

3

WATER CONSUMPTION AND WASTEWATER GENERATION UNIT RATES

The Planning and Economic Development Committee recommends the adoption of the recommendations contained in the following report dated May 29, 2008, from the Commissioner of Planning and Development Services and the Commissioner of Environmental Services:

1. RECOMMENDATIONS

It is recommended that:

1. The unit rates report (*Council Attachment 1*) titled “Unit Rates Water and Wastewater Master Plan Update” be adopted by Regional Council for use in the Water and Wastewater Master Plan Update.
2. The Regional Clerk forward copies of this report to the Clerks of the local municipalities in York Region.

2. PURPOSE

This report has been prepared to inform the Committee and Council on the Water and Wastewater Unit Rates (*Council Attachment 1*) that will be used for the Master Plan Update. The water consumption and wastewater generation rates are the average amount of water or wastewater used per unit for population for a period of time. Domestic use is represented in litres per capita per day, and non-residential use is represented in litres per employee per day. These rates will be applied to the planning population forecasts to establish the future demands on the water supply and wastewater collection systems.

3. BACKGROUND

Water and Wastewater Master Plan Update

In 2006 York Region commenced both the Transportation and Water and Wastewater Master Plan Update studies in the context of changes in growth and planning as a result of provincial initiatives. These provincial initiatives include the Province’s Growth Plan for the Greater Golden Horseshoe, Greenbelt Plan, and new population and employment targets. The report “Water and Wastewater Unit Rates” documents the unit rates and is done under the umbrella of the scope of work for the Water and Wastewater Master Plan Update.

There are four background reports that were prepared within the Water and Wastewater Master Plan Update. They are:

Unit Rates – Presents the projected water consumption rates and the wastewater generation rates.

Policy and Criteria – Documents the water and wastewater policies, responsibilities, jurisdictions and criteria for York Region Water and Wastewater systems.

Sustainability Strategy - Develops the framework for the water and wastewater sustainability strategy.

Baseline Report – Outlines the existing Regional water and wastewater systems; establishes the starting point in the assessment of water and wastewater systems to service the existing and projected development; it also establishes the base condition for infrastructure for hydraulic models for both systems.

The Sustainability Strategy report was presented to Council on April 9, 2008. The remaining three will also be communicated to Council for endorsement.

As part of the review, we have worked closely with Environmental Services staff to ensure the process and the final report are acceptable.

4. ANALYSIS AND OPTIONS

Past and Projected Water Consumption Rates are Presented

Information was obtained from past Water Master Plans and optimization studies, the current Water Efficiency Master Plan and servicing studies and Class Environmental Assessments conducted by the Region. The analysis of this information shows that over the past ten years the consumption rates (combined residential and employment) have reduced from the range of 300-500 L/capita/day to the range of 250-450 L/capita/day, signifying a reduction in excess of 10% in some areas.

Projected water consumption rates are based on historical data and an assessment of anticipated future changes. Such changes can be due to water rate increases, plumbing code changes and the ongoing implementation of the Water Efficiency Program. The water rates represent the average day demand, derived from the total annual water use on a daily basis. The maximum day factor is a multiple of the average day demand, representing daily use during peak demand periods, such as during dry summer days. Water production, transmission and storage capacity is designed to meet the maximum day demand. Projected water consumption rates are outlined in Table 1, listed for each

service area, up to year 2036, including the recommended peak maximum day factors. The rates for each service area are discussed in further detail in the attached background report, addressing issues such as area-specific future development and density.

Projected Rates Show a Decrease in Water Consumption

Projected rates are lower than shown in the 1997 and 2004 Water Master Plans, considering a decrease in water consumption due to the success of water efficiency programs such as Water for Tomorrow, which are assumed to be continued in the future. Data presented in Tables 1 and 2 will be used for planning and phasing of the proposed and new water and wastewater infrastructure.

Unit rates are not to be used for allocation purposes outside of the current Master Plan update initiative. Results from the Water and Wastewater Master Plan will provide the context for future allocation. A reduction in water consumption is contingent upon the continued implementation and success of the Region's water efficiency and conservation programs.

Table 1
Projected Future Water Consumption Unit Rates (L/ca/day)

Water System	Service Area	Rate Type	Base	2031	2036	Maximum Day Factor
York Water System	Aurora	Res	241	224	224	1.8
		Emp	252	234	234	
	Holland Landing	Res	229	229	229	1.8
		Emp	198	198	198	
	Queensville	Res	229	229	229	1.8
		Emp	198	198	198	
	Sharon	Res	229	229	229	1.8
		Emp	198	198	198	
	Markham	Res	240	223	223	1.8
		Emp	214	199	199	
	Newmarket	Res	229	213	213	1.8
		Emp	198	184	184	
	Richmond Hill	Res	256	238	238	1.8
		Emp	246	229	229	
	Vaughan	Res	278	259	259	1.8
		Emp	283	263	263	
Georgina Water System	Keswick	Res	290	270	270	2.1
		Emp	252	234	234	
	Sutton	Res	256	238	238	2.1
		Emp	276	257	257	
Smaller Urban System	Ballantrae	Res	223	207	207	2.9
		Emp	208	193	193	
	King City	Res	256	238	238	2.4
		Emp	246	229	229	
	Kleinburg	Res	352	327	327	2.5
		Emp	322	300	300	
	Mount Albert	Res	214	199	199	2.8
		Emp	198	184	184	
	Nobleton	Res	264	245	245	2.5
		Emp	220	205	205	
	Schomberg	Res	276	257	257	2.1
		Emp	401	373	373	
	Stouffville	Res	266	235	235	2.0
		Emp	232	205	205	

Source: Table 2-8, Water & Wastewater Unit Rates Report (Attachment 1)

Past and Projected Wastewater Generation Rates are Presented

Information was obtained from the past Wastewater Master Plans, servicing studies and Class Environmental Assessments conducted by the Region. The residential generation

rates have been in the range of 245-455 L/capita/day and the non-residential generation rates were in the range of 160-455 L/emp/day. Infiltration and inflow (I/I) rates varied in the 0.20-0.50 L/ha/s range.

Projected wastewater generation rates are based on historical data and on the relationship between water consumption and wastewater flows. Analysis of this information shows that on average water demand accounts for almost 100% of the wastewater generated. In addition, an allowance for average infiltration has been added to the average wastewater generation rates. Future wastewater consumption unit rates are presented in Table 2.

Another component of wastewater comes from inflow and infiltration which is water that enters the sanitary sewer from rainwater and groundwater. Inflow is rainwater that enters the sewer systems at points of direct connection to the systems, such as from footing/foundation drains and downspouts. Infiltration is groundwater that enters sanitary sewer systems through cracks and/or leaks in the sanitary sewer pipes, e.g. due to age related deterioration, loose joints and root infiltration. Inflow and infiltration is measured in litres per hectare per second (L/ha/s). The recommended infiltration and inflow (I/I) rate for the York-Durham Sewage System (YDSS), for new development areas, is 0.26 L/ha/s. The I/I allowance in the stand-alone systems has been included in the unit wastewater rates presented in Table 2.

Projected Rates Show a Decrease in Wastewater Generation

Projected unit wastewater rates, presented in Table 2, are lower than shown in the 1997 and 2003 wastewater master plans, considering a decrease in water consumption due to the success of water efficiency programs such as Water for Tomorrow, which are assumed to be continued in the future.

Table 2
Projected Future Wastewater Consumption Unit Rates (L/ca/day)

Wastewater System	Service Area	Rate Type	2001-2005 Average	2031	2036
YDSS	Aurora	Res	331	314	314
		Emp	342	324	324
	East Gwillimbury	Res	319	319	319
		Emp	288	288	288
	Markham	Res	330	313	313
		Emp	304	289	289
	Newmarket	Res	319	303	303
		Emp	288	274	274
	Richmond Hill	Res	346	328	328
		Emp	336	319	319
	Vaughan	Res	368	349	349
		Emp	373	353	353
	King City	Res	346	328	328
		Emp	336	319	319
	Stouffville	Res	356	325	325
		Emp	322	295	295
Keswick WWTP	Keswick	Res	380	360	360
		Emp	342	324	324
Sutton WWTP	Sutton	Res	346	328	328
		Emp	366	347	347
Kleinburg WWTP	Kleinburg	Res	442	417	417
		Emp	412	390	390
Mount Albert WWTP	Mount Albert	Res	304	289	289
		Emp	288	274	274
Nobleton WWTP	Nobleton	Res	354	335	335
		Emp	310	295	295
Schomberg WWTP	Schomberg	Res	366	347	347
		Emp	491	463	463

Source: Tables 3-8 and 3-9, Water & Wastewater Unit Rates Report (Attachment 1)

Water and Wastewater Unit Rates are done as part of the Master Plan Update

Water and wastewater unit rates in conjunction with population projections provide a foundation for the current Water & Wastewater Master Plan Update. Servicing alternatives will be assessed using this information and will be reported in the third quarter of 2008 as part of the Preferred Alternative and Public Consultation Process report to Council.

RELATIONSHIP TO VISION 2026

One of the goals set by Vision 2026 is Enhanced Environment, Heritage and Culture. The action areas of this goal are: Protecting the quality and quantity of groundwater, surface water and streams; and Encouraging water conservation. In addressing water and wastewater rates, the Unit Rates report is one step in promoting these goals. This report is therefore consistent with the priorities previously set by Vision 2026.

5. FINANCIAL IMPLICATIONS

This report does not have any direct financial impacts to either the Region or the local municipalities. The cost of this study is covered under the budget for the Water and Wastewater Master Plan Update.

6. LOCAL MUNICIPAL IMPACT

The Unit Rates report provides information on the Regional water consumption rates and wastewater generation rates. While the local municipalities are not directly affected, the local municipalities can benefit by having an understanding of the Regional updated water and wastewater unit rates to be used in the Water and Wastewater Master Plan Update.

7. CONCLUSION

The Region has updated the water consumption rates and wastewater generation rates through the release of this report. The rates summarized in this report will be applied to the planning population forecasts to establish the demands on the water supply and wastewater collection systems. The Water and Wastewater Master Plan Update will assess impact of the demands and recommend servicing alternatives for future Regional water and wastewater systems.

For more information on this report, please contact Milan Jekic, Water & Wastewater Modelling Coordinator, Infrastructure Planning Branch (905) 830-4444 at Ext. 1579, or Paul May, Director, Infrastructure Planning at Ext. 5029.

The Senior Management Group has reviewed this report.

(The attachment referred to in this clause is attached to this report.)