6,500	2026	$ 8,481	$ 8,481	$ -	$ -	$ 8,481	$ -	$ -	$ -
Utilities Upgrades	$ 6,500	2027	$ 8,735	$ 8,735	$ -	$ -	$ 8,735	$ -	$ -	$ -
Storm Sewer Capital Projects	$ 40,000	2018	$ 41,200	$ 41,200	$ -	$ -	$ 41,200	$ -	$ -	$ -
Storm Sewer Capital Projects	$ 40,000	2019	$ 42,436	$ 42,436	$ -	$ 42,436	$ -	$ -	$ -	$ -
Storm Sewer Capital Projects	$ 40,000	2020	$ 43,709	$ 43,709	$ -	$ -	$ 43,709	$ -	$ -	$ -
Public Works Vehicles	$ 41,480	2018	$ 42,724	$ 42,724	$ -	$ -	$ 42,724	$ -	$ -	$ -
Public Works Vehicles	$ 23,300	2019	$ 24,719	$ 24,719	$ -	$ 401	$ 24,319	$ -	$ -	$ -
Public Works Vehicles	$ 35,000	2020	$ 38,245	$ 38,245	$ -	$ -	$ 38,245	$ -	$ -	$ -
Public Works Vehicles	$ 15,900	2021	$ 17,896	$ 17,896	$ -	$ -	$ 17,896	$ -	$ -	$ -
Public Works Vehicles	$ 40,800	2022	$ 47,298	$ 47,298	$ -	$ -	$ 47,298	$ -	$ -	$ -
Public Works Vehicles	$ 68,300	2023	$ 81,554	$ 81,554	$ -	$ -	$ 81,554	$ -	$ -	$ -
Public Works Vehicles	$ 52,500	2024	$ 64,568	$ 64,568	$ -	$ -	$ 64,568	$ -	$ -	$ -
Public Works Vehicles	$ 25,000	2025	$ 31,669	$ 31,669	$ -	$ -	$ 31,669	$ -	$ -	$ -
Public Works Vehicles	$ 40,000	2026	$ 52,191	$ 52,191	$ -	$ -	$ 52,191	$ -	$ -	$ -
Public Works Vehicles	$ 40,000	2027	$ 53,757	$ 53,757	$ -	$ -	$ 53,757	$ -	$ -	$ -
Rec Centre - Phase 2 A & B - Added Ice Surface/Outdoor R	$ 400,000	2024	$ 491,950	$ 491,950	$ -	$ 491,950	$ -	$ -	$ -	$ -
	$ 2,303,780		**$ 2,791,462**	**$ 2,215,082**	**$ 576,381**	**$ 1,231,579**	**$ 983,503**	**$ -**	**$ 576,381**	**$ -**

Notes:

1. For road related projects #2 (Road Rehab), #4 (East Boundary), and #5 (100 St), 50% of curb and gutter costs have been allocated to Stormwater utility, and curb and gutter costs are estimated at 10% of total project cost.
2. 50% of projects #4 (East Boundary) and #5 (100 St) have been allocated to future development (consistent with the Town's offsite levy bylaw).

Existing and Future Debt Payments – Rates/recoveries must provide for debt payments on existing and future debentures. The Town has no existing debts. However, in the future debt will be required until sufficient reserves are created to fund capital requirements. The following table outlines debt payments associated with new debentures over the rate-planning period.

Year	Existing Debt			Future Debt			Total Debt		
	Principal	Interest	Total	Principal	Interest	Total	Principal	Interest	Total
2018	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2019	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2020	$ -	$ -	$ -	$ 4,375	$ 5,111	$ 9,486	$ 4,375	$ 5,111	$ 9,486
2021	$ -	$ -	$ -	$ 4,514	$ 4,972	$ 9,486	$ 4,514	$ 4,972	$ 9,486
2022	$ -	$ -	$ -	$ 4,657	$ 4,829	$ 9,486	$ 4,657	$ 4,829	$ 9,486
2023	$ -	$ -	$ -	$ 4,805	$ 4,681	$ 9,486	$ 4,805	$ 4,681	$ 9,486
2024	$ -	$ -	$ -	$ 4,958	$ 4,528	$ 9,486	$ 4,958	$ 4,528	$ 9,486
2025	$ -	$ -	$ -	$ 18,298	$ 19,774	$ 38,072	$ 18,298	$ 19,774	$ 38,072
2026	$ -	$ -	$ -	$ 34,324	$ 37,240	$ 71,564	$ 34,324	$ 37,240	$ 71,564
2027	$ -	$ -	$ -	$ 35,415	$ 36,149	$ 71,564	$ 35,415	$ 36,149	$ 71,564
Total	**$ -**	**$ -**	**$ -**	**$ 111,344**	**$ 117,285**	**$ 228,629**	**$ 111,344**	**$ 117,285**	**$ 228,629**

Operating and Maintenance Costs – The table below outlines projected net operating expenditures that must be provided for by stormwater utility rates. Projected expenditures over the rate planning period are based on baseline costs (2018 actual/budgeted operating expenditures adjusted for budgeted step increases/decreases) plus a provision for future escalation of these costs (3.0% inflation on costs and revenues are taken into consideration in each year of the 10-year planning period).

Net Operating Expenditures

Year	Miscellaneous Recoveries	Expenditures	Net Expenditures
2018	$ -	$ 73,417	$ 73,417
2019	$ -	$ 75,620	$ 75,620
2020	$ -	$ 77,888	$ 77,888
2021	$ -	$ 80,225	$ 80,225
2022	$ -	$ 82,632	$ 82,632
2023	$ -	$ 85,111	$ 85,111
2024	$ -	$ 87,664	$ 87,664
2025	$ -	$ 90,294	$ 90,294
2026	$ -	$ 93,003	$ 93,003
2027	$ -	$ 95,793	$ 95,793

Depreciation Expense on Acquired Assets – Depreciation represents the value of assets consumed while in service to ratepayers. A depreciation expense establishes part of the provision used for the rehabilitation and replacement of assets. Under the *utility (full cost) approach* a depreciation expense is calculated only on acquired assets (contributed assets have not been purchased and therefore no expense can emanate from these assets). The depreciation expense established within the stormwater revenue

requirement is calculated on a straight-line base over the economic life of assets in each asset class (catch basins & manholes, mains, etc). The tables below outline the economic life of each stormwater asset class and the depreciation expenses in each year of the rate-planning period.

Economic Life of Asset Classes

Category	Economic Life	
Catch Basins & Manholes	50	Years
Mains	75	Years
Storm Ponds	75	Years
Pump Stations	45	Years
Other	30	Years
Equipment	10	Years
Computers	5	Years

Depreciation Expense

Description	2018	2019	2020	2021	2022
System Acquired Assets					
Catch Basins & Manholes	$ 43,908	$ 43,908	$ 43,908	$ 43,908	$ 43,908
Mains	$ 386,694	$ 387,394	$ 388,061	$ 388,449	$ 388,548
Storm Ponds	$ 11,982	$ 12,715	$ 13,447	$ 13,447	$ 13,447
Pump Stations	$ 84,375	$ 84,375	$ 84,375	$ 84,375	$ 84,375
Other	$ 609	$ 1,749	$ 2,826	$ 3,935	$ 5,078
Equipment	$ -	$ -	$ -	$ -	$ -
Computers	$ -	$ -	$ -	$ -	$ -
Total Depreciation	$ 527,569	$ 530,140	$ 532,617	$ 534,113	$ 535,355

Description	2023	2024	2025	2026	2027
System Acquired Assets					
Catch Basins & Manholes	$ 43,908	$ 43,908	$ 43,908	$ 43,908	$ 43,908
Mains	$ 388,650	$ 392,034	$ 395,422	$ 395,534	$ 395,648
Storm Ponds	$ 13,447	$ 13,447	$ 13,447	$ 13,447	$ 13,447
Pump Stations	$ 84,375	$ 74,640	$ 64,906	$ 64,906	$ 51,530
Other	$ 6,254	$ 7,466	$ 18,321	$ 29,213	$ 30,537
Equipment	$ -	$ -	$ -	$ -	$ -
Computers	$ -	$ -	$ -	$ -	$ -
Total Depreciation	$ 536,633	$ 531,495	$ 536,003	$ 547,007	$ 535,070

Notes:

1. Depreciation is calculated in the year of construction.

Return – As previously indicated various rates of returns are established for assets in service by using the 2017 Generic Rate of Return established by the Alberta Utilities Commission (AUC).

Assets in service include:

- Acquired assets that are debt supported
- Acquired assets that are equity supported
- Contributed assets, and
- Working capital.

The actual capital structure of a utility is most often used to determine the weight of each cost of capital. However, the relative components of debt and equity can change over time. Sometimes the actual capital structure can have excessive amounts of debt or equity. As such, an alternative capital structure, referred to as a "deemed capital structure", is used to determine a fair return.

The AUC has determined that the optimum capital structure for an investor-owned utility is 60% debt based and 40% equity; however, municipal debt is constrained by the Municipal Government Act and related debt regulations. As such, the level of debt to equity has been revised downward to 40% debt and 60% equity. The deemed capital structure helps to generate a smooth revenue requirement during periods of abnormally low or high capital construction.

Acquired assets that are deemed to be **debt supported** (40% of all acquired assets) are provided a rate of return that meets average debt obligations (principle and interest payments). For example, in year 2 of the review period the return of 3.00% is determined by the average interest terms of all outstanding debentures with a minimum of 3.00%[1].

Acquired assets that are deemed to be **equity supported** (60% of all acquired assets) are provided a rate of return of 8.50% (the AUC Generic Rate of Return) which approximates the cost of equity capital for stormwater utilities as determined by the AUC.

Contributed assets do not earn a rate of return.

Determination of average **working capital** requirements is based on 1½ months of operating and maintenance costs (the "one-eighth" rule). Returns on working capital are assumed to be 8.50% (the AUC Generic Rate of Return).

To illustrate, the table below summarizes returns for each asset in service in year 2 of the rate planning period. The average return on all assets in service is 6.30%. As previously indicated this return is intended to meet any borrowing obligations that are

[1] A minimum return of 3% applied to debt was established, in alignment with current Alberta Capital Financing borrowing rates.

incurred in the creation of assets and to rehabilitate and replace the assets when they reach the end of their economic life.

Summary of Returns – Year 2

2019 Description	Actual Capital In Service	% Actual Capital Structure	% Actual System Acquired Asset Structure	Deemed % System Acquired Asset Structure	Deemed Rate Base	Rate of Return	Return on Deemed Rate Base
System Acquired Assets							
Debt Portion	$ 163,250	0.83%	0.83%	40.00%	$ 7,871,945	3.00%	$ 236,158
Equity Portion	$ 19,516,613	99.17%	99.17%	60.00%	$ 11,807,917	8.50%	$ 1,003,673
Total System Acquired	$ 19,679,862	100.00%	100.00%	100.00%	$ 19,679,862		$ 1,239,831
Contributed Assets	$ -	0.00%			$ -	0.00%	$ -
Total Assets	$ 19,679,862	100.00%			$ 19,679,862		$ 1,239,831
Working Capital	$ 75,620				$ 9,452	8.50%	$ 803
						Total Return	$ 1,240,635
							6.30%

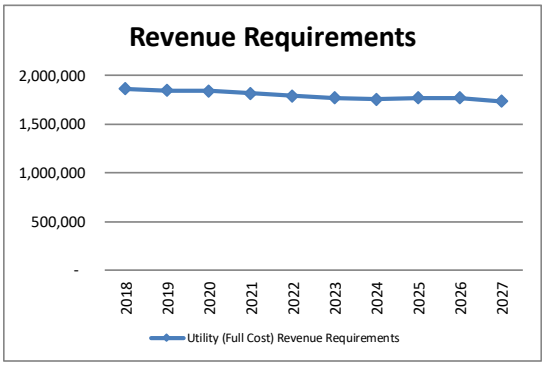
Summary of Revenue Requirements (Utility (Full Cost) Approach) – Based on the various elements described in this section the following table and graph outline the revenue requirements under the *utility (full cost) approach*. The Town's revenue requirement is declining over the rate planning period (even after adjusting for inflation) because the asset base is depreciating without significant addition of new capital investments during the rate planning period. There may be a need to re-examine the capital plan, particularly in the latter years of the rate planning period.

Stormwater Revenue Requirements

Description	2018	2019	2020	2021	2022
O&M costs (Net)	73,417	75,620	77,888	80,225	82,632
Depreciation	527,569	530,140	532,617	534,113	535,355
Return					
System Assets - Debt	239,805	236,158	247,973	242,163	236,744
System Assets - Equity	1,019,169	1,003,673	982,723	958,491	935,758
Contributed Assets	-	-	-	-	-
Working Capital	780	803	828	852	878
Total	1,860,740	1,846,395	1,842,029	1,815,845	1,791,367

Description	2023	2024	2025	2026	2027
O&M costs (Net)	85,111	87,664	90,294	93,003	95,793
Depreciation	536,633	531,495	536,003	547,007	535,070
Return					
System Assets - Debt	231,783	216,079	217,499	227,858	222,599
System Assets - Equity	914,772	918,338	924,370	901,563	879,518
Contributed Assets	-	-	-	-	-
Working Capital	904	931	959	988	1,018
Total	1,769,204	1,754,508	1,769,126	1,770,419	1,733,998

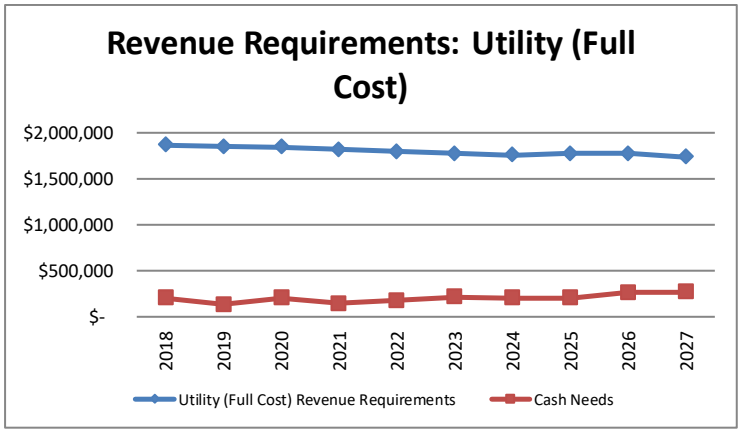
	Revenue Requirement - Utility (Full Cost)			
Year	Net Operating Expenditures	Depreciation	Return	Total Revenue Requirement
2018	$ 73,417	$ 527,569	$ 1,259,754	$ 1,860,740
2019	$ 75,620	$ 530,140	$ 1,240,635	$ 1,846,395
2020	$ 77,888	$ 532,617	$ 1,231,524	$ 1,842,029
2021	$ 80,225	$ 534,113	$ 1,201,506	$ 1,815,845
2022	$ 82,632	$ 535,355	$ 1,173,380	$ 1,791,367
2023	$ 85,111	$ 536,633	$ 1,147,460	$ 1,769,204
2024	$ 87,664	$ 531,495	$ 1,135,349	$ 1,754,508
2025	$ 90,294	$ 536,003	$ 1,142,828	$ 1,769,126
2026	$ 93,003	$ 547,007	$ 1,130,410	$ 1,770,419
2027	$ 95,793	$ 535,070	$ 1,103,135	$ 1,733,998



Comparison of Utility (Full Cost) Revenue Requirement vs Cash Requirements – Based upon all revenue requirements described in this section the following table and graph compare the revenue recovery required under the *Utility (Full Cost) Approach* with the *Cash Needs Approach*.

Full Cost vs Cash Requirements

	Revenue Requirement - Utility (Full Cost)				Revenue Requirement - Cash				
Year	Net Operating Expenditures	Depreciation	Return	Total Revenue Requirement	Net Operating Expenditures	Debt Charges	Revenue Requirement Before Capital Drawn From	Capital Drawn From Reserves	Total Revenue Requirement
2018	$ 73,417	$ 527,569	$ 1,259,754	$ 1,860,740	$ 73,417	$ -	$ 73,417	$ 134,909	$ 208,326
2019	$ 75,620	$ 530,140	$ 1,240,635	$ 1,846,395	$ 75,620	$ -	$ 75,620	$ 63,042	$ 138,661
2020	$ 77,888	$ 532,617	$ 1,231,524	$ 1,842,029	$ 77,888	$ 9,486	$ 87,374	$ 121,839	$ 209,213
2021	$ 80,225	$ 534,113	$ 1,201,506	$ 1,815,845	$ 80,225	$ 9,486	$ 89,711	$ 58,977	$ 148,688
2022	$ 82,632	$ 535,355	$ 1,173,380	$ 1,791,367	$ 82,632	$ 9,486	$ 92,118	$ 89,611	$ 181,729
2023	$ 85,111	$ 536,633	$ 1,147,460	$ 1,769,204	$ 85,111	$ 9,486	$ 94,597	$ 125,137	$ 219,734
2024	$ 87,664	$ 531,495	$ 1,135,349	$ 1,754,508	$ 87,664	$ 9,486	$ 97,150	$ 109,458	$ 206,608
2025	$ 90,294	$ 536,003	$ 1,142,828	$ 1,769,126	$ 90,294	$ 38,072	$ 128,366	$ 77,906	$ 206,272
2026	$ 93,003	$ 547,007	$ 1,130,410	$ 1,770,419	$ 93,003	$ 71,564	$ 164,567	$ 99,815	$ 264,382
2027	$ 95,793	$ 535,070	$ 1,103,135	$ 1,733,998	$ 95,793	$ 71,564	$ 167,357	$ 102,809	$ 270,166



Key Conclusions:

- The *Cash Needs Approach* outlines the minimum amount of cash required in any given year and are equivalent to the Town's current draw on taxes. If, after having established a stormwater utility rate, revenue production falls below cash needs this will result in a utility "loss", and subsequent subsidy from the Town (i.e., tax financed).

- Over the long term, rates and revenues need to satisfy the utility (full cost) revenue requirements in order for the utility to be fully self-sustained.

- Transition to full cost rates immediately would require a very high rate. Accordingly, a gradual, long term transition toward full cost rates is recommended and is discussed in Section 6.

4.2 Existing Stormwater Recoveries

As described in the section above, the Town's stormwater utility will draw approximately $208,326 from the tax levy in 2018 in order to meet its cash requirements. The Town currently has approximately 3374 utility rate payers. So, effectively rate payers are paying a stormwater charge of $5.15 per month currently, as shown in the table below.

Current Tax Recoveries & Equivalent Rate

	Recovered By Rates	Recovered By Taxes	Total
Revenue	$ -	$ 208,326	$ 208,326
Rate or Equivalent	$ -	$ 5.15	$ 5.15

Should the Town continue using the tax levy as the sole financing source for the

stormwater utility (or should the Town fail to adopt a full cost rate transition strategy over time) it will result in a utility (full cost) deficit of approximately $15.9 million over the 10-year review period, as shown in the table below.

Full Cost Deficit

Year	Utility (Full Cost) Revenue Requirement	Cash Requirement	Difference
2018	$ 1,860,740	$ 208,326	$ 1,652,414
2019	$ 1,846,395	$ 138,661	$ 1,707,733
2020	$ 1,842,029	$ 209,213	$ 1,632,816
2021	$ 1,815,845	$ 148,688	$ 1,667,157
2022	$ 1,791,367	$ 181,729	$ 1,609,638
2023	$ 1,769,204	$ 219,734	$ 1,549,470
2024	$ 1,754,508	$ 206,608	$ 1,547,900
2025	$ 1,769,126	$ 206,272	$ 1,562,854
2026	$ 1,770,419	$ 264,382	$ 1,506,038
2027	$ 1,733,998	$ 270,166	$ 1,463,833
Total	$ 17,953,631	$ 2,053,780	$ 15,899,852

5 Stormwater Rate Philosophy and Structure

Who Should Contribute? All properties use the public drainage systems and therefore receive a benefit from the system. Even properties that are not directly connected to storm sewers benefit through the protection from flooding and receive a service from the municipal operation of an adequate and properly managed drainage system.

Research has consistently identified that any property that is part of the watershed benefits from surface drainage improvement, improvements of health, comfort, convenience, and enhanced property values. A 2013 report prepared by the Water Environment Federation called User Funded—Stormwater Utilities states that, *"Stormwater allocation considers the following:*

- *Users are properties that add runoff to a system and/or are served by the provision of stormwater services and facilities;*
- *Beneficiaries are people or properties that gain from stormwater management (are protected, for example, from the effects of flooding and resulting flood damage or benefit from improved water quality); and*
- *Service or user fees are dedicated charges paid by generators of stormwater*

runoff on the estimated amount of water that leaves their property or in relation to the services and facilities they receive."

This supports the need for all properties to contribute to the stormwater charges to maintain and replace the system in a fair and equitable manner.

Stormwater Rate Approaches. While the trend has been to move to a stormwater utility rate model, there is no standard approach used by municipalities to recover costs. For example, some municipalities charge one flat rate or different flat rates by property class, others consider the impervious area of a property, the size of a property and runoff factors. Many factors impact the type of rate structure that is used by each municipality. Ultimately, municipalities strive to ensure that rate structures meet legislative requirements, adhere to fairness and equity principles, and are administratively manageable.

According to the Water Environment Federation, the most equitable methods (and costly to administer) for stormwater rate structures are impervious area and intensity of development area. Due to the cost and availability of property specific information, municipalities across Canada have also implemented more simplistic approaches including lot size (with no differentiation recognition of impervious area or runoff), or a flat rate structure for properties in various classifications.

There are a number of considerations in establishing the most appropriate rate structure including:

a. Availability of Information – While principles of fairness and equity are critical in the decision-making process, the availability of information to calculate the rates cannot be ignored, particularly as decisions will also need to be made with respect to possible credits and exemptions. The approach undertaken by many municipalities is to work with data that is readily available and to work, over time, to expand the database to include additional detail and parameters that impact stormwater costs.

b. Cost to Administer – If the cost of implementing and maintaining a given rate methodology demands an unreasonably large portion of the stormwater utility's projected revenues, then the approach may be either too complex or the potential stormwater utility's scope of service too small to justify the creation of a self-sustaining utility.

c. Homogeneity of Properties – In municipalities where properties are fairly homogeneous, there is less need to incorporate additional factors into the

calculation. If there are classes of properties that are relatively homogenous, a decision may be made to charge a flat rate rather than one based on a calculated rate for every property.

The following summarizes different rate setting options for stormwater management:

Intensity of Development Method – This method is based on gross area of the property, land use designation and a runoff factor or coefficient (to estimate impervious area on a property). Runoff factors are calculated for each type of property based on land zoning. This approach is arguably the most equitable as it considers a number of factors that impact stormwater costs but is it also the most administratively challenging.

Data in Morinville is not readily available to support this option. Further, the costs of implementing and maintaining this type of rate structure and associated account files is administratively and cost prohibitive.

Impervious Area Method – Some municipalities bill customers based on the actual or estimated quantity of runoff generated by the property (impervious area). Due to administrative challenges with respect to charging each property a different rate based on impervious area and land size, many municipalities establish flat rates for all properties within a class (e.g. residential vs non-residential). While these proxies may not be perfect indicators of each property's impact on the storm sewer systems, it strikes a balance between perfect equity and exorbitant administrative costs. One approach is to calculate the rates in terms of single-family equivalents, or "equivalent residential units" (ERU), which equate runoff from all parcels to the average amount from a single-family residential property.

Impervious area data is not readily available in Morinville however "rules of thumb" can be used for residential and non-residential property classes.

Lot Size – Another rate structure option is to use the total property area for all assessable properties in the urban area. Lot size determines the rate based on the total number of hectares. Under this approach, there is no differentiation by the type of property or the imperviousness of the property. Every property pays based on its size.

Because it is impractical to charge every property a rate based on the exact size of the property, rates based on land area are normally designed to fit average conditions for groups of customers having similar service requirements or to establish a threshold upon which variable rates would be charged (e.g. size of property). This structure is considered appropriate for systems:

- Whose overall expenditures are relatively small;
- Where an alternative approach would significantly increase overall expenditures; or
- That are relatively homogenous in their density of development whereby all properties can reasonably be treated as having the same runoff characteristics.

6 Recommendations

This section describes the recommended stormwater rate structure for the Town, and the long-term rate transition strategy will enable the Town to maintain a sustainable utility (i.e., a *utility (full cost) approach*).

Recommended Rate Structure – To leverage existing data and conditions in Morinville without adding undue administrative costs or billing complexities, it is recommended that a residential and non-residential stormwater charge be established based on average lot size for each customer class and an estimate of impervious area for each customer class.

After examining conditions in Morinville, it was determined that residential customers have an average lot size (594 m^2) and 45% impervious area (257 m^2). In calculating the difference between residential and non-residential rates, 6 benchmark communities/organizations have been examined: EPCOR, City of Calgary, Town of Okotoks, City of Chestermere, City of St. Albert, and Town of Cochrane. While similar, each one of these communities/organizations reflect different residential-non-residential relationships. These benchmarks have been averaged to determine the residential-non-residential relationship in Morinville (i.e., 2X)[2].

Recommended Rate Strategy

The recommended residential and non-residential rates for the 10-year review period are shown in the table below. The residential charge commences at $5.00 per month, which is essentially the same effective rate as exists today via the tax draw. The rate grows gradually over the 10-year period to $32.00 per month in 2026 which achieves full-cost recovery in year 9/10[3].

The non-residential charge commences at $10.00 per month, which is 2X the residential rate as described in the previous section. The rate grows gradually over the 10-year period to $64.00 per month in 2027 which achieves the full-cost recovery in year 10.

[2] In Morinville, non-residential customers have an average lot size of 2975 m2 and their impervious area is between 2.6X and 7.5X greater than residential customers.
[3] Planning for full-cost rates in Year 9 affords the Town addition flexibility to achieve full cost by Year 10 should new costs be added to capital and operating plans.

Summary of Rates – Utility (Full Cost) Rate Strategy[4]

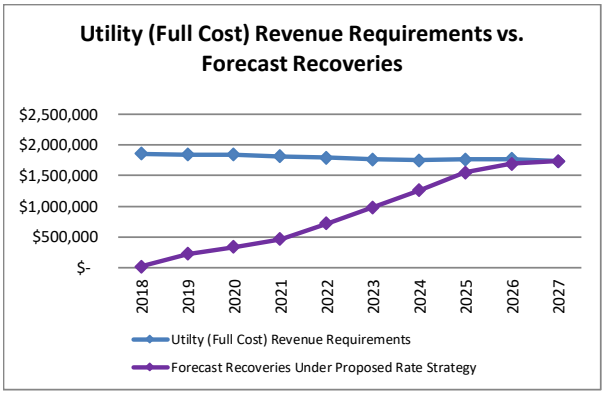
	2018	2019	2020	2021	2022
Residential	$ 5.00	$ 5.00	$ 7.50	$ 10.00	$ 15.00
Non-Residential	$ 10.00	$ 10.00	$ 15.00	$ 20.00	$ 30.00

	2023	2024	2025	2026	2027
Residential	$ 20.00	$ 25.00	$ 30.00	$ 32.00	$ 32.00
Non-Residential	$ 40.00	$ 50.00	$ 60.00	$ 64.00	$ 64.00

Under the proposed rate strategy, the projected revenues will exceed cash requirements in year 2, and meet the full cost revenue requirement in year 9/10 as shown in the table and graph below ("purple" line)[5]. Implementation of the proposed rate strategy also eliminates the need for future draws on taxes—reducing the tax burden by approximately $205,000 per year.

Forecast Recoveries

Year	Utility (Full Cost) Revenue Requirement	Cash Requirement	Actual Revenue Under the Proposed Rate Strategy
2018	$ 1,860,740	$ 208,326	$ 17,840
2019	$ 1,846,395	$ 138,661	$ 219,432
2020	$ 1,842,029	$ 209,213	$ 339,022
2021	$ 1,815,845	$ 148,688	$ 467,851
2022	$ 1,791,367	$ 181,729	$ 719,321
2023	$ 1,769,204	$ 219,734	$ 983,072
2024	$ 1,754,508	$ 206,608	$ 1,259,561
2025	$ 1,769,126	$ 206,272	$ 1,549,260
2026	$ 1,770,419	$ 264,382	$ 1,693,857
2027	$ 1,733,998	$ 270,166	$ 1,736,204
Total	$ 17,953,631	$ 2,053,780	$ 8,985,420



Under the proposed rate strategy, $6.9 million in reserves are amassed over the 10-year review period[6]. These funds will be used to finance future stormwater capital requirements.

[4] Multi-family developments with more then 4 units, and supplied by a single water meter, will be charged the non-residential rate.
[5] It is assumed that rates will be implemented late in 2018, so it will not be possible to achieve cash requirements in 2018.
6 Typically, reserves are not permitted to be "negative". However, in order to offset the negative balance in year 1 rates would have to be increased dramatically for the last month of 2018 to overcome losses from the first 11 months. Instead, the break-even rate has been applied to the last month of 2018. The resulting negative reserve balance is overcome in 2020 after rates increases take full effect.

Forecast Reserve Balance

	Opening Reserve Balance	$ -

Year	Reserve Receipts	Reserve Applied	Reserve Balance
2018	$ (55,577)	$ 134,909	$ (190,486)
2019	$ 143,812	$ 63,042	$ (109,716)
2020	$ 251,648	$ 121,839	$ 20,093
2021	$ 378,140	$ 58,977	$ 339,256
2022	$ 627,203	$ 89,611	$ 876,848
2023	$ 888,475	$ 125,137	$ 1,640,186
2024	$ 1,162,411	$ 109,458	$ 2,693,139
2025	$ 1,420,894	$ 77,906	$ 4,036,127
2026	$ 1,529,291	$ 99,815	$ 5,465,602
2027	$ 1,568,847	$ 102,809	$ 6,931,640
	$ 7,915,143	$ 983,503	

7 Acknowledgements

CORVUS Business Advisors would like to thank all the Town of Morinville staff from Engineering, Planning, and Finance who supported the work of this review.

8 Disclaimer

CORVUS Business Advisor has relied upon Town of Morinville to provide all of the data and information used to construct the utility rate model and create the rates, such as TCA's, capital plans and costs estimates, debenture details, and operating budgets etc. As such, CORVUS Business Advisors makes no guarantee as to the accuracy of the input data and information provided by these groups or the results that stem from this data and information.

Appendix A – Utility Rate Model

Each element of the CORVUS utility rate model is described in the sections below.

Existing Stormwater Assets – The cost of existing stormwater assets used in the provision of services (tangible capital assets) is included in the stormwater rate model. Stormwater asset costs are categorized into one or more of the following generic categories:

- Catch Basins & Manholes
- Mains
- Storm Ponds
- Pumping Stations
- Equipment
- Computers
- Land
- Other

The model contains a summary of this asset cost information summarized by asset category and by year of construction.

Future Stormwater Assets – Town staff developed a multi-year capital plan for future stormwater infrastructure capital requirements. The first 10 years of the plan are included in the stormwater rate model, consistent with the 10-year outlook of this study. The 10-year plan includes the cost of assets to be constructed and an associated financing plan. The model includes mechanisms for integrating capital plan impacts into future year rate setting.

Depreciation of Stormwater Assets – Town staff were consulted on the development of depreciation allowances for each stormwater asset category. Depreciation is calculated in the rate model using a straight-line depreciation approach based on the economic life assigned to each asset category. The stormwater rate model contains information on the annual and accumulated depreciation for each asset class by year from year of construction to present. The stormwater rate model also forecasts future depreciation expenses for the 10-year planning period based on assets currently in service and those that will be added as a result of the 10-year capital plan described above.

Existing and Future Debt Financing – The stormwater rate model considers the impact of existing and future debt financing costs on stormwater rates. The model

provides a breakdown of all existing outstanding debentures used to finance stormwater infrastructure. Debt information includes the original principal financed, the borrowing term, interest rate, principal payment, interest payment, as well as the outstanding balance associated with each debt. The model also establishes future debt impacts for new assets identified in the 10-year capital plan.

Operating and Maintenance Costs – The stormwater rate model considers the operating and maintenance costs associated with the provision of stormwater services over the 10-year planning period. Operating budget provisions were determined with Town staff. The model accounts for inflation used to escalate each expenditure category. In addition, the model accounts for cost "step" increases or decreases (if any) to accommodate changes in planning assumptions (e.g., the addition of new staff).

Return – The stormwater rate model establishes returns on stormwater assets that are employed in the provision of service. Determination of returns are based on a deemed capital structure in order to smooth rate impacts associated with rate volatility that results from large swings in capital construction activity. The model allows for rates of return for equity and debt, as well as working capital employed in the operation of the stormwater utilities. The Alberta Utility Commission's "generic rate of return" has been applied to equity assets (those assets financed through utility rates) and working capital, and the average cost of debt in any given year is used as the rate of return on debt assets (those assets financed through utility borrowings) in that year. No return is established on contributed assets (those assets provided by way of grant, levies, and third parties etc.).

Customer Information Profile – Customer profile information from 2018 was analyzed and is used as the basis for forecasting rate requirements in the stormwater rate model. The stormwater rate model customer profile includes the number of accounts of each customer class.

Revenue Requirements and Rate Impacts – The stormwater rate model outlines what revenue should be recovered through stormwater rates (revenue requirements) under the *utility (full cost) approach*, and the impact of rate structure / strategy on recoveries. The model compares recovery targets and projects recovery estimates as well as impacts on "typical" ratepayers as a result of rate changes. The model allows the Town to develop a long-term strategy in developing stormwater rates and consideration of rate smoothing over the rate planning period.

Reserve Balances – The *utility (full cost) approach* to rate setting establishes provisions for future asset replacement. As such, the accumulation and use of asset replacement funds (reserve funds) is also considered in the stormwater rate model. The model

ensures future rate scenarios are sufficient to meet reserve financing requirements identified in the 10-year capital plan and to meet reserve covenants (reserve minimums and maximums) (if any).

Appendix B – Customer Impacts

The effective stormwater charge today is $5.15 per month (as explained in Section 4.2). The proposed rate in 2019 will result in a slight ("effective") reduction for residential customers ($0.15 per month). Non-residential customers will see an ("effective") increase of $4.85 per month.

Residential		
	Existing	2019
Customer Billing Charge	$ -	$ -
Fixed Charge	$ 5.15	$ 5.00
Total Monthly Billing	$ 5.15	$ 5.00
Change from Existing Billing		$ (0.15)
Non-Residential		
	Existing	2019
Customer Billing Charge	$ -	$ -
Fixed Charge	$ 5.15	$ 10.00
Total Monthly Billing	$ 5.15	$ 10.00
Change from Existing Billing		$ 4.85

Appendix C – Benchmarks[7]

2018	Calgary	Okotoks	Chestermere	Cochrane	EPCOR	St. Albert	Morinville Existing	Morinville New
Stormwater / Drainage								
Flat Rate/mo - Res	$ 15.05	$ 12.00	$ 16.03	$ 4.16	$ 9.00	$ 16.11	$ 5.15	$ 5.00
Flat Rate/mo - Non-res	$ 15.05	$ 12.00	$ 26.97	$ 4.16	$ 40.00	$ 43.09	$ 5.15	$ 10.00

[7] Municipal rate information was drawn (or estimated) from available sources on the internet in January 2018.