FINANCIAL MANAGEMENT OF MUNICIPAL WATER SYSTEMS IN ONTARIO

PREPARED ON BEHALF OF CANADIAN ENVIRONMENTAL LAW ASSOCIATION

June, 2001

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1. INTRODUCTION

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1.1 Purpose

This report is being prepared on behalf of the Canadian Environmental Law Association as part of a number of background papers being prepared and reviewed during the Walkerton Inquiry. This report specifically will review the municipal financial environment in which municipalities work within to present a detailed picture of how municipalities operate their systems, finance capital expenditures (replacement and growth-related), undertake pricing policies, etc. This information will provide a foundation on which to discuss privatization of municipal systems as a new initiative in municipal service provision. This review will provide observation regarding municipalities' ability to address potential capital financing problems and the potential impacts on rates of undertaking this approach to water service delivery.

1.2 Overview of Water Systems in Ontario

In 1998, there were 639 Water Treatment facilities in Ontario. Approximately 80% of these facilities were operated by municipalities and 20% operated by the Ontario Clean Water Agency. A limited number of small facilities were operated by private operations. Based upon Municipal Financial Information Returns for 1997, approximately $893 million was spent on operating costs to run these systems. As well, approximately $413 million was spent in capital water expenditures (on infrastructure) for the same year.

With the recent events arising in the community of Walkerton, considerable focus has been given to the state or condition of water systems in Ontario. Questions have been raised as to the condition of water systems in Ontario; however, there appears to be no definitive data available to answer these questions. As well, there needs to be a clear identification of what is defined as system deficiencies in order to address this question. Deficiency in a system can be defined in many ways:

- water quality from the source
- ability to treat the water to remove contaminants
- security of the water supply throughout the year

- water pressure
- fire protection needs
- adequate storage
- etc.

Hence, deficiencies within a system have to be clearly defined to establish clear conclusions on the state of Ontario systems, and to address these issues through regulation, operational changes or capital/operating spending. For example, water quality issues may be addressed in some situations by enhancing treatment through operational changes whereas in other cases, it may need to be addressed via capital expenditures for chlorination systems. Fire flow problems may be as a result of treatment capacity or storage problems which may be mitigated by lawn watering problems in the summer, versus undersized water mains or dead-end pipes which require main replacement or system looping.

Hence, identification of the problems must be categorized in order to clearly define how these problems are to be addressed. It is noted, however, that much of this information is probably kept by Ontario water operators (municipalities, PUC's, OCWA), however it has not been consolidated into a larger data base to be overseen by a regulatory body. During the late 1980's-early 1990's, municipalities commenced documenting their inventories of main location, age, material, etc., in order to commence asset management practices. Therefore, information is available, however on a fragmented basis.

Extensive research on the state of water infrastructure is limited; however, two studies have been conducted which attempt to address this issue. These are presented in the following sections.

1.3 Federation of Canadian Municipalities Study (1996)

A study was prepared by the Canadian Federation of Municipalities, in January 1996, titled "Report on the State of Municipal Infrastructure in Canada." The intent of this report focused on essential infrastructure such as roads, bridges, sidewalks, sewers and water qualities. This report surveyed municipalities throughout Canada categorized by size ranges. These ranges are as follows:

Group 1 - Population below 10,000
Group 2 - Population between 10,000-100,000
Group 3 - Population between 100,000-400,000
Group 4 - Population above 400,000.

Thirty-five (35) of the total 167 municipalities surveyed were in Ontario. The population of these municipalities in Ontario totalled 7.2 million or 65% of the Ontario population.

The survey sought to obtain perspectives on the changing condition of infrastructure for these municipalities and to assess the major impediments to maintaining the municipalities' infrastructure. This information was presented on a consolidated basis and information specific to Ontario was not provided within the report. A summary of the information provided on a Canada-wide basis is presented below.

The first part of the study sought the municipal staff opinion regarding the condition of their infrastructure over the past ten year period. The results are presented as follows:

Change in Condition of Infrastructure – Water Distribution

	About the Same	Worse	Improving
Group 1	31%	28%	41%
Group 2	30%	25%	44%
Group 3	26%	23%	50%
Group 4	52%	32%	8%

Change in Condition of Infrastructure – Water Supply

	About the Same	Worse	Improving
Group 1	33%	23%	44%
Group 2	38%	6%	56%
Group 3	54%	19%	27%
Group 4	60%	32%	8%

Based on the above, 60%-76% of the water distribution systems in Canada and 68%-91% of the water supply systems are being maintained or improved. The residual percentage of the systems are worsening.

The survey also identified impediments to maintaining municipal infrastructure. The top two major impediments are provided below by category.

Major Impediments to Maintaining Infrastructure

Group 1	Funding Shortage, Political Inaction
Group 2	Funding Shortage, Lack of Staff
Group 3	Funding Shortage, Lack of Staff
Group 4	Funding Shortage, Red Tape

1.4 Canadian Water and Wastewater Association Study (1998)

A study was undertaken by the Canadian Water and Wastewater Association in April, 1998, entitled "Municipal Water and Wastewater Infrastructure: Estimated Investment Needs, 1997 to 2012." This report was partially sponsored by the Canadian Mortgage and Housing Corporation. A summary of this document is provided herein.

The study noted that "there is very little information available on which to base any estimates, and what information there is, is very fragmentary." (page iii) The focus of the paper was to address future investment needs for municipal water (and wastewater) infrastructures. It should be made clear that the report was not solely addressing matters of deficiencies, but estimating investment in water infrastructure. This distinction needs to be clearly made, as the financial avenues available to municipalities to address these investment needs, varies depending upon the nature of this need.

The study defined four categories of investment needs:

a) maintenance of the current infrastructure in a good operating condition (since a large portion of Canada's infrastructure is adequately served by the current infrastructure);

b) expansion of the current infrastructure to urban Canadians who currently do not receive complete services (e.g. some are connected to water services and not to wastewater services;

c) improvements in current infrastructure (some portion of the infrastructure are a rudimentary level of service);

d) growth of the current infrastructure to meet extraordinary population pressures (serving future populations).

The above information was collected for all provinces and territories; however, the information summarized herein is for Ontario only. The study surveyed municipalities with populations in excess of 1,000 persons. Although it was noted that there are municipalities below this size who provide water servicing to its residents, the survey limited the number of municipalities surveyed. On a population basis, 9.3 million out of a total Ontario population of 10.9 million were surveyed (84.8%). Of the 9.3 million surveyed, 92% or 8.5 million were serviced by municipal water.

For Ontario, the study identified $12.6 billion in water infrastructure needs. The cost breakdown of this total is provided below.

Summary of Water Investment Need in Ontario ($ millions)

Water Infrastructure Type	Existing Needs	Expanded System	Growth-Related	Total
Watermains	1,163.7	1,495.5	2,884.8	5,544.0
Storage	315.9	36.6	137.4	489.9
Supply	384.0	1,024.1	5,120.6	6,528.7
Total	1,863.6	2,556.2	8,142.8	12,562.6

"Existing Needs" represents improvements needed in the existing systems to overcome identified problems. In total, $1.9 billion or 14.8% of the total needs are for this category. The study does not provide an indication of the nature of the problem (water quality, pressure, main breaks, fire protection, etc.).

The "Expanded System" costs represent 20% of the total needs identified. These costs are estimated to bring the entire population onto municipal water systems.

The “Growth-Related” costs represent the largest share of the needs identified totalling $8.1 billion or 65% of the total. These costs are future costs needed to service new development over the 15 year forecast period. The amount of growth for Ontario, on which this was based, was a 30% increase in population.

As will be discussed later in this report, the way in which municipalities address these cost issues will be different depending upon the category of expenditure. For example, the costs related to growth are normally addressed by municipalities under the *Development Charges Act*. Under this legislation, municipalities impose charges directly against residential and non-residential growth to finance these expenditures. As well, it would appear from the methodology employed in the study calculations, that local watermains are also included within these cost figures. Under the *Planning Act*, local watermains and connections to the water systems are direct costs borne by the land developer. Hence, these costs are paid 100% by the subdivider of land. The use of these statutory authorities ensure a cost recovery with little or no costs being funded by rates.

In regard to the Expanded Growth costs, municipalities also have to ability to recover the costs of extending services into areas with existing homes and businesses without affecting water rates. Under section 221 of the *Municipal Act*, all costs of extending the mains and costs for expansion to supply and storage facilities can be recovered through this authority. As well, other authorities such as the *Local Improvement Act* would also allow municipalities to recover the cost of local mains extended into unserviced areas.

The “Existing Needs” category would be costs which would have to be finance directly or over time (via debt) through the rates. Those costs reflect needs to maintain or improve an existing system and hence, are required to be paid for by existing users. The affordability of these costs would have to be considered on a municipality by municipality basis; however, most municipalities in Ontario have the ability to raise capital through debenturing. Based on 1997 financial data, the debt capacity of Ontario municipalities is between $16 and $24 billion, depending upon the term of the debt. For those municipalities which provide water services (not all Ontario municipalities have municipal water systems), the ability to raise capital is between $13 and $20 billion. Hence, the magnitude of these costs to address these problems represents between 9%-14% of the municipality’s debt capacity.

2. OVERVIEW OF THE MUNICIPAL FINANCIAL SYSTEM

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Municipalities in Ontario utilize Fund Accounting as the basis for recording and reporting of all financial transactions. It can be defined as an "accounting system in which a self-balancing group of accounts is provided for each accounting entity established by legal, contractual, or voluntary action, especially in government units". In more simple terms, Ontario municipalities practice a form of accounting which uses three funds; those being a revenue (or operating) fund, a capital fund and a reserve fund. Each of these funds has a specific defined use and within that use, the expenditures are funded by various sources. The three funds are described as follows:

Revenue Fund

The revenue fund or the "operating" or "general fund" as it is often called, is the principle fund found in all municipalities. This is the fund into which the main sources of financing available to the municipality flow. Taxation revenue, grants, interest earned on investments, service charges, licenses and permits are all to be found in this fund. It is also this fund in which for the everyday operating expenditures of the municipality are recorded. The revenue fund initially records most of the sources of financing that are eventually transferred to the capital fund and the reserve funds.

Capital Fund

The capital fund is used to record the financing sources and expenditures for the acquisition of or for the rehabilitation or replacement of the capital assets of the municipality. In general, capital assets refer to the building, equipment and infrastructure of the municipality. Included here are municipal buildings, arenas, trucks, graders, roads, water/sewerage systems and the like.

Reserve Funds

Reserve funds are those funds that have been set aside either by a by-law of the council or by a requirement of provincial legislation to meet a future event. As a result, reserve funds could be called either "permissive" being those set up by Council or "regulatory" (or obligatory) being

those set up by virtue of a requirement of a provincial statute. As a general principle, municipal Councils may set up reserve funds for any purpose for which they have the authority to spend money.

An overview of these three funds, how they inter-relate and the more common expenditures and revenues associated with each fund is provided in Figure 2-1.

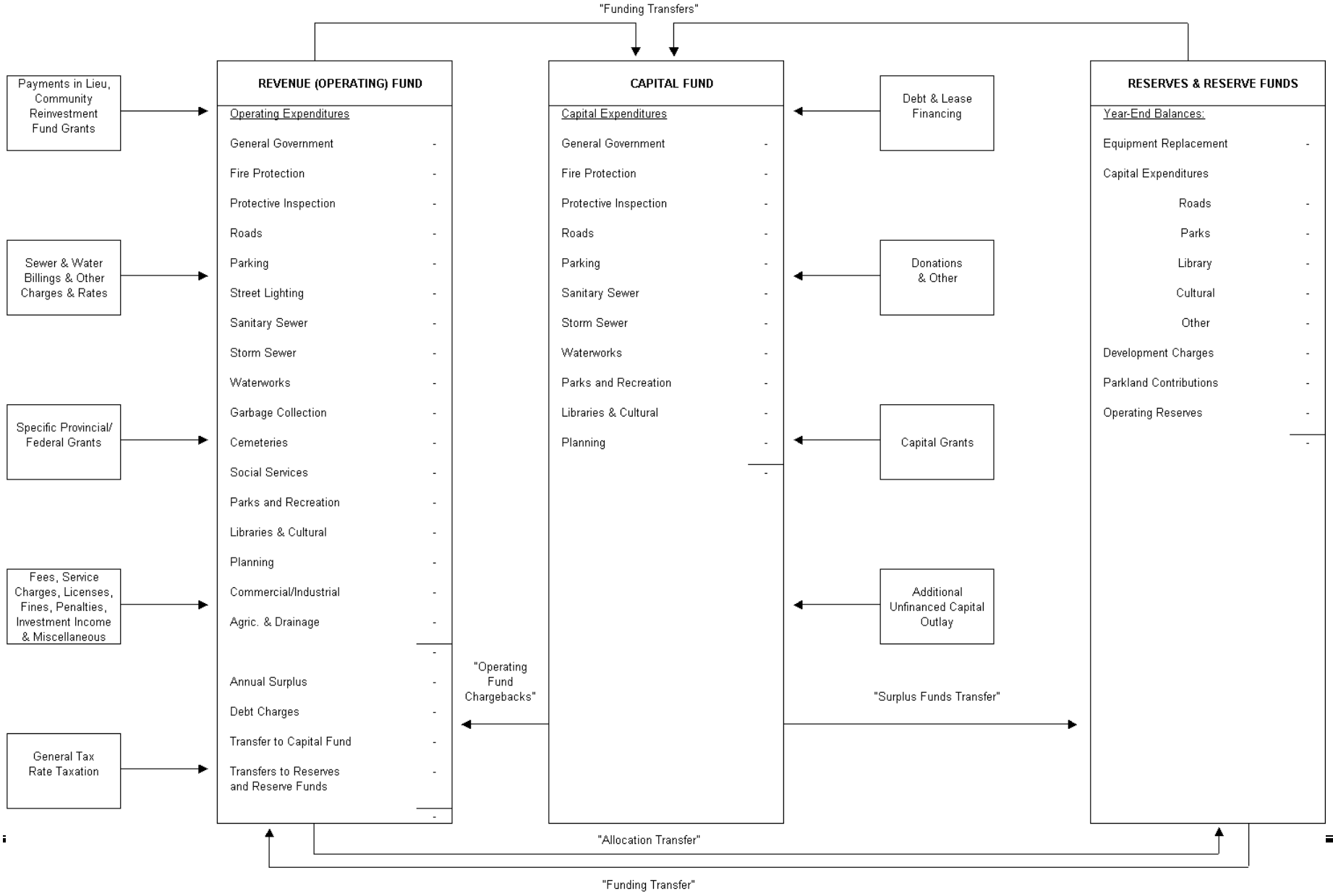
Fund Accounting is different from that which is used by private companies. The most notable distinction is that municipalities do not generate profits from their activities. As a result, the need to carry asset inventory valuations on the balance sheets is not required. Hence, asset depreciation is not part of the annual expenditures.

When a municipality undertakes a capital project (replacement or new), the project cost is expended in the capital fund. Project funding may come from transfers from the operating fund (i.e. amounts budgeted from in year taxes or user rates), transfers from reserve funds (accumulated amounts set aside for specific purposes), external sources (such as grants, donations, developer contributions) or from debt financing. If debt is used in financing the capital project, the repayment of that debt (both principal and interest) is budgeted for in subsequent years in the operating fund. Once the debt is paid off for that project, the asset is no longer recorded on the financial statements. That is not to say that the municipality does not have inventory records for its various assets, but it is not reported in the financial statements.

As municipalities operate on a “not for profit basis,” all expenditures are reported at cost and revenues such as property taxes and user fees (e.g. water rates) reflect this. As no profits are generated, no income taxes are paid. It is noted that not all revenues generated in a specific year may be expensed in that year. Many municipalities have financial management policies which transfer monies into the reserve fund. These funds are to smooth out potential tax/rate fluctuations which may arise due to the need to pay for large expenditure items in future years or to cover off potential liabilities or risks which may occur in the future. These concepts will be explored further in this report.

Figure 2-1

SCHEMATIC OVERVIEW OF THE MUNICIPAL FINANCIAL SYSTEM



3. CAPITAL INFRASTRUCTURE

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3.1 Water Infrastructure Expenditures

Municipalities in Ontario are empowered by statutory authority to provide services to their residents. Often, in the delivery of the service, capital assets need to be acquired or constructed. For water services, capital infrastructure costs are required for supply, treatment, storage and distribution. Examples of the infrastructure involved in the water service, are as follows:

Supply	- wells
	- intake pipes
	- recharge systems
	- etc.
Treatment	- filtration system
	-sediment tanks
	- chlorination/chemical systems
	- etc.
Storage	- elevated standpipes
	- inground reservoirs
	- storage tanks
	- etc.
Distribution	- pumping stations
	- trunk mains
	- local mains
	- water haul stations
	- etc.

Generally, municipalities categorize their infrastructure needs as either new infrastructure, generally to service new residential, commercial, industrial and institutional growth or service

area expansion, or replacement due to age. However, other types of expenditures will also be made resulting from legislated service standard changes, cost saving measures or system enhancements. The basis for the expenditure is important to the municipality as the potential recovery of those expenditures (i.e. financing) will vary as a result. These financing mechanisms are provided in the following section.

3.2 Summary of Capital Cost Financing Alternatives

Historically, the powers which municipalities have had to raise alternative revenues to taxation/rates to fund capital services have been restrictive. Over the past few years, legislative reforms have been introduced. Some of these have expanded municipal powers (e.g. Bill 26 introduced in 1996 to provide for expanded powers for imposing fees and charges), while others appear to restrict them (Bill 98 in 1997 providing amendments to the *Development Charges Act*).

The methods of capital cost recovery available to municipalities are provided as follows:

RECOVERY METHODS		SECTION REFERENCE
• *Development Charges Act, 1997*		3.3
• *Municipal Act*		3.4
• Fees and Charges	s.220.1	
• Sewer and Water Area Charges	s.221	
• Connection Fees	s.222	
• Other Acts		
• *Local Improvement Act*		3.5

3.3 *Development Charges Act, 1997*

In November, 1996, the Ontario Government introduced Bill 98, a new *Development Charges Act*. The Province's stated intentions were to "create new construction jobs and make home ownership more affordable" by reducing the charges and to "make municipal Council decisions

more accountable and more cost effective". The basis for this Act is to allow municipalities to recover the growth-related capital cost of infrastructure necessary to accommodate new growth within the municipality. Generally the new Act provided the following changes to the former Act.

- Replace those sections of the 1989 DCA which govern municipal development charges.

- Limit services which can be financed from development charges, specifically excluding parkland acquisition, administration buildings, and cultural, entertainment, tourism, solid waste management and hospital facilities. (Water service continues to be an eligible service for DC purposes.)

- Ensure that the level of service used in the calculation of capital costs will not exceed the average level of service over the previous decade. Level of service is to be measured from both a quality and quantity perspective.

- Provide that uncommitted excess capacity available in existing municipal facilities and benefits to existing residents are removed from the calculation of the charge.

- Ensure that the development charge revenues collected by municipalities are spent only on those capital costs identified in the calculation of the development charge.

- Require municipalities to contribute funds (e.g. taxes, user charges or other non-development charge revenues) to the financing of certain projects primarily funded from development charges. The municipal contribution is 10 percent for services such as recreation, parkland development, libraries, etc. (This requirement does not apply to water service.)

- Permit municipalities to grant developers credits for the direct provision of services identified in the development charge calculation and, when credits are granted, require the municipality to reimburse the developer for the costs the municipality would have incurred if the project had been financed from the development charge reserve fund. This provision allows the municipality to negotiate with developers, to construct infrastructure (such as water) and to receive a future recovery as a repayment of costs incurred.

- Set out provisions for front-end financing capital projects (limited to essential services such as water and sewer) required to service new development. This is a similar negotiated agreement with the developer to construct the new infrastructure and to recover these costs in the future.

3.4 ***Municipal Act***

3.4.1 Section 220.1 provides municipalities with broad powers to impose fees and charges via passage of a by-law. The fee or charge must be based on service or activities provided to the end user or entity which benefits, for costs payable by it for services or activities done by or on behalf of the end user or entity which benefits or for use of municipal property under its control. Restrictions are provided to ensure that the form of the charge is not akin to a Provincial sales tax on goods and services or a poll tax. Any charges not paid under this authority may be added to the tax roll and collect them in a like manner. The by-law imposed under this section is not appealable to the OMB.

3.4.2 s.221 (Sewer and Water Charges) permits a local municipality to impose a charge by by-law, on owners or occupants of land who will or may derive a benefit from the construction of sewage (storm and sanitary) or water works being authorized (in a Specific Benefit Area). OMB approval is no longer required for such by-law. Charges on individual parcels can be deferred, exemptions can be established (e.g. existing residential), repayment is secured, a variety of different means can be used to establish the rate and non-abutting owners can be charged. Rates may be imposed in respect to costs of major capital works, even though an immediate benefit is not enjoyed. Finally, recovery is authorized against existing works, where a new water or sewer main is added to such works, "notwithstanding that the capital costs of existing works has in whole or in part been paid." The Act sets out that recovery of the costs may be imposed by a number of methods at the discretion of Council (i.e. lot size, frontage, number of benefiting properties, etc.). This section of the Act is very useful in recovering capital costs to extend water and sewer services into areas with existing homes and businesses and to recover these capital costs directly from those who benefit from the service.

3.4.3 s.222 (Connection Fees) permit a local municipality by by-law, to require buildings to be connected to the municipality's sewer and water systems, charging an owner for the cost of constructing service drains from sewers to the property line.

Note: The reference in section 221 and 222 is to "work or service done or furnished". This would therefore appear to refer to the cost of works or services that are already completed, hence based on final actual costs.

3.5 ***Local Improvement Act***

- A variety of different types of works may be undertaken, such as watermain, storm and sanitary sewer projects, supply of electrical light or power, bridge construction, sidewalks, road widening and paving.

- Council may pass a by-law for undertaking such work on petition of a majority of benefiting taxpayers, on a 2/3 vote of Council and on sanitary grounds, based on the recommendation of the Minister of Health. The by-law must go to the OMB, which may hold hearings and alter the by-law, particularly if there are objections.

- The entire cost of a work is assessed only upon the lots abutting directly on the work, according to the extent of their respective frontages, using an equal special rate per metre of frontage.

3.6 Grant Funding Availability

Since the early 1980's, the level of Provincial and Federal assistance toward municipal infrastructure has declined significantly. By the mid 1990's, there were very limited funds available from senior levels of government. Recently, initiatives from the Provincial and Federal level have been announced; however, detailed eligibility criteria is not available at the time of writing. The basic programs are summarized below:

- An agreement for the implementation of the Infrastructure Canada program in Ontario was signed between the governments of Canada and Ontario on October 20, 2000. The Infrastructure Canada allocation to Ontario is $680.723 million. With contributions from

provincial and municipal partners, the total infrastructure investment in Ontario will be more than $2.04 billion.

- Infrastructure Canada funds were allocated according to a formula that gives equal weight to population and unemployment, a formula the Government of Canada believes takes into account the economic status and investment needs of all regions.

- On average, the federal government will contribute one-third of the cost of municipal infrastructure projects. The provincial and municipal governments will contribute the remaining funds, and in some instances, there may be private sector investment as well.

- Infrastructure Canada's first priority is green municipal infrastructure. The Infrastructure Canada-Ontario agreement specifies a minimum 40 per cent of the total value of all approved projects must be invested in green municipal infrastructure.

- Secondary priorities for the Infrastructure Canada-Ontario program include cultural and recreational facilities, infrastructure supporting tourism, rural and remote telecommunications, high-speed Internet access for local public institutions, local transportation and affordable housing.

- Municipal governments will continue to play an important role: Municipalities will propose most of the projects funded by Infrastructure Canada-Ontario. In addition, one or more Federal-Provincial-Local Government committees on Infrastructure will be established for the purpose of consulting local government on program design and implementation. The committee(s) will include representation from the Association of Municipalities of Ontario, and other local government representation as appropriate.

3.7 Reserves

As noted earlier, reserves can be used as a source of financing future anticipated capital expenditures. There are various types of reserves in use by municipalities today for water services. A summary of those types of reserves is as follows:

- capital replacement/life cycle reserves – money set aside to replace infrastructure as it approaches the end of its useful life (see chapter on life cycle costing);

- unallocated capital – reserves set aside for either unforeseen capital expenditures or the fund project expenditure overages;

- rate stabilization reserves – amounts set aside to fund operating budget shortfalls due to seasonal water use fluctuations. In years where there are surpluses, the amounts are transferred into the reserve. Conversely, amounts are transferred out when budget shortfalls occur;

- working funds – funds set aside for operating cash flow purposes – to offset the need for short term borrowing for timing differences between operating expenditures and billings;

- contingency reserves – funds set aside for potential events or expenditures which may arise – to offset the risk of an occurrence.

3.8 Debenture Financing

Although it is not a direct method of minimizing the overall cost to the ratepayer, debentures are used by municipalities to assist in cash flowing large capital expenditures.

The Ministry of Municipal Affairs regulates the level of debt incurred by Ontario municipalities, through its powers established under the *Municipal Act*. Ontario Regulations 799/94, as amended by 75/97, provides the current rules respecting municipal debt and financial obligations. Through the rules established under these regulations, a municipality's debt capacity is capped at a level where no more than 25% of the municipality's own purpose revenue, may be allotted for servicing the debt (i.e. debt charges).

Appendix A to this report provides a detailed listing of municipal debt capacity for Ontario municipalities for the year 1997. As the provincial regulation is based upon the debt charge paid annually through the operating funding, the interest rate and term of the debt would establish a range of potential debt which could be secured by municipalities. Hence, the debt

capacity calculations are based on 10 year and 20 year terms. A summary of the borrowing capacity of Ontario municipalities as of 1997, is summarized below:

Debt Borrowing Capacity of Ontario Municipalities (1997)

($ Billions)

	All Municipalities	Municipalities Providing Water Service
10 Year Debt	$15.8	$13.1
20 Year Debt	$23.8	$19.7

The use of debt financing and the amount borrowed is often a function of the financial policies of the municipality. Although many municipalities have large borrowing capacity, financial management practices in recent years have seen a movement more towards pay-as-you-go. However, these policies have preserved the municipal sector's ability to react to unforeseen or unplanned expenditures, should the need arise.

4. PRICING STRUCTURES

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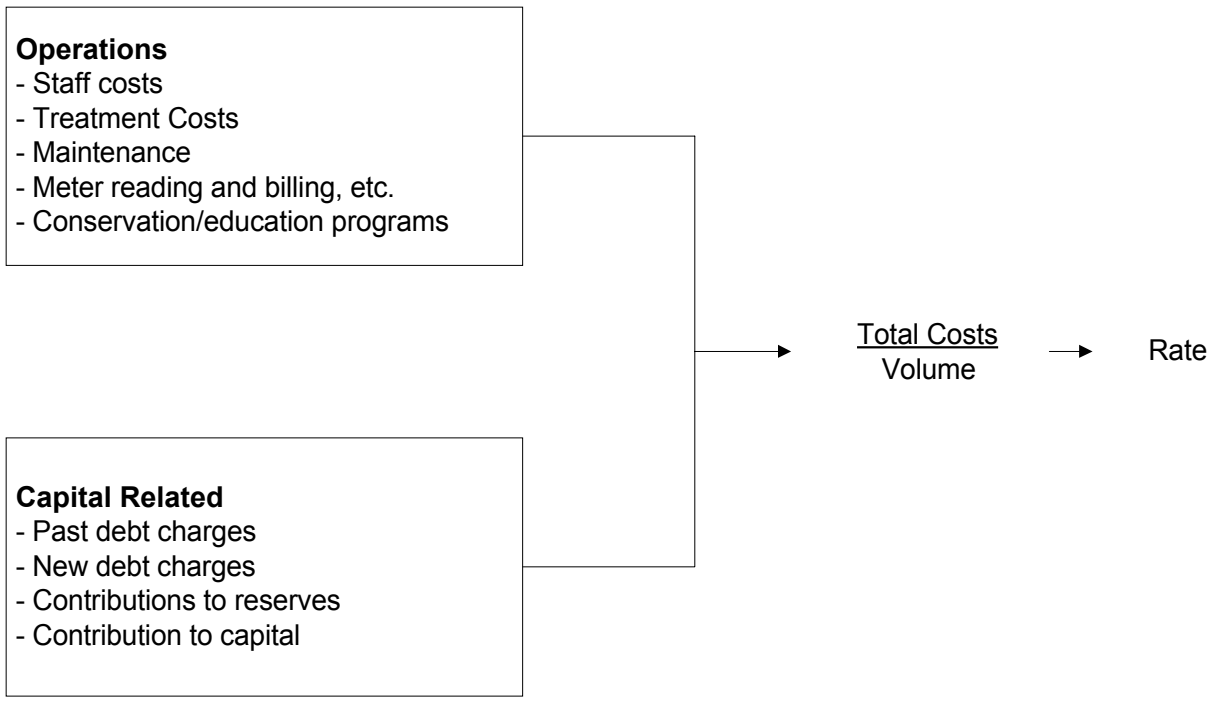
4.1 Introduction

Rates in their simplest form can be defined as total costs to maintain the utility function divided by the total expected volume to be generated for the period. Total costs are usually a combination of operating costs (e.g. staff costs, treatment costs for purchased water, maintenance, administration, etc.) and capital-related costs (e.g. past or future debt to finance capital projects, transfers to capital to fund in year expenditures, transfers to reserves to finance future expenditures, etc.). The schematic below provided a simplified illustration of the rate calculation.

"ANNUAL COSTS"



These operating and capital expenditures will vary over time. An example of factors which will affect the expenditures over time are provided below:

Operations

- Inflation
- Increased maintenance as system ages
- Additional treatment costs, i.e. purchased water meter reading, administration as more users hook to the system
- Changes to Provincial legislation

Capital Related

- New capital will be built as areas expand
- Replacement capital needed as system ages
- Financing of capital costs are a function of policy regarding reserves and direct financing from rates (pay as you go), debt and user pay methods (development charges, s.221 *Municipal Act*)

4.2 Alternative Pricing Structures

As reflected later in this Chapter in the "Survey of Municipalities", the use of pricing mechanisms varies between municipalities throughout Ontario, and as well, Canada. The use of a particular form of pricing depends upon numerous factors, including Council preference, administrative structure, surplus/deficit system capacities, economic/demographic conditions, to name a few.

Municipalities within Ontario have two basic forms of collecting revenues for water purposes, those being through incorporation of the costs within the tax rate charged on property assessment and/or through the establishment of a specific water rate billed to the customer. Within the rate methods, there are four basic rate structures employed:

- Flat Rate
- Constant Rate
- Declining Block Rate
- Increasing (or Inverted) Block Rate.

The definitions and general application of the various methods are as follows:

Property Assessment: This method incorporates the total costs of providing water into the general requisition or the assessment base of the municipality. This form of collection is a "wealth tax", as payment increases directly with the value of property owned and bears no necessary relationship to actual consumption. This form is easy to administer as the costs to be recovered are incorporated in the calculation for all general services, normally collected through property taxes. Generally, most municipalities have moved away from this method as amounts can be collected from properties exempted from taxation (e.g. provincial and federal lands, school boards, etc.).

Flat Rate: This rate is a constant charge applicable to all customers served. The charge is calculated by dividing the total number of user households and other entities (e.g. businesses) into the costs to be recovered. This method does not recognize differences in actual consumption but provides for a uniform spreading of costs across all users. Some municipalities define users into different classes of similar consumption patterns, that is a commercial user, residential user and industrial user, and charge a flat rate by class. Each user is then billed on a periodic basis. No meters are required to facilitate this method, but an accurate estimate of the number of users is required. This method ensures a set revenue for the collection period but is not sensitive to consumption, hence may cause a shortfall or surplus of revenues collected.

Constant Rate: This rate is a volume-based rate, in which the consumer pays the same price per unit consumed, regardless of the volume. The price per unit is calculated by dividing the total cost of the service by the total volume used by total consumers. The bill to the consumer climbs uniformly as the consumption increases. This form of rate requires the use of meters to record the volume consumed by each user. This method closely aligns the revenue recovery with consumption. Revenue collected varies directly with the consumption volume.

Declining Block Rates: This rate structure charges a successively lower price for set volumes, as consumption increases through a series of "blocks". That is to say that within set volume ranges, or blocks, the charge per unit is set at one rate. Within the next volume range the charge per unit decreases to lower rate, and so on. Typically, the first, or first and second blocks cover residential and light commercial uses. Subsequent

blocks normally are used for heavier commercial and industrial uses. This rate structure requires the use of meters to record the volume consumed by each type of user. This method requires the collection and analysis of consumption patterns by user classification to establish rates at a level which does not over or under collect revenue from rate payers.

Increasing (Inverted) Block Rates: The increasing block rate works essentially the same way as the declining block rate, except that the price of water in successive blocks increases rather than declines. Under this method the consumer's bill rises faster with higher volumes used. This rate structure also requires the use of meters to record the volume consumed by each user. This method requires, as with the declining block structure, the collection and analysis of consumption patterns by user classification to establish rates at a level which does not over or under collect from rate payers.

4.3 Assessment of Alternative Pricing Structures

The adoption by a municipality or utility of any one particular pricing structure is normally a function of a variety of administrative, social, demographic and financial factors. The number of factors and the weighting each particular factor receives can vary between municipalities. The following is a review of some of the more prevalent factors:

Cost Recovery

Cost recovery is a prime factor in establishing a particular pricing structure. Costs can be loosely defined into different categories: operations; maintenance; capital; financing; administration. These costs often vary between municipalities and even within a municipality, based on consumption patterns, infrastructure age, economic growth, etc.

The pricing alternatives defined earlier can all achieve the cost recovery goal, but some do so more precisely than others. Fixed pricing structures, such as Property Assessment and Flat Rate, are established on the value of property or on the number of units present in the municipality, but do not adjust in accordance with consumption. Thus, if actual consumption for the year is greater than projected, the municipality incurs a higher cost of production, but the revenue base remains static (since it was determined at the beginning of the year), thus

potentially providing a funding shortfall. Conversely, if the consumption level declines below projections, fixed pricing structures will produce more revenue than actual costs incurred.

The other pricing methods (declining block, constant rate, increasing block) are consumption based and generally will generate revenues in proportion to actual expenditures.

Administration

Administration is defined herein as the staffing, equipment and supplies required to support the undertaking of a particular pricing strategy. This factor not only addresses the physical tangible requirements to support the collection of the revenues, but also the intangible requirements, such as policy development.

The easiest pricing structure to support is the Property Assessment structure. As municipalities undertake the process of calculating property tax bills and the collection process for their general services, the incorporation of the water costs into this calculation would have virtually no impact on the administrative process and structure.

The Flat Rate pricing structure is relatively easy to administer as well. It is normally calculated to collect a set amount, either on a monthly, quarterly, semi annual or annual basis and is billed directly to the customer. The impact on administration centres mostly on the accounts receivable or billing area of the municipality, but normally requires minor additional staff or operating costs to undertake.

The three remaining methods, those being Increasing Block Rate, Constant Rate and Declining Block Rate, have a more dramatic effect on administration. These methods are dependent upon actual consumption and hence involve a major structure in place to administer. First, meters must be installed in all existing units in the municipality and units to be subsequently built must be required to include these meters. Second, meter readings must be undertaken periodically. Hence staff must be available for this purpose or a service contract must be negotiated. Third, the billings process must be expanded to accommodate this process. Billing must be done per a defined period, requiring staff to produce the bills. Also, as consumers become more aware of consumption, the number of customer inquiries, investigations, etc. increases and must be responded to. Lastly, either through increased staffing or by service

contract, an annual maintenance program must be set up to ensure meters are working effectively in recording consumed volumes.

The benefit derived from the installation of meters is that information on consumption patterns becomes available. This information provides benefit to administration in calculating rates which will ensure revenue recovery. Additionally, when planning what services are to be constructed in future years, the municipality or utility has documented consumption patterns distinctive to its own situation, which can be used to project sizing of growth-related works.

Equity

Equity is always a consideration in the establishment of pricing structures but its definition can vary depending on a municipality's circumstances and based on the subjective interpretation of those involved. For example: is the price charged to a particular class of rate payer consistent with those of a similar class in surrounding municipalities; through the pricing structure does one class of rate payer pay more than another class; should one pay based on ability to pay, or on the basis that a unit of water costs the same to supply no matter who consumes it; etc. There are many interpretations. Equity therefore must be viewed broadly in light of many factors as part of achieving what is best for the municipality as a whole.

Conservation

In today's society, conservation of natural resources is increasingly being more highly valued. Controversy continuously focuses on the preservation of non-renewable resources and on the proper management of renewable resources. Conservation is also a concept which applies to a municipality facing physical limitations in the amount of water which can be supplied to an area. As well, financial constraints can encourage conservation in a municipality where the cost of providing each additional unit is increasing.

Pricing structures such as property assessment and flat rate do not, in themselves, encourage conservation. In fact, depending on the price which is charged, they may even encourage resource "squandering", either because consumers, without the price discipline, consume water at will, or the customer wants to get his money's worth and hence adopts more liberal consumption patterns. The fundamental reason for this, is that the price paid for the service

bears no direct relationship to the volume consumed and hence is viewed as a "tax", instead of being viewed as the price of a purchased commodity.

The Declining Block Rate provides a decreasing incentive towards conservation. This method creates an awareness as to volumes consumed and a consumer can reduce his costs by restricting consumption. This incentive lessens as more is consumed, because the cost per unit declines as the consumer enters the next block pricing range. Similarly, those whose consumption level is at the top end of a block have reduced incentive to reduce consumption.

The Constant Rate structure presents the customer with a linear relationship between consumption and the cost thereof. As the consumer pays a fixed cost per unit, his bill will vary directly with the amount consumed. This method presents tangible incentive for consumers to conserve water. As metering provides direct feedback as to usage patterns and the consumer has direct control over the total amount paid for the commodity, the consumer is encouraged to use only those volumes that are reasonably required.

The Inverted Block method presents the most effective pricing method for encouraging conservation. Through this method, the price per unit consumed increases as total volumes consumed grow. The consumer becomes aware of consumption through metering with the charges increasing dramatically with usage. Hence, there normally is an awareness that exercising control over usage can produce significant savings. This method not only encourages conservation methods, but penalizes legitimate high volume users.

Economic Development

An economic development policy encourages community-related economic development by setting the rate for water service at a level that retains existing customers, attracts new customers who are critical to the community's development and economic welfare, and encourages new and expanded uses of water from existing customers. The rate is normally made available to targeted customers who provide an overall economic benefit to the community in terms of employment, local tax revenues , and community services.

For example, municipalities who may wish to encourage certain types of high water industries to their community may establish a declining block rate structure which reduces the cost per unit of

water as the monthly volume increases. Should water costs provide a significant cost factor in the company's production costs, it may serve to attract certain types of industries.

Figure 4-1 provides a schematic representation of the various rate structures (note property tax as a basis for revenue recovery has not been presented for comparison, as the proportion of taxes paid varies in direct proportion to the market value of the property). The graphs on the left-hand side of the figure present the cost per unit for each additional amount of water consumed. The right-hand side of the figure presents the impact on the customer's bill as the volume of water increases. The schematic is summarized below for each rate structure.

RATE STRUCTURE	COST PER UNIT AS VOLUME CONSUMPTION INCREASES	IMPACT ON CUSTOMER BILL AS VOLUME CONSUMPTION INCREASES
Flat Rate	Cost per unit decreases as more volume consumed	Bill remains the same no matter how much volume is consumed
Constant Rate	Cost per unit remains the same	Bill increases in direct proportion to consumption
Declining Block	Cost per unit decreases as threshold targets are achieved	Bill increases at a slower rate as volumes increase
Increasing (Inverted) Block	Cost per unit increases as threshold targets are achieved	Bill increases at a faster rate as volumes increase

4.4 Experience in Ontario Municipalities

A survey of rates and structures was undertaken to provide a cross-section across Ontario. The rates are 2000/2001 rates as, at the time of surveying municipalities, a number had yet to establish their new rates for 2001. The survey samples all Regional municipalities and a number of Cities and Towns across Ontario. It is noted that in the case of Regional municipalities, some had full control of supply, treatment, storage and distribution (Halton,

Durham, Haldimand-Norfolk), whereas others (York, Waterloo, Niagara) had split responsibilities where supply, treatment and storage generally was an upper tier responsibility and distribution and billing was a lower tier. In the case of the latter instance, two municipalities were presented in the survey. The survey also provided for a wide range of municipality size. Populations for each municipality is provided in Table 4-1.

Table 4-2 provides the sample of rates based on residential consumers and non-residential consumers. This distinction was made as many municipalities adopt somewhat different structures for the two types of users. Rates are presented on a monthly basis:

Elements of the table are described below:

Flat Rate - Column denotes those municipalities which impose a flat rate charge to customers. This normally occurs where meters are not present, either municipality-wide or within certain areas of the municipality where meters are yet to be installed.

Base Charge - Many municipalities impose a base charge which will require the user to pay whether or not any water was consumed for the month. Often the base charge is established at a level which recovers billing, meter reading and administration costs where as others establish it by policy to ensure that a portion of the revenue collection is fixed and does not vary with usage.

Step Rates - As two of the rate structures involve stepped rates, the table has been formatted to present this information. The “upper limit” denotes the high end of that stepped rate after which, the next step is imposed. The constant rate is presented as Step One and “all” is noted on the upper limit line.

Based on the survey, all forms of rate structures are present. A listing of the structures is presented on Table 4-3 and is summarized below:

Rate Structure	Residential Rates	Non-Residential Rates
Flat Rate	3	0
Constant Rate	22	21
Declining Block	4	9
Increasing Block	2	1
Number Using a Base Charge	22	24

Of the 31 municipalities surveyed, 70% used the Constant Rate as their rate structure. For residential users, Declining Block, Flat Rate and Increasing Block were also used. For non-residential users Declining Block was the second most used structure with only one municipality using the Increasing Block rate and no municipality uses the Flat Rate.

Tables 4-4 to 4-6 provide average annual billing to users based upon set amounts of volumes consumed. Table 4-4 is based on an annual consumption of 227 m^3 (50,000 gallons) and represents the usage of an average household. Table 4-5 provides the annual water bill based upon 447 m^3 (100,000 gallons) and represents many small business users. Table 4-6 provides for an annual volume of 60,000 m^3 (13.2 million gallons and represents the bill for a large industrial users. These tables are summarized below:

Usage	Average Annual Water Bill		
	Lowest	Highest	Mid-point
227 m^3 (Table 4-4)	$89	$312	$178
445 m^3 (Table 4-5)	$127	$539	$277
60,000 m^3 (Table 4-6)	$15,883	$67,800	$31,155

Table 4-1
Population of Surveyed Municipalities

Municipality	Population
City of Toronto	2,385,421
Region of Peel	933,000
City of Ottawa (Former Region of Ottawa-Carlton)	718,499
City of Hamilton (Former Region of Hamilton-Wentworth)	461,541
Region of Durham	458,616
City of London	330,258
Region of Halton	329,613
City of Windsor	200,062
Town of Markham	191,527
City of Kitchener	181,703
City of Sudbury (Former Region of Sudbury)	164,049
City of St. Catharines	130,926
City of Kingston	110,327
City of Chatham-Kent	109,945
City of Cambridge	105,484
Region of Haldimand/Norfolk (Former)	96,336
City of Guelph	92,130
City of Brantford	86,100
City of Sarnia	70,503
City of Welland	47,617
City of Cornwall	46,802
Town of Aurora	40,000
City of Woodstock	32,347
City of St. Thomas	31,319
City of Stratford	30,000
Town of Leamington	25,042
Town of Tecumseh	23,151
Town of Whitchurch-Stouffville	22,000
Town of Grimsby	19,585
Town of Ingersoll	10,009
Town of Goderich	7,428

Source: Populations figures shown above are based on 1997 Enumerations

Table 4-2
Survey of Monthly Residential and Commercial/Industrial Water Rates Per m^3
(2000/2001)

Municipality	WATER RATES													
	RESIDENTIAL							COMMERCIAL/INDUSTRIAL						
	Flat Rate	Base	Metered Rate					Flat Rate	Base (reference to inches denotes meter size)	Metered Rate				
			Step 1	Step 2	Step 3	Step 4	Step 5			Step 1	Step 2	Step 3	Step 4	Step 5
City of Toronto (Toronto Community)														
Upper Limit			all							all				
Rate			$1.1300							$1.1300				
Region of Peel														
Upper Limit			all											
Rate	$6.00		$0.3959					$6.00		$0.3959				
Region of Durham														
Upper Limit			45	4500	residual					45	4500	residual		
Rate		$6.60	$0.3930	$0.3340	$0.3070				$6.60 (1") - $1,112 (12")	$0.3930	$0.3340	$0.3070		
Town of Aurora														
Upper Limit			all							all				
Rate			$0.6440							$0.6440				
Town of Markham														
Upper Limit			all							all				
Rate			$0.6358							$0.6358				
Town of Whitchurch-Stouffville														
Upper Limit			7	residual						7	residual			
Rate		$8.50	base	$0.6050					$8.50	base	$0.6050			
City of Hamilton														
Upper Limit			5	residual						15	residual			
Rate		$3.95	base	$0.5500					$11.85(5/8") - $863.82(12")	base	$0.5500			
Region of Halton														
Upper Limit			25	45	60	460	residual			25	45	60	460	residual
Rate		$4.86	$0.3979	$0.4569	$0.5254	$0.4860	$0.3973		$4.86(3/4") - $805.42(10")	$0.3973	$0.4569	$0.5254	$0.4860	$0.3973
Region Haldimand/Norfolk (former)														
Upper Limit			50	residual						50	residual			
Rate	$27.11	$7.21	$0.9950	$0.4140				$27.11	$7.21(3/4") - $983.55(12")	$0.9950	$0.4140			
City of St. Catharines														
Upper Limit			9	residual						9	residual			
Rate	$15.68	$6.85	base	$0.5600				$15.68	$6.85	base	$0.5600			
City of Welland														
Upper Limit			all							all				
Rate		$9.56	$0.5103						$9.50	$0.5103				
Town of Grimsby														
Upper Limit			8	residual						8	residual			
Rate		$10.95	base	$0.4488					$10.95	base	$0.4500			
City of Sudbury														
Upper Limit			all							all				
Rate	$50.41	$8.77	$0.7700					$50.41	$8.77(5/8") - 486.39 (10")	$0.7700				
City of Ottawa (Ottawa Community)														
Upper Limit			all											
Rate		$1.00	$0.4950						$ (1/2") $1 - $256 (18")	$0.4950				

Table 4-2
Survey of Monthly Residential and Commercial/Industrial Water Rates Per m^3
(2000/2001)

Municipality	WATER RATES												
	RESIDENTIAL							COMMERCIAL/INDUSTRIAL					
	Flat Rate	Base	Metered Rate					Flat Rate	Base (reference to inches denotes meter size)	Metered Rate			
			Step 1	Step 2	Step 3	Step 4	Step 5			Step 1	Step 2	Step 3	Step 4	Step 5
City of Cornwall														
Upper Limit										758	7,575	18,933	37,833	Residual
Rate	$17.83									$0.2838	$0.2613	$0.2497	$0.2393	$0.2210
City of Kingston														
Upper Limit			all							50	residual			
Rate		$3.25-$10.01	$0.4029						$16.38-$23.59 (11/2") - $72.02-$79.23 (6")	$0.4029	$0.2839			
City of London														
Upper Limit			17	40	residual					3	708	residual		
Rate			$1.0445	$1.1014	$1.1569				$5.00	$3.5876	$0.6124	0.5007		
Town of Ingersoll														
Upper Limit			all							all				
Rate		$6.25	$0.3300						$6.25 (3/4") - $124.25 (6")	$0.3300				
City of Woodstock														
Upper Limit										8,000	residual			
Rate	$10.59								$12.19 (5/8") - $ 893.35 (6")	$0.4087	$0.3285			
City of Windsor														
Upper Limit			all							all				
Rate		$10.07	$0.2530						$ 8.34 (5/8")-$1,463.20 (10")	$0.2530				
City of Chatham-Kent (Chatham Community)														
Upper Limit			all							235	residual			
Rate		$3.35	$0.5110						$3.35	$0.5110	$0.3800			
Town of Leamington														
Upper Limit			all							all				
Rate		$13.50	$0.4000						$13.50	$0.4900				
Town of Tecumseh														
Upper Limit			114	residual						114	residual			
Rate		$8.60	$0.2464	$0.2354					$8.6 (5/8") - $210 (6")	$0.2464	$0.2354			
City of Sarnia														
Upper Limit			all							all				
Rate		$5.65	$0.5290						$ 5.65 (5/8") -1,030.81 (10")	$0.5290				
City of Kitchener														
Upper Limit			all							all				
Rate			$0.9052							$0.9052				
Town of Goderich														
Upper Limit										250	750	1750	residual	
Rate	$15.95								$1.46 (1/2") -$73.02 (8")	$0.5400	$0.4300	$0.3900	$0.3500	
City of Stratford														
Upper Limit			3	residual						3	residual			
Rate		$3.50	$1.0000	$0.3600					$3.50 (1") - $62.00 (8")	$1.0000	$0.3600			
City of Cambridge														
Upper Limit			all							all				
Rate		$3.90	$0.5885						$3.90(5/8") - $228.51(10")	$0.5885				

Table 4-2
Survey of Monthly Residential and Commercial/Industrial Water Rates Per m^3
(2000/2001)

Municipality	WATER RATES												
	RESIDENTIAL							COMMERCIAL/INDUSTRIAL					
	Flat Rate	Base	Metered Rate					Flat Rate	Base (reference to inches denotes meter size)	Metered Rate			
			Step 1	Step 2	Step 3	Step 4	Step 5			Step 1	Step 2	Step 3	Step 4	Step 5
City of St. Thomas														
Upper Limit			all							all				
Rate		$14.50	$0.5100						$14.50(5/8") - $436.00(6")	$0.5100				
City of Brantford														
Upper Limit			all							all				
Rate		$7.25	$0.4700						$7.25 (5/8') - $821 (8")	$0.4700				
City of Guelph														
Upper Limit			all							all				
Rate		$2.10	$0.2800						$2.10 (5/8") - $333 (10")	$0.2800				

Notes: Monthly Residential Water

A flat rate has been applied to all residential units which do not have meters
Base charges for residential are based on a meter size of 1" or less for all municipalities surveyed
A range of base charges based on meter size has been provided for commerical rates
Rates do not vary based on meter size for the following municipalities; Toronto, Peel, Aurora, Markham, Whitchurch-Stouffville, St. Catharines, Welland, Grimsby, Cornwall, London, Chatham-Kent, Leamington, and Kitchener
Basic service charges in Kingston are based on an average for Central, West, and East Kingston
For the City of Windsor from May to October excess water consumption (water not delivered back into the sewer system) is charged at reduced rate of .237

TABLE 4-3
Survey of Water Pricing Structures

Municipality	Water Rate Structure	
	Residential	Commercial/Industrial
City of Toronto (Toronto Community)	Constant Rate	Constant Rate
Region of Peel	Constant Rate	Constant Rate
Region of Durham	Base + Declining Block	Base + Declining Block
Town of Aurora	Constant Rate	Constant Rate
Town of Markham	Constant Rate	Constant Rate
Town of Whitchurch-Stouffville	Base + Constant Rate	Base + Constant Rate
City of Hamilton	Base + Constant Rate	Base + Constant Rate
Region of Halton	Base + Inverted Block	Base + Inverted Block
Region Haldimand/Norfolk (former)	Base + Declining Block	Base + Declining Block
City of St. Catharines	Base + Constant Rate	Base + Constant Rate
City of Welland	Base + Constant Rate	Base + Constant Rate
Town of Grimsby	Base + Constant Rate	Base + Constant Rate
City of Sudbury	Base + Constant Rate	Base + Constant Rate
City of Ottawa (Ottawa Community)	Base + Constant Rate	Base + Constant Rate
City of Cornwall	Flat Rate	Declining Block
City of Kingston	Base + Constant Rate	Base + Constant Rate
City of London	Inverted Block	Base + Declining Block
Town of Ingersoll	Base + Constant Rate	Base + Constant Rate
City of Woodstock	Flat Rate	Declining Block
City of Windsor	Base + Constant Rate	Base + Constant Rate
City of Chatham-Kent (Chatham Community)	Base + Constant Rate	Base + Declining Block
Town of Leamington	Base + Constant Rate	Base + Constant Rate
Town of Tecumseh	Base + Declining Block	Base + Declining Block
City of Sarnia	Base + Constant Rate	Base + Constant Rate
City of Kitchener	Constant Rate	Constant Rate
Town of Goderich	Flat Rate	Base + Declining Block
City of Stratford	Base + Declining Block	Base + Declining Block
City of Cambridge	Base + Constant Rate	Base + Constant Rate
City of St. Thomas	Base + Constant Rate	Base + Constant Rate
City of Brantford	Base + Constant Rate	Base + Constant Rate
City of Guelph	Base + Constant Rate	Base + Constant Rate

TABLE 4-4
Annual Residential Water Bill
Based on 227 Cubic Metres Consumption (50,000 Gallons)
(2000 / 2001 Rates)

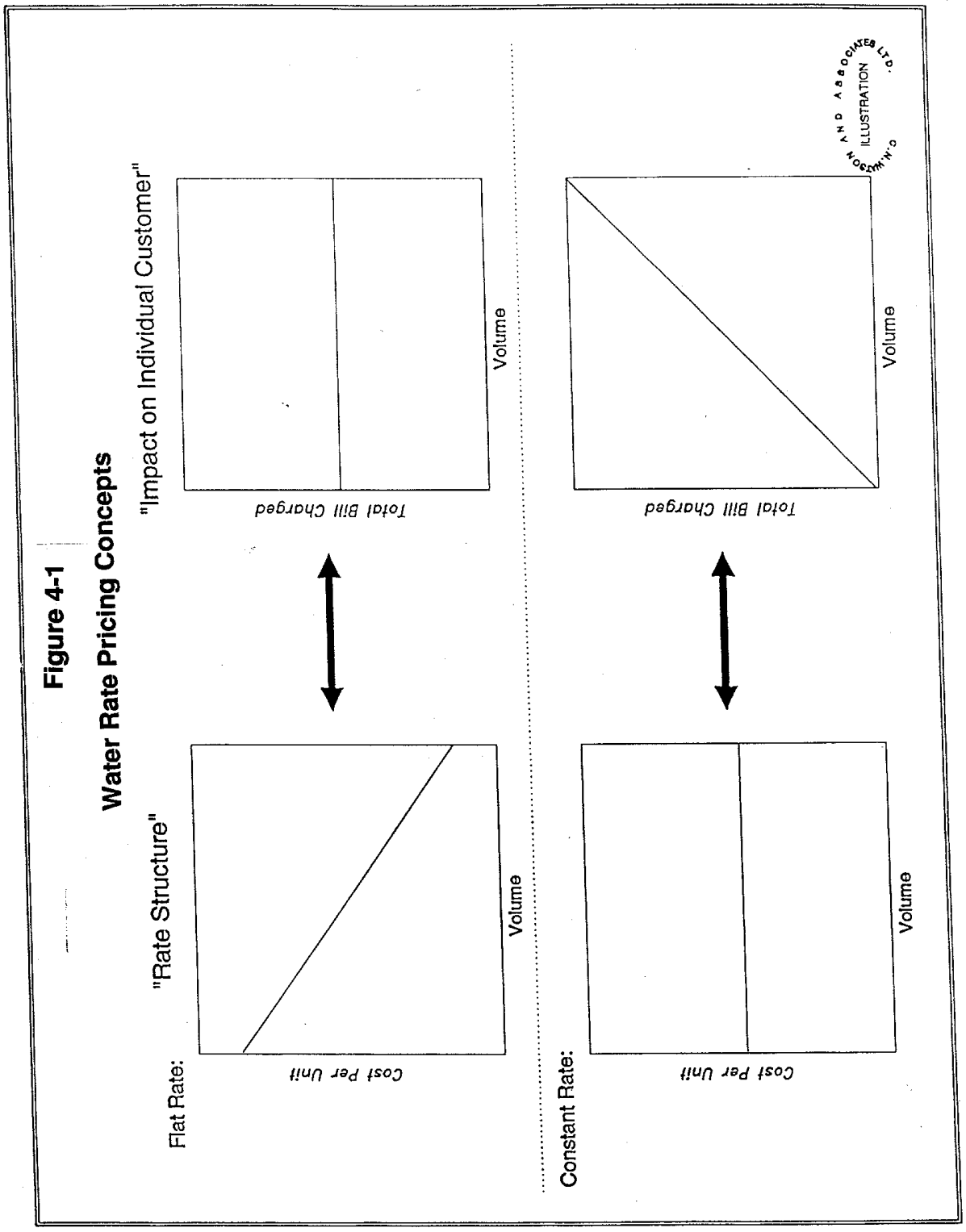
Municipal Ranking	Municipality	Water Charges
1	Region Haldimand/Norfolk (former)	312
2	City of St. Thomas	290
3	City of Sudbury	280
4	City of Toronto (Toronto Community)	257
5	Town of Leamington	253
6	City of London	238
7	City of Welland	231
8	City of Cornwall	214
9	City of Kitchener	205
10	City of Brantford	194
11	Town of Grimsby	192
12	Town of Goderich	191
13	Town of Whitchurch-Stouffville	191
14	City of Sarnia	188
15	City of Cambridge	180
16	City of Windsor	178
17	City of Kingston	172
18	Region of Durham	168
19	Town of Tecumseh	159
20	City of Chatham-Kent (Chatham Community)	156
21	Town of Ingersoll	150
22	City of St. Catharines	149
23	Region of Halton	149
24	City of Stratford	147
25	Town of Aurora	146
26	Town of Markham	144
27	City of Hamilton	139
28	City of Woodstock	127
29	City of Ottawa (Ottawa Community)	124
30	Region of Peel	90
31	City of Guelph	89

TABLE 4-5
Annual Residential Water Bill
Based on 455 Cubic Metres Consumption (100,000 Gallons)
(2000 / 2001 Rates)

Municipal Ranking	Municipality	Water Charges
1	Region Haldimand/Norfolk (former)	539
2	City of Toronto (Toronto Community)	514
3	City of London	490
4	City of Sudbury	456
5	City of Kitchener	412
6	City of St. Thomas	406
7	City of Welland	347
8	Town of Leamington	344
9	Town of Whitchurch-Stouffville	329
10	City of Cambridge	315
11	City of Sarnia	308
12	City of Brantford	301
13	Town of Grimsby	295
14	Town of Aurora	293
15	Town of Markham	289
16	City of St. Catharines	277
17	City of Chatham-Kent (Chatham Community)	273
18	City of Hamilton	265
19	City of Kingston	263
20	Region of Durham	258
21	Region of Halton	249
22	City of Ottawa (Ottawa Community)	237
23	City of Windsor	236
24	City of Stratford	229
25	Town of Ingersoll	225
26	Town of Tecumseh	215
27	City of Cornwall	214
28	Town of Goderich	191
29	Region of Peel	180
30	City of Guelph	153
31	City of Woodstock	127

Figure 4-1

Water Rate Pricing Concepts



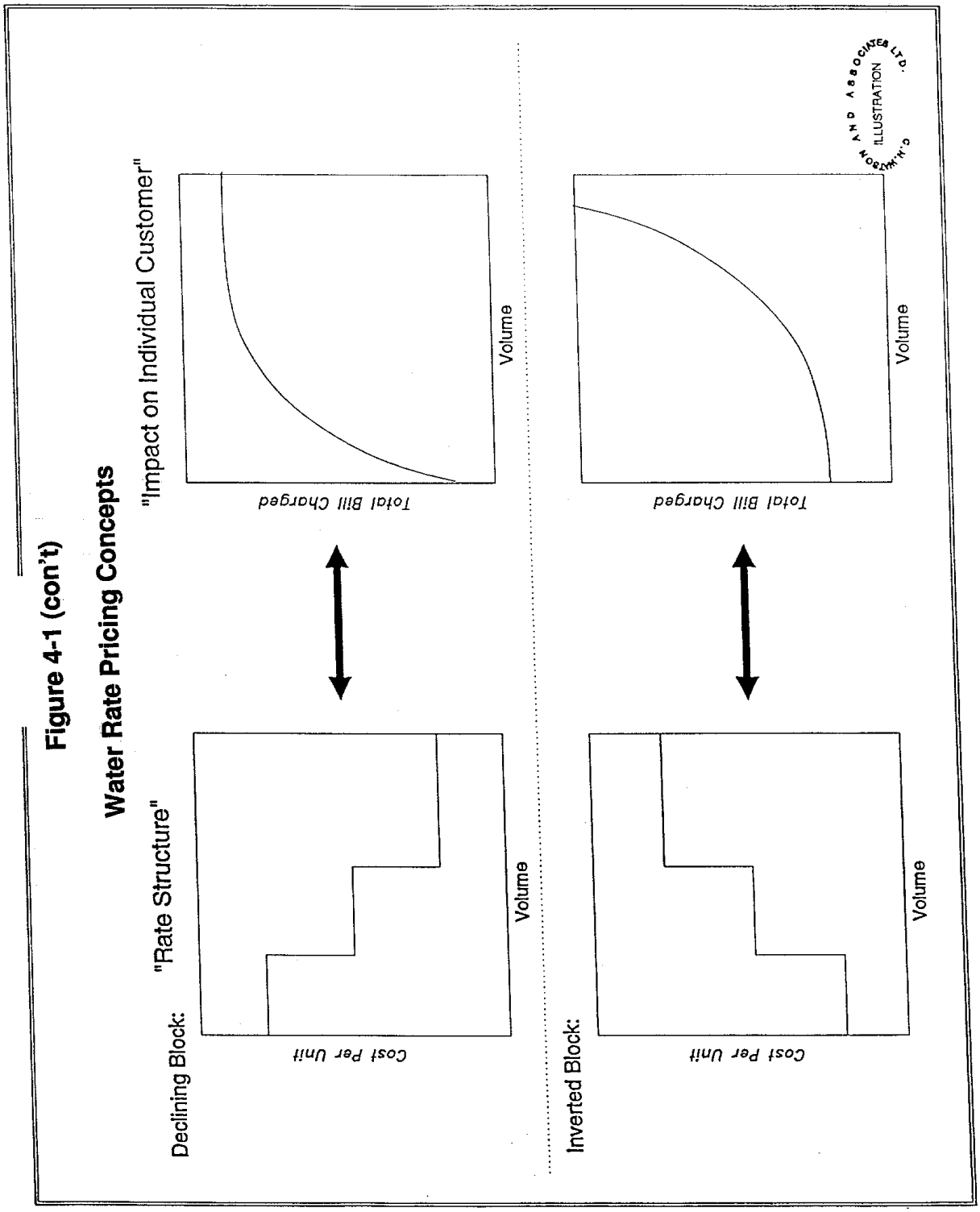


Figure 4-1 (con't)
Water Rate Pricing Concepts
"Rate Structure"
"Impact on Individual Customer"
Declining Block:
Inverted Block:
Cost Per Unit
Volume
Total Bill Charged
Volume
C.N. WATSON AND ASSOCIATES LTD.
ILLUSTRATION

TABLE 4-6
Annual Residential Water Bill
Based on 60,000 Cubic Metres Consumption (13,200,000 Gallons)
(2000 / 2001 Rates)

Municipal Ranking	Municipality	Water Charges
1	City of Toronto (Toronto Community)	67,800
2	City of Kitchener	54,312
3	City of Sudbury	48,316
4	Town of Aurora	38,640
5	Town of Markham	38,148
6	City of Cambridge	37,749
7	City of Hamilton	36,801
8	Town of Whitchurch-Stouffville	36,354
9	City of St. Thomas	35,832
10	City of Sarnia	35,621
11	City of Woodstock	35,242
12	City of Ottawa (Ottawa Community)	34,884
13	City of Brantford	33,936
14	City of St. Catharines	33,622
15	Region Haldimand/Norfolk (former)	32,099
16	City of London	31,155
17	City of Welland	30,732
18	Town of Leamington	29,562
19	Region of Halton	29,267
20	Town of Grimsby	27,090
21	Region of Durham	24,734
22	Region of Peel	23,756
23	Town of Goderich	23,743
24	City of Chatham-Kent (Chatham Community)	23,210
25	City of Stratford	22,151
26	Town of Ingersoll	21,291
27	City of Windsor	20,895
28	City of Guelph	18,193
29	City of Kingston	17,970
30	Town of Tecumseh	16,657
31	City of Cornwall	15,883

Note: Base water charges are based on a 6" metre size

5. LIFE CYCLE COSTING

5. LIFE CYCLE COSTING

5.1 Overview of Life Cycle Costing

5.1.1 Definition

For many years, life cycle costing has been used in the field of maintenance engineering and to evaluate the advantages of using alternative materials in construction or production design. The method has gained wider acceptance and use in the areas of industrial decision-making and the management of physical assets.

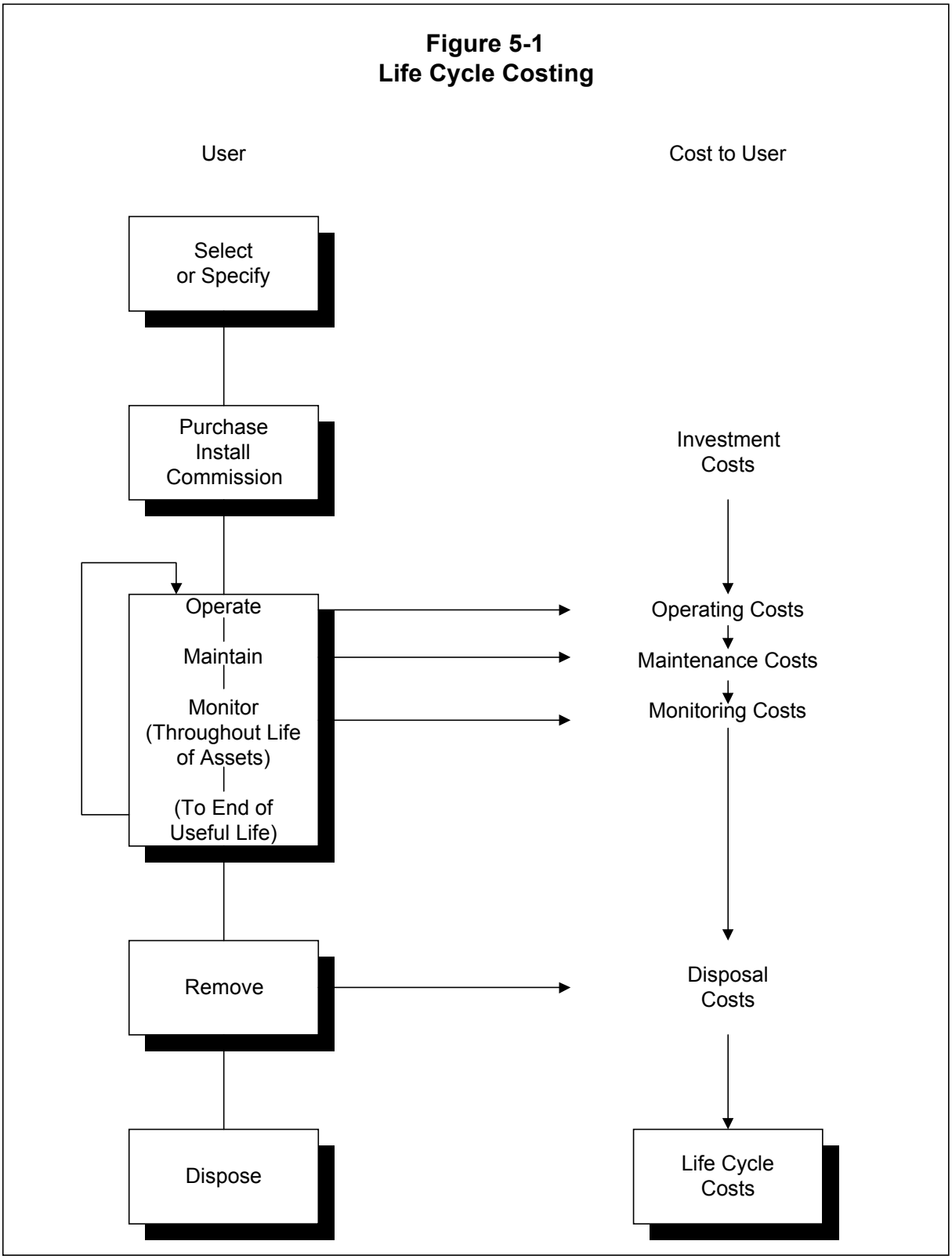
By definition, life cycle costs are all the costs which are incurred during the life cycle of a physical asset, from the time its acquisition is first considered, to the time it is taken out of service for disposal or redeployment. The stages which the asset goes through in its life cycle are specification, design, manufacture (or build), install, commission, operate, maintain and dispose of. Figure 3-1 depicts these stages in a schematic form.

5.1.2 Financing Costs

This section will focus on financing mechanisms in place to fund the costs incurred throughout the asset's life.

In a municipal context, services are provided to benefit taxpayers. Acquisition of assets is normally timed in relation to direct needs within the community. At times, economies of scale or technical efficiencies will lead to oversizing an asset to accommodate future growth within the municipality. Over the past few decades, new financing techniques such as development charges, have been employed, based on the underlying principle of having tax/rate payers who benefit directly from the service paying for that service. Operating costs which reflect the cost of the service for that year, are charged directly to all existing tax/rate payers who have received the benefit. Operating costs are normally charged through the tax base or user rates.

Figure 5-1
Life Cycle Costing



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As noted in Chapter 3, capital expenditures are recouped through several methods; operating budget contributions, development charges, reserves, developer contributions and debentures, being the most common.

New construction related to growth could produce development charges and developer contributions (e.g. works internal to a subdivision which are the responsibility of the developer to construct) to fund a significant portion of projects, where new assets are being acquired to allow growth within the municipality to continue. As well, debentures could be used to fund such works, with the debt charge carrying costs recouped from taxpayers in the future.

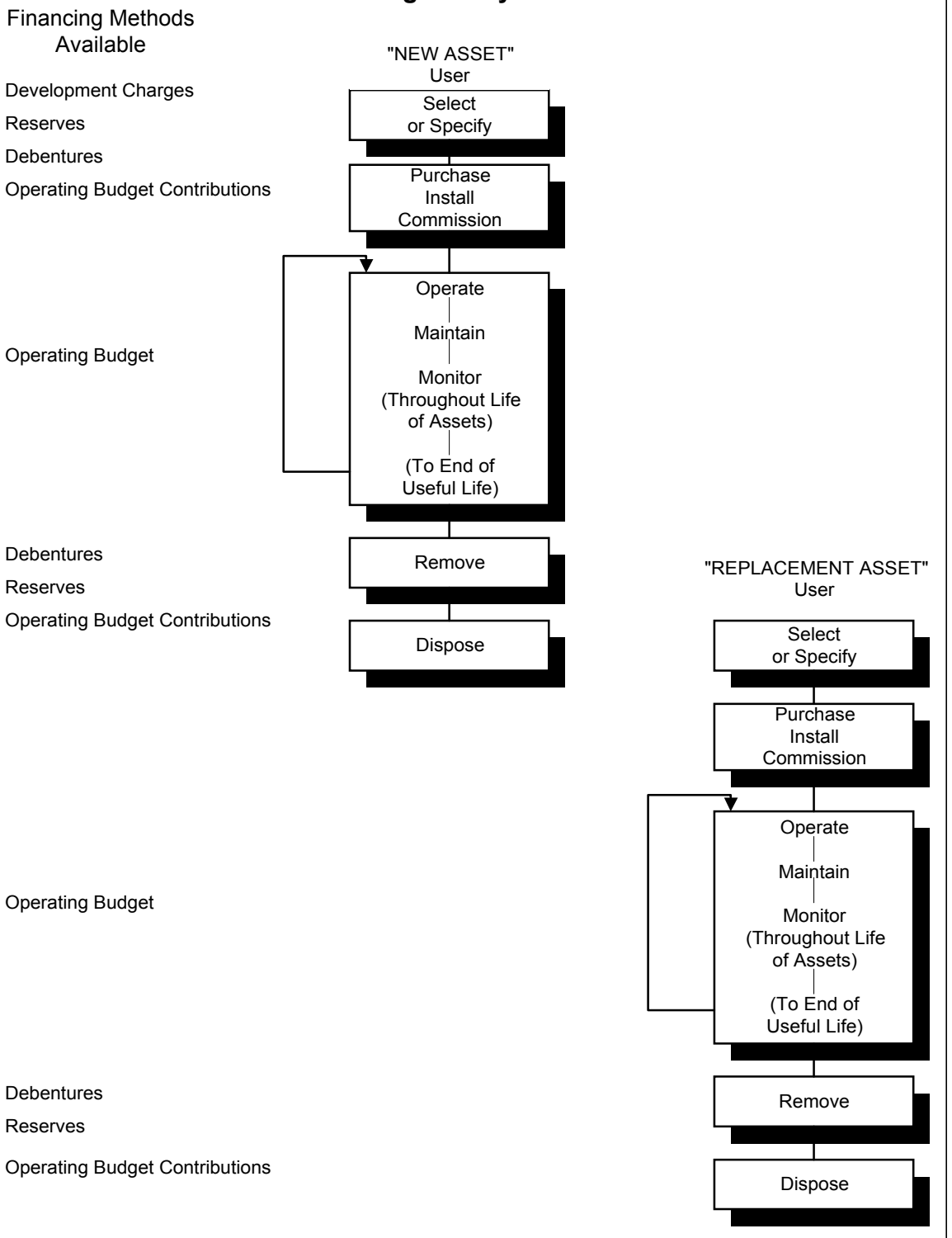
However, capital construction to replace existing infrastructure is largely not growth-related and will therefore not yield development charges or developer contributions to assist in financing these works. Hence, a municipality will be dependent upon debentures, reserves and contribution from the operating budget to fund these works.

Figure 5-2 depicts the costs of an asset from its initial conception through to replacement and then continues to follow the associated costs through to the next replacement.

As referred to earlier, growth-related financing methods such as development charges and developer contributions could be utilized to finance the growth-related component of the new asset. These revenues are collected (indirectly) from the new homeowner who benefits directly from the installation of this asset. Other financing methods may be used as well to finance this project; reserves which have been collected from past tax/rate payers, operating budget contributions which are collected from existing tax/rate payers and debenturing which will be carried by future tax/rate payers. Ongoing costs for monitoring, operating and maintaining the asset will be charged annually to the existing tax/rate payer.

When the asset requires replacement, the sources of financing will be limited to reserves, debentures and contributions from the operating budget. At this point, the question is raised as to "If the cost of replacement is to be assessed against the tax/rate payer who benefits from the replacement of the asset, should the past tax/rate payer pay for this cost or should future rate payers assume this cost?" If the position is taken that the past user has used up the asset, hence he should pay for the cost of replacement, then a charge should be assessed annually, through the life of the asset to have funds available to replace it when the time comes. If the

Figure 5-2
Financing Life Cycle Costs



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position is taken that the future tax payer should assume this cost, then debenturing and, possibly, a contribution from the operating budget should be used to fund this work.

Charging for the cost of using up of an asset is the fundamental concept behind depreciation methods utilized by the private sector. This concept allows for expending the asset as it is used up in the production process. The tracking of these costs forms part of the product's selling price and hence end users are charged for the asset's depreciation. A similar concept can be applied in a municipal setting to charge existing users for the asset's use and set those funds aside in a reserve to finance the cost of replacing the asset in the future. **It should be noted that this one component is the one difference between the private sector and municipalities with respect to "full cost pricing." However, as will be discussed later in this chapter, some municipalities address replacement of capital through life cycle reserves and others through a combination of reserves/debt/operating contributions. However, this may not be consistently applied across Ontario municipalities.**

5.1.3 Costing Methods

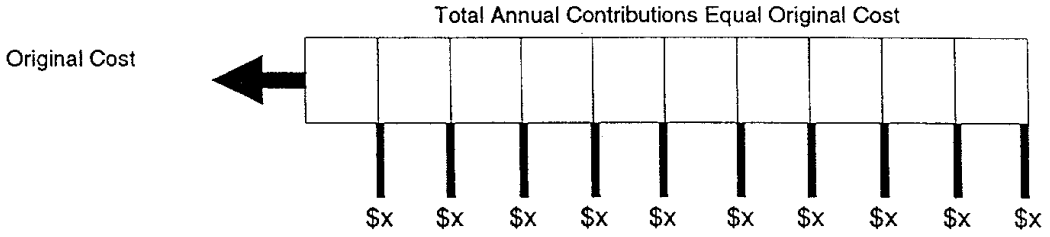
There are two fundamental methods of calculating the cost of the usage of an asset and for the provision of the revenue required when the time comes to retire and replace it. The first method is the Depreciation Method. This method recognizes the reduction in the value of the asset through wear and tear, and aging. There are two commonly used forms of depreciation: the straight line method and the reducing balance method.

The straight line method is calculated by taking the original cost of the asset, subtracting its estimated salvage value (estimated value of the asset at the time it is disposed of) and dividing this by the estimated number of years of useful life. The reducing balance method is calculated by utilizing a fixed percentage rate and this rate is applied annually to the undepreciated balance of the asset value.

The second method of life cycle costing is the sinking fund method. This method first estimates the future value of the asset at the time of replacement. This is done by inflating the original cost of the asset at an assumed annual inflation rate. A calculation is then performed to determine annual contributions (equal or otherwise) which, when invested, will grow with interest to equal the future replacement cost.

Figure 5-3

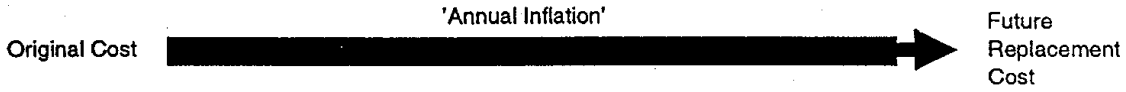
STRAIGHT LINE DEPRECIATION



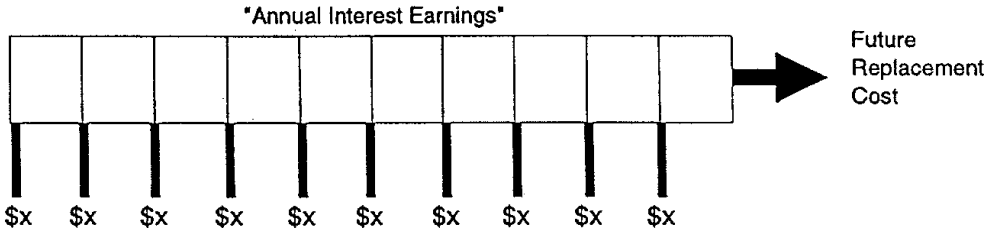
Formula: $\frac{\text{Original Cost - Salvage Cost}}{\text{Number of Years of Useful Life}}$

SINKING FUND METHOD

1. 'Estimate Future Replacement Cost'



2. 'Estimate Annual Contribution which will Grow with Interest to Equal Future Replacement Cost'



Formula: $\frac{\text{Interest Rate}}{(1 + \text{Interest Rate})^{\text{Term}_1}} \times \text{Original Cost}$

Note: Interest Rate Used Would be the Investment Rate - Inflation Rate, e.g. 11% - 5% = 6% and is Presented as 0.06.

Both the straight line depreciation method and the sinking fund method are presented in a schematic form on Figure 5-3. The formula for calculating the annual contributions is also presented. This figure demonstrates the fundamental principles behind both methods. The straight line method focuses on the original acquisition of the asset. Each year as the asset is being used, the users contribute toward the original purchase of the asset. The sinking fund method focuses on the replacement of the asset. The original purchase of the asset is accepted as a given level of service. Each year, as the asset is used, a contribution is made toward its replacement at a time when the asset is no longer functional.

Of the two methods presented, the sinking fund method is recommended as it provides for potential investment income to be earned over the period and hence, has a lower impact on rates.

5.2 Water Infrastructure Life Cycle

As discussed in the first Chapter, there is no detailed information available today on the existing condition of water systems in Ontario. The condition of a system in one municipality may be considerably different from another municipality. Reasons for these differences are discussed below.

5.2.1 Average Life of Infrastructure

Given normal maintenance and care of water systems, materials used for water infrastructure have average useful lives after which their potential for continuing to provide a reasonable service performance diminishes. Listed below are examples of the average life of various components of a water system.

Ground Water Supply	- Well house	75 years
	- Pumps	25 years
	- Well rehabilitation	10 years
Surface Water Treatment Plant	- Super Structure (50% of cost)	75 years
	- Mechanical Pumps and Valves (20% of cost)	25 years
	- Electrical meters, wires, lights (10% of cost)	10 years
	- Instrumentation/HUSAC (10% of cost)	10 years

	- Intake pipes, etc. (10% of cost)	50 years
Mains	- Concrete	80 years
	- PVC	80 years
	- Cast iron	50 years
	- Duct Tile Iron	50 years
	- Steel	50 years

It is noted that the average life figures listed above can be variable based upon materials used, construction quality, maintenance, etc., and have been provided based upon discussions with various engineers.

5.2.2 Age of System

Municipalities in Ontario have grown and urbanized at different times throughout the past century. Older municipalities such as Toronto, Kingston, London, Windsor have watermains dating back to the early 1900s. Their systems were constructed at different intervals over time and, depending upon when growth periods were experienced, will have varying age systems. Many Ontario municipalities urbanized during or since the 1960's and 1970's. During this period, the Province of Ontario made municipal water systems a priority and provided long term loans and grants and constructed numerous plants operated by the MOE (subsequently by OCWA). Hence, the age of the municipal systems will vary dramatically across the province.

As well, in conjunction with the timing of when municipal servicing was put in place, different materials were used in construction of watermains. During the 1960's and 1970's, materials such as cast iron and duct tile iron were used. As noted in the prior section, these materials may have a shorter useful life. Many of these materials will be requiring replacement over the next two decades.

5.2.3 Changing Legislation

Over time, Provincial standards for water quality, operational procedures, etc., will change. As these changes are implemented and depending upon the rules regarding immediate or longer terms to conform to these standards, the systems may or may not conform to present day standards. These matters are particularly applicable in the areas of water treatment.

5.2.4 Other Factors

Other matters will also affect the state of the municipal water system. For example, the extent of ongoing maintenance of the storage, treatment or distribution systems will affect the performance and useful life of the infrastructure. As well, other factors such as soil conditions can also affect the useful life of these systems.

5.3 Approach to Addressing Infrastructure Replacement and Upgrade

The approach used by various municipalities in addressing life cycle costs varies across the Province. Twenty years ago, when most systems were relatively young, not many municipalities provided for much of their rate budgets for the purpose of infrastructure replacement. As the systems have aged, this cost component has emerged as a higher priority budget item. Listed below are a number of examples of how municipalities are addressing lifecycle costs for their systems.

Aurora – In 1989, with the inventory work being undertaken with WIMS, the municipality addressed the issue of long term system renewal and replacement. At that time the municipality was fully responsible for all supply, treatment, storage and distribution. The municipality undertook to implement life cycle reserves (based on the sinking fund method) and provides annual an amount which is set aside in reserves for long term infrastructure replacement. The Town updates this valuation approximately every 5 years. Today, their full life cycle replacement of water and sewer services are funded through this system. Life cycle costs represents 10% of their rates.

Chatham-Kent – The new municipality amalgamated as of January 1, 1998. The former 22 municipalities were consolidated into one municipality with responsibility for water being provided to the PUC. The PUC has undergone an extensive masterplanning process to identify existing improvements, extension of servicing to existing residents experiencing problems with private systems and planning for growth. Major improvements to the plants and trunk mains will be financed over the next ten years using a combination of user rates and debt. For more local mains, the PUC, as part of its rate study process, is considering phasing in life cycle reserve contributions (sinking fund method) over the next five years. All of this is being undertaken in

conjunction with the standardization of the rate pricing structure. Life cycle costs will represent about 12% of their rates once fully implemented.

St. Thomas – St. Thomas is presently finalizing a new rate study and, as part of this process, a detailed review of the condition and replacement needs of their entire water system. The City has developed a 20 year capital replacement plan and will be financing these costs by a combination of operating contributions, reserves and debt. This financing plan will equate to 30% of their rates. As part of this overall plan, a longer term, full asset replacement needs assessment was also undertaken. Within the policies established for financing the next 10 years, sufficient financing mechanisms should be in place to provide future full replacement of assets, when required.

Lincoln – The Town is presently undertaking a water rate study. As part of that study, they are reviewing life cycle replacement of their water system. Their system is relatively young dating back to only 1969. Upon implementation of a life cycle reserve (sinking fund), this cost will equate approximately 9% of their rates and should be implemented with a phase-in policy over the next 5 years.

Halton Region – The Region has valued their water and waste water infrastructure at about $2.7 billion. The Region uses a 10 year capital and operating budget forecast period; however, recently they have extended this to 16 years (to conform to their OP forecast period). The Region's plan identified an annual asset replacement budget of $40-50 million. For 2001, they are financing approximately $30 million through the use of debt, transfers from the operating budget and reserves. It is anticipated that this amount will be increased over the period as annual budgets are approved.

Based upon the above, there are a number of examples where municipalities have adopted very long term infrastructure replacement programs in concert with their rate structures.

6. OVERVIEW OF VARIOUS TYPES OF WATER SUPPLY SYSTEMS IN ONTARIO

6. OVERVIEW OF VARIOUS TYPES OF WATER SUPPLY SYSTEMS IN ONTARIO

A study was undertaken in 1997 by C.N. Watson and Associates Ltd. on behalf of the Ontario Ground Water Association. The purpose of the study was to review the cost of water supplied by different methods. The different systems considered are summarized as follows:

Ground Water System #1 – smaller municipality with over 10 wells
Ground Water System #2 – serves many communities and has larger number of wells
Surface Water System #1 and #2 – Lake-based water treatment plants
Surface water System #3 – River-based system
Big Pipe System #1 – Lake-based water treatment servicing over 10 communities with a transmission distance in excess of 30 km.

The focus of this study was to consider the cost of water production only and did not address the municipalities' distribution and storage systems. However, for the purpose of reviewing the "Big Pipe" option, the cost of the infrastructure required to move water to the border of the community was considered. Observations and analysis from that study are provided herein.

For municipal water systems, comparing consumer water bills is not an accurate basis for determining whether one system of water production is less expensive than another. For example, Whitchurch-Stouffville charges its residential customers approximately $100 per year for water whereas East Gwillimbury charged up to $300 a year for similar water consumption levels, yet both municipalities were on well-based systems and are part of the same Regional municipality. Many factors impact on the cost of water paid by consumers including geographical considerations, density of land use, type of water supply, age of distribution system, maintenance management practices, loss due to leakage and rate-setting practices.

In undertaking this assessment, it was determined that samplings of different-sized systems be considered to establish potential ranges within the individual forms of supply. These systems were summarized above.

Operating costs were summarized into 5 components; personnel (including benefits), chemicals, utilities, maintenance and other materials and services. The range of operating costs for each of the systems is presented below:

SUPPLY SOURCE	SYSTEM #	COST PER m³
Groundwater	System #1 System #2	8.9¢ - 10.7¢ 6.2¢ - 7.0¢
Surface water	System #1 System #2 System #3	7.0¢ - 7.8¢ 7.4¢ - 8.1¢ 22.1¢ - 24.9¢
Big Pipe	System #1	8.9¢ - 10.5¢

It was observed that each of the systems were performing at less than their optimum capacity, hence, the comparison provided in the above table requires adjustment to present each system cost at its optimum efficiency. For example, the surface water #3 system was running at 30% of its rated capacity; hence, fixed operating costs represent a high proportion of the cost per m³. To adjust for this, the costs were adjusted to reflect the operating costs associated with its maximum annual or firm capacity. For the purposes of the analysis, the firm capacity was defined as 85% of rated capacity. It was also assumed that chemicals and utility costs were completely variable, and that personnel, maintenance and other materials and services were fixed costs. The results are summarized as follows:

SUPPLY SOURCE	SYSTEM #	COST PER m³ AT FIRM CAPACITY
Groundwater	System #1 System #2	6.9¢ - 7.8¢ 5.7¢ - 6.3¢
Surface water	System #1 System #2 System #3	5.3¢ - 5.5¢ 6.0¢ - 6.5¢ 11.3¢ - 15.4¢
Big Pipe	System #1	7.7¢ - 8.8¢

From an operating cost perspective, it was observed that operating costs were generally similar between groundwater and (lake based) surface water systems. At lower volumes the groundwater appeared to produce a slightly overall lower cost where surface water appears slightly lower at firm capacity levels. Both the river based system and the Big Pipe system had higher costs, the former caused primarily by higher chemical costs and the latter by higher utility costs.

The estimated capital costs for each of the systems were as follows:

SYSTEM TYPE	CAPITAL COST $	MIGD	COST/MIGD
Groundwater System #1	12,600,000	11.6	1,170,000
Groundwater System #2	62,500,000	41	1,524,400
Surface water System #1	63,000,000	36	1,750,000
Surface water System #2	42,000,000	24	1,750,000
Surface water System #3	100,000,000	16	6,250,000
Big Pipe System #1	105,000,000	72	1,458,300

The allocation of the capital cost against the volume of water produced is less precise than the estimate and allocation of operating costs against water volumes. This results from a number of factors:

- lump sum capital payment versus future volumes produced
- under-utilized volume capacity
- interest cost on borrowing
- lifecycle costs of component parts of the system, requiring replacement
- etc.

To equalize the capital costs on the rates, standardized calculations were made. Two approaches to allocating the capital costs were utilized, those being the capital financing perspective and the lifecycle cost perspective. Under both methods, the groundwater system was less expensive. From the capital financing perspective, the groundwater system was 24%

less expensive (50% less expensive if considered on a present value basis). From a lifecycle cost perspective, groundwater is 50% less expensive than surface water.

From a combined capital and operating perspective, it was concluded that groundwater was a less expensive source for water supply than surface water. The conclusions from the preceding chapters were based upon a small sample size relative to the number of systems operating in Ontario; however, the opinion of the municipal engineers and engineering consultants were sought relative to their applicability compared to elsewhere in the Province. The numbers presented were deemed in line with other systems elsewhere.

7. PRIVATIZATION OF WATER SERVICE

7. PRIVATIZATION OF WATER SERVICE

7.1 Review of Legislation

In 1993, the Province of Ontario passed Bill 40 which provided expanded powers for municipalities to enter into financial arrangements with private companies. This Bill provided changes to the *Municipal Act* (Section 210.1). Section 210.1 provides Councils of metropolitan, regional and district municipalities the power to enter into agreements for the provision of municipal capital facilities to such municipalities by the private sector, to provide financial or other assistance to persons providing municipal capital facilities and to exempt from taxes land owned by persons providing municipal capital facilities in certain circumstances. The key aspects of the new section 210.1 are summarized below:

- Section 210.1(2) provides that the Council of a municipality may enter into agreements for the provision of municipal capital facilities by any person.
- Section 210.1(3) provides that such agreements may allow for the lease, operation or maintenance of such facilities by any person and will permit that sale or other disposition of municipal land or buildings that are still required for the use by the municipality.
- Section 210.1(4) allows municipalities to extend Section 210.1(4) allows municipalities to extend financial or other assistance at less than fair market value or at no cost to persons with whom the municipality has contracted for the provision of capital facilities. This assistance may include: (1) the lending of money; (2) lending, leasing or selling of property; (3) guaranteeing borrowing; or (4) providing the services of municipal employees. Section 210.1(5) provides that any assistance provided by the municipality must be solely in respect of the provision, lease, operation or maintenance of the facilities that are subject of the agreement.
- Section 210.1(7) allows municipalities, in certain circumstances, to grant property tax exemptions to private sector entities in respect of municipal capital facilities provided to the municipality by such entities.
- Section 210.1(8) provides that by-laws passed under section 210.1(7) may also provide a full or partial exemption from the facilities from payments required under the *Development Charges Act*.

In most instances, no approval by the Ontario Municipal Board or Ministry of Municipal Affairs is required relative to the above. The Province will, however, retain a degree of supervisory contact through its power under 210.1(19) to make regulations defining "municipal capital facilities" and prescribing the municipal capital facilities or clauses which may or may not be eligible for inclusion of an agreement under 210.1(2).

Ontario Regulation 46/94 was filed February 11, 1994, which provided the first regulations for the new Act. With respect to agreements established under s.210.1(2) of the *Municipal Act*, a municipality may provide for the following classes of municipal capital facilities:

- Facilities used by the council.
- Facilities used for the general administration of the municipality.
- Municipal roads, highways and bridges.
- Municipal local improvements and public utilities, except facilities for the generation of electricity.
- Municipal facilities related to the provision of telecommunications, transit and transportation systems.
- Municipal facilities for water, sewers, sewage, drainage and flood control.
- Municipal facilities for the collection and management of waste and garbage.
- Municipal facilities relating to policing, firefighting and by-law enforcement.
- Municipal facilities for the protection, regulation and control of animals.
- Municipal facilities related to the provision of social and health services, including homes under the *Homes for the Aged and Rest Homes Act*.
- Municipal facilities for public libraries.
- Municipal facilities that combine the facilities described in the above.
- Municipal community centres.
- Parking facilities ancillary to facilities described in any of the above.
- Municipal facilities used for cultural, recreational or tourist purposes including municipal general parking facilities and ancillary parking facilities.

7.2 Forms of Public Private Partnerships

Section 210.1 of the *Municipal Act* provides a broad range of arrangements for municipalities to enter into. They range for a fully public service to fully private service. There are numerous forms of arrangements which could be contemplated.

Table 7-1 provides nine of the more common forms of arrangements. Some of the arrangements are of an operating nature, while others provide for construction and/or financing of capital facilities or for a full operation of the service. Considerations of what form of arrangements provides the best arrangement for a particular municipality, will be subject to review of various policy and financial/economic factors. These are discussed in the next section.

TABLE 7-1
SUMMARY OF PUBLIC/PRIVATE FINANCING TECHNIQUES

FORM OF ARRANGEMENT	DESCRIPTION	ASSET OWNERSHIP	COMMENTARY
1. Operation and Maintenance Contract	• private contractor operates publicly-owned facility	• municipality	• many municipalities use this basis for garbage collection or snow clearing
2. Super-Turnkey Development	• public contractor designs and constructs facility • municipality pays for facility upon completion • private contractor operates	• municipality	• this form of contract being used by municipalities (e.g. recycling)
3. Wrap Around Agreement	• private developer finances and constructs addition to existing municipal facility • private sector operates entire facility • capital recovery through user fee revenue	• municipality	• this form of contract may be used by municipalities (e.g. recycling)
4. Lease - Develop - Operate	• private developer given long term lease to operate and expand facility • at end of period, facility reverts to municipal ownership	• municipality (but right of use given up by municipality during life of agreement)	• some municipalities have undertaken this type of arrangement with community groups
5. Temporary Privatization	• existing public facility transferred to private company who expands (or upgrades) facility and operates the facility • at some point in the future (after recovery of capital and return on investment) title transferred back to municipality (possibly at some specified value)	• private developer (until facility is acquired at end of the period)	• facility may be sold at fair market value • at present, debt capacity guidelines may restrict some municipalities' abilities
6. Buy - Build – Operate	• existing public facility purchased by private developer who renovates or expands the facility • ownership and operation remains with developer in perpetuity	• private developer	• facility may be sold at fair market value • at present, debt capacity guidelines may restrict some municipalities' abilities
7. Build - Transfer - Operate	• private developer finances and builds facility • upon completion, transfer the facility back to municipality, then leases back the facility on a long-term lease • developer operates and recovers investment user fees and commercial enterprises	• municipality	• at present, debt capacity guidelines may restrict some municipalities' abilities
8. Build - Operate - Transfer	• private developer receives a franchise to build and collect user fees on a facility for a specified time period • at the end of the period the facility transfers back to the municipality	• private developer (until facility is acquired at end of the period)	• at present, debt capacity guidelines may restrict some municipalities' abilities
9. Build - Own - Operate	• private developer finances, owns, and operates facility in perpetuity	• private developer	• at present, debt capacity guidelines may restrict some municipalities' abilities

C.N. Watson and Associates Ltd.

7.3 Review of Goals and Objectives of Private/Public Partnerships

The goals and objectives of a municipality in evaluating an arrangement with private providers will vary depending upon the political or bureaucratic perspectives within the municipality. For example, the Chief Financial Officer (e.g. Treasurer) of a municipality will be most concerned about maximizing service levels while minimizing the net financial impact onto taxes or rates. Alternatively, the Municipal Engineer will be most concerned about the quality of the service and minimizing risk and liability in carrying out the service.

In considering a private sector arrangement, a number of goals or objectives will be measured during the review of an agreement. These goals may vary between the political and bureaucratic sides of the corporation, as follows:

Political Goals and Objectives

- Minimize environment impact
- Maximize economic benefit
- Job creation
- Community impact and benefits
- Maximize service level provided
- Public control of the arrangement

Bureaucratic Goals and Objectives

- Cost/benefit of the agreement
- Public cost of construction
- Control of scheduling
- Ability to adjust service with changing Federal/Provincial regulations and standards
- Probability and impact of default
- Liability arising from the agreement
- Terms of the agreement

Based upon the goals and objectives identified above, there may be distinct advantages and disadvantages to an agreement which the municipality will consider, as follows:

Possible Advantages to Municipality

- Lower labour costs
- Lower material/service costs

- Access to technology and knowledge
- Cost efficiencies arising from different management skills or resulting from being consolidated as part of the larger operation
- Flexibility in making operational changes
- Sharing of risk
- Access to larger financial market and ability to spread costs over life of asset
- Less municipal administration
- Access to grants and subsidies targeted towards private sector.

Possible Disadvantages

- Assumption of capital assets and corresponding depreciation of those assets may increase the annual operating cost significantly
- Profit margin for private operator must be added to cost
- Council loss of input into service levels during life of contract
- Less control in managing risk
- Longer term for financing capital may result in higher interest rates and higher total cost of capital
- Type of agreement entered into may impact on debt capacity more than traditional methods
- Potential environmental risks.

The weighting assignment to any of the above factors will vary based upon the service provided, the form of agreement being considered and the municipality considering the agreement.

7.4 Financial Consideration

7.4.1 Overview

As noted in the previous section, there are various factors to be considered in the development of a privatization agreement. The following analysis will address only the financial competitiveness aspects of the arrangements, as only one factor of several to be considered.

This review will consider the operating aspects of the water service along with the capital aspects. It should be clear that water service involves not only the supply and treatment of water, but storage, distribution and administration (including metering and billing). Hence, this review will consider the details of the system, and address areas where the private or public sector may have abilities to provide components of the service at a less expensive cost.

7.4.2 Analysis of Capital Costs of a Water System

From a capital financing perspective, municipalities have traditionally funded their net capital financing requirements through the debenture markets. Prior to the 1980's, municipalities often funded major capital facilities over a 15-20 year term. With the high interest rate costs experienced during the 1980's, most municipalities restricted the term of their debt to 10 years or less. This change in terms was due to a concerted effort to minimize the overall cost of capital and was due in part to the reduction in the number of investors wishing to invest for a term longer than 10 years.

Most municipalities issue serial bonds (annual retirement of debt equal to the principal retired in a long term blended payment loan). Municipalities also have the power to issue "bullet" bonds in which all principal is retired in a lump sum at the end of the period. Annual costs to the end of the period would only be for the annual interest payments to bond holders. Municipalities may also issue sinking fund debentures which, to the investor, is similar to a "bullet" issue. The municipality annually contributes an amount into a sinking fund reserve which will be invested and will compound to equal the amount of principal to be retired at the end of the period.

With respect to the credit worthiness of municipalities in Ontario, almost all Regional municipalities have AAA ratings from the Bond Rating Agencies. Currently, this provides a better credit rating than the Province of Ontario. This superior credit rating allows Regional municipalities to borrow at interest rates equal to the Province or, at times, lower rates of interest. Most other municipalities in Ontario have lower credit ratings than Regional municipalities which has meant, in the past, that these municipalities borrow at rates higher than the Province.

With respect to Private Sector financing various forms of financial arrangements may be available. These forms can range from total debt financing to total equity financing or some combination thereof. The final form of the arrangement, to a great extent, is dependent upon the provider of capital. Often in facility financing, a combined debt/equity arrangement would be made. Low risk investments would often require a lower debt component whereas higher risk investments often require a higher debt component. This relationship is a function of investors willingness to purchase shares in the capital venture. As there are less investors willing to invest in high risk ventures, the shortfall in share equity is offset by debt financing.

With respect to the rate of interest, often debt financed forms of arrangements provide a higher rate of interest than what municipalities may borrow at (possibly 1-2% above municipal borrowing rates). With respect to return on investment for equity financing a (pre-tax) rate of approximately 6-8% above the municipal borrowing rate would often be required.

The advantage of private sector arrangements to a municipality would be the ability to spread the capital repayment over a longer period of time (i.e. the life of the asset). As well, if short term cash flow restriction are faced by municipalities, private sector financing arrangements may provide for the interest and principal payments to be delayed in the early years and recovered at a later period.

As noted in Chapter 3, municipalities have legislation which allows them to recover the cost of new capital through section 221 of the *Municipal Act* or the *Development Charges Act*. These Acts provide municipalities with the ability to impose user fees directly on those benefiting landowners to directly recover the cost of the capital infrastructure. Hence, these costs do not affect the water rates as they are funded from another source. The private sector may use similar forms of charges to pay for capital; however, tax legislation may restrict their ability to capitalize the asset. Hence, there may be reluctance to recover the costs directly from landowners and thus, these costs would be reflected in the water rates.

7.4.3 Analysis of Operating Costs of a Water System

A review of two municipalities was undertaken to establish a range of the amount of expenditures made on water service provision. A large and medium-size municipality were selected as follows:

	Municipality	
	Halton Region	St. Thomas
Service Population (est.)	366,000	34,000
Service Area	• Burlington • Oakville • Milton • Halton Hills	• St. Thomas • portion of Central Elgin
Services Provided	• Supply • Treatment • Storage • Distribution • Administration* • Billing/Collection	• Supply and treatment of water purchased from Elgin Primary Water System • Storage • Distribution • Administration • Billing/Collection
Water Supply Type	• Predominately surface water from Lake Ontario • Halton Hills and portions of Milton on wells	• Surface water from Lake Erie ("Big Pipe" Supply System)

*Administration includes subdivision servicing review, design, capital project management, etc.

Details of the operating expenditures are provided in Tables 7-2 and 7-3. Operating expenditures have been summarized into five sub-categories: Treatment, Distribution, Administration, Billings/Collection and Capital Related. These expenditures have been further broken down into six components: Personnel, Chemicals, Utilities, Services/Overhead, Maintenance and Capital/Debt/Reserves. The following table summarizes the percentage breakdown of these expenditure components.

% Breakdown of Operating Expenditures

Expenditure Component	Halton Region	St. Thomas
Personnel	19.6%	20.2%
Chemicals	1.0%	2.5%
Utilities	6.8%	6.4%
Services and Overhead	8.9%	10.9%
Maintenance	8.1%	10.8%
Capital/Debt/Reserves	55.7%	49.2%
Total	100.0%	100.0%

A commentary on the ability for the private sector to compete, is provided below:

- Personnel – In discussion with municipal staff from the sample municipalities, it was identified that the wage rate for staffing is lower on average than comparable jobs in the private sector. During more buoyant economic times, problems have been experienced in the municipalities' ability to maintain or hire staff because of the lower wage scale. It was also acknowledged though, that benefit packages (e.g. pension, medical, disability, etc.) were higher for municipal staff than the private sector.

  There may be opportunities to reduce the number of staff through capital upgrades or changes in operating processes. Potential savings, however, would vary depending upon the municipal system. Municipalities may address these issues by establishing periodic operational reviews, thus providing them with similar processes (if required) as the private sector. The dominant issue within this category is definition of acceptable service quality levels and the corresponding staffing levels to implement those measures.

- Chemicals – Municipalities often competitive bid their tenders for materials on a quantity basis. As well, in recent times, tendering arrangements with other municipalities have been undertaken to take advantage of "bulk quantity" discounts on similar goods. Hence, the private sector may not be able to gain a significant reduction in this area.

- Utilities – Municipalities, as in all hydro users, purchase energy at prevailing rates. Whereas municipalities formerly were GST exempt, recent changes have removed this area of cost advantage. Unless significant charges are made to the treatment process, costs would remain the same for both private and public service providers.

- Services and Overhead – Overhead and service includes items such as taxes, purchased services, supplies, etc., As most items are purchased via a tendering process, limited cost savings would materialize through privatization.

- Maintenance – This category includes purchase of services and maintenance replacement items. Most of these services are purchased via tendering and, hence, limited opportunities for cost savings are available.

- Capital/Debt/Reserves – Municipalities normally address capital needs over a 5-10 year planning horizon through their capital budget process. Costs are either funded immediately through direct contributions from the operating budget to the capital budget or from reserves. If sufficient funds are not available, costs would be debentured over a 10-20 year period and repaid through the operating budget. This process minimizes interest costs and, once the capital asset is paid for, is normally not a significant cost until the need arises for major repair or replacement. Alternatively, the private sector builds the infrastructure which is recorded as an asset on the financial statements. The capital is then depreciated over the life of the asset in somewhat similar annual amounts. Interest financing is normally higher than the municipal rate and may extend for a longer period of time. For Halton Region, whose capital costs are approximately $21.7 million, depreciation of the asset would be in the range of $16 million per year based on current costs. In addition to this amount, the financing of the $1.3 billion in capital assets must also be included. It is anticipated that these costs collectively would cause rates to increase significantly.

- Other Costs – As municipalities are required to operate on a “not for profit basis,” profit margins are not incorporated into the above costs. As well, income taxes are also not paid on their operations. For the private sector, these costs would have to be factored into the analysis. A rate of 10-15% would be considered appropriate for these types of operations.

Table 7-2
Region of Halton 2001 Operating Budget

Expenditure Category	Total Expenditure	Total Expenditure	Personnel	Chemicals	Utilities	Services and Overhead	Maintenance	Capital/Debt/ Reserves
Operating								
Treatment (Purchased water)	6,338,900	16.3%	1,386,300	373,000	2,636,500	645,400	1,297,700	
Distribution System	6,371,200	16.4%	4,516,766				1,854,435	
Administration	2,732,300	7.0%	1,719,975			1,012,325		
Billing, Collection & Meter Reading	1,792,600	4.6%				1,792,600		
Sub-total	17,235,000	44.3%	7,623,041	373,000	2,636,500	3,450,325	3,152,135	0
Capital Related								
Debt - External	4,910,800	12.6%						4,910,800
Transfer to Capital	12,728,200	32.7%						12,728,200
Tansfer to Reserves - Capital	62,000	0.2%						62,000
- internal Debt	3,982,000	10.2%						3,982,000
Subtotal	21,683,000	55.7%	0	0	0	0	0	21,683,000
Total	38,918,000	100.0%	7,623,041	373,000	2,636,500	3,450,325	3,152,135	21,683,000
% of Total			19.6%	1.0%	6.8%	8.9%	8.1%	55.7%

Table 7-3
City of St. Thomas 2001 Operating Budget

Expenditure Category	Total Expenditure	% of Total Expenditure	Personnel	Chemicals	Utilities	Services and Overhead	Maintenance	Capital/Debt/ Reserves
Operating								
Treatment (Purchased water)	1,750,000	35.2%	252,200	123,700	319,000	194,300	83,100	777,700
Secondary System	120,600	2.4%				77,300		43,300
Distribution System	929,100	18.7%	473,800				455,300	
Administration	162,300	3.3%	82,800			79,500		
Billing, Collection & Meter Reading	385,000	7.7%	196,400			188,600		
Sub-total	3,347,000	67.4%	1,005,200	123,700	319,000	539,700	538,400	821,000
Capital Related								
Debt	240,000	4.8%						240,000
Transfer to Capital	1,291,100	26.0%						1,291,100
Tansfer to Reserves	90,400	1.8%						90,400
Subtotal	1,621,500	32.6%	0	0	0	0	0	1,621,500
Total	4,968,500	100.0%	1,005,200	123,700	319,000	539,700	538,400	2,442,500
% of Total			20.2%	2.5%	6.4%	10.9%	10.8%	49.2%

8. REGIONALIZATION OF WATER SYSTEM

8. REGIONALIZATION OF WATER SYSTEM

8.1 Chatham-Kent PUC

In 1997, the 22 former municipalities and 13 public utilities within Kent County were ordered to amalgamate by a Commission appointed by the Minister of Municipal Affairs and Housing. As a result, Chatham-Kent is a single municipality and all independent public utilities have been integrated into a single utility for water and sewer.

The amalgamation placed all water systems under the jurisdiction of the Chatham-Kent PUC. The various systems included well based, stream based, small lake based, large lake based systems and included the purchase of water from municipalities outside of the County. A summary of the systems and (former) municipalities served by the systems are provided on Table 8-1. Several of the systems were owned and operated by the municipalities, others were owned and operated under joint agreement, while others were owned and operated by OCWA (Ontario Clean Water Agency). The OCWA systems are presented below:

- Three (3) water treatment facilities owned and operated under contract by the Ontario Clean Water Agency (OCWA)
    - Chatham-Kent Raw Water Facility at Erie Beach
    - Erieau/Erie Beach Water Treatment Plant
    - Dealton Water Treatment Plant

- Four (4) water distribution systems within Chatham-Kent owned and operated by the Ontario Clean Water Agency (OCWA)
    - Blenheim Area Water Transmission Mains
    - Erieau/Erie Beach Water Distribution System
    - North-Kent Area Supply System
    - Shrewsbury Transmission Mains

Table 8-1
Former Water Systems in Chatham-Kent

Water System	Communities Serviced	Water Source
1. Wallaceburg	Wallaceburg Chatham Twp. (portion)	St. Clair River (via Chenal Escarte Channel)
2. Dresden/North Kent	Dresden Camden Twp. (portion)	Chatham Water System
3. Bothwell	Bothwell	West Lorne System (Elgin)
4. Tilbury	Tilbury Tilbury East Twp. Tilbury North Twp. (Essex)	Lake St. Clair
5. Chatham	Chatham Dresden/North Kent system Mitchell's Bay system	Lake Erie
6. Mitchell's Bay	Dover Twp.	Chatham Water System
7. Thamesville	Thamesville	Well-based
8. Wheatly	Wheatly Romney Twp. (portion) Mersea (Essex)	Lake Erie
9. Blenheim/Dealtown	Blenheim Harwich Twp. (portion)	Lake Erie
10. Eric Beach	Erie Beach Erieau	Lake Erie
11. Ridgetown	Ridgetown	Well-based

As noted, the amalgamation or regionalization of these various systems presented a wide variety of systems and operators. Upon assumption of these systems, in order to look at a standardization of service levels and efficiencies, the PUC undertook several initiatives to establish a conditions audit of the capital infrastructure and the operations system and practices. These initiatives also included a Water and Wastewater Masterplan Report, Facilities Inspection and Evaluation Report, Water Distribution System Analysis and a Water and Wastewater Rate Study.

Discussions were held with the Manager of Water and Wastewater for the PUC. Observations were provide regarding the "regionalization" of the systems, as follows:

- Undertook a standardization of salaries/wages with the assistance of the Ontario Labour Relations Branch – many staff wages increased with this standardization, however, several positions were frozen. Process was undertaken with no strikes.

- Same number of staff as before, however, have increase workload with this staff to address increase maintenance of facilities and distribution systems, increases in sampling and engineers reports due to changing regulations, increased contracts to build additional infrastructure and to upgrade existing infrastructure, and service population has increased by approximately 20%.

- Several facilities were not maintained at standards now imposed by the new PUC. Major equipment overhauls and replacements were needed to bring these facilities up to standard.

- No direct correlation between the quality of the system and former municipal size. Quality of operation was more a function of municipal policy regarding management of the system.

- Ability to implement policies, practices and approve capital works greatly enhanced. Now one decision maker vs. some systems, which needed several councils' approval to undertake.

- Better able to address problems with private well facilities and water quality problems. Extension of servicing to rural areas requires financial ability to extend loans to landowners for constructing new works (section 221 of *Municipal Act).*

- PUC retains very good cross-section of knowledge across its workers, which allows for cross-training and knowledgeable back-up staff. As well, better able to hire outside expertise when needed.

- Economies of scale allows the operation costs per m^3 to decrease due to operational efficiencies.

- Since the amalgamation, have paid off all of their debt. Are implementing life cycle reserves and have a twenty year plan for replacement of aging infrastructure and upgrading of all facilities.

- It is estimated that approximately $2.5 million (out of $17 million budget) has been saved through staff realignment, operating efficiencies and economies of scale. All of these savings have been re-invested in increasing service delivery and infrastructure replacement/ maintenance.

- The new utility is prepared for any regulatory changes which may be implemented over the next few years. It was identified that the water service is operating above provincially mandated standards.

9. OBSERVATIONS AND SUMMARY COMMENTS

9. OBSERVATIONS AND SUMMARY COMMENTS

9.1 Overview

The primary focus of this report is two-fold. First, in recent times there have been comments and observations on the provision of public water service by municipalities. As this service is somewhat unique and the basis for accounting and financing this service is different for municipalities than for private corporations, this report has sought to provide a detailed review of the financial environment within which these systems operate. It is only with the knowledge of how the municipal financial environment operates that one can measure and judge the validity or success of moving to a different system of service provision.

The second purpose is to address the issue of privatization and to provide insights into whether a privatized system is more cost effective than existing municipal systems. To conclude that one system is better than the other without a solid foundation on which to base this conclusion, would not be beneficial to the users of the system, both from a cost perspective and from a quality of service perspective. Although observations may be made as to municipal situations where errors have been made and inefficiencies experienced, similar examples are also available in regard to privatized services in Ontario and elsewhere. Hence, regard should be made to factual information and not isolated examples.

9.2 Need for Capital Infrastructure Repair and Replacement

The level of detailed analysis available on the state of municipal water infrastructure appears to be limited. The most detailed review appears to have been the 1998 study undertaken by the Canadian Water and Wastewater Association. The often-quoted "deficiencies" total $12.6 billion, however, this study did not identify this as existing deficiencies. Of this total amount, 64.5% ($8.1 billion) related to the need to build new infrastructure to service growth in Ontario. As noted in Chapter 3, most municipalities have implemented development charges which provide a per unit fee charged to developing landowners. Many municipalities who do not have the upfront cash to build infrastructure, enter into cost sharing arrangements with developers to finance the construction of these works and provide for a method of flowing back the costs over time. Hence, this portion of the costs identified within the report are not considered a significant problem as most municipalities have a funding mechanism to address this.

The second largest cost was for expanding the system to service all users within the municipality. The $2.6 billion cost (20% of total needs) represents, to some extent, a hypothetical calculation. There are many areas where the quality and quantity of water supply for private systems, functions adequately. Hence, there is not a need, or at least an immediate need, to expand municipal systems to connect those users to municipal systems. However, there are situations in various areas of the province, where there is a real need for extending municipal services into unserviced areas. Most municipalities extending these services impose a charge on landowners under section 221 of the *Municipal Act*. This charge provides for a direct recovery of the cost to the municipality. Once again, it is not perceived that this component of the identified "deficiencies" is a significant concern as it can be addressed and financed without impacting on water rates.

The third area of investment was for existing needs. These costs ($1.9 billion) represent 15% of the total needs identified. These costs do relate to systems improvements required now and would impact on water rates. From a funding perspective, municipalities who provide water services have the debt borrowing capacity of between $13 and $19 billion. Hence, although many municipalities have policies to limit the amount of debt they incur, they do have the financial ability (in most municipalities) to address these needs.

9.3 Cost of Water to Residents

The cost for water charged to Ontario residents is relatively inexpensive. Of the 31 municipalities surveyed, the average annual cost to households (based on 227 m^3 or 50,000 gallons) ranges from a low of $89 (Guelph) to $312 (Haldimand/Norfolk), with the mid-point being $178 (Windsor). When compared to other discretionary household purchases such as the Internet at $240 annually (basic service) or cable TV at approximately $350 per year, the purchase of water is a reasonable commodity. Put another way, for the cost of a bottle of spring water ($1.25) purchased at the store, consumers can get approximately 3,200 glasses of water (based on the mid-point annual cost noted above).

9.4 Infrastructure Management

As observed in Chapter 5, many municipalities in Ontario are addressing infrastructure replacement in their financial plans. The extent of this approach to managing the system is not known; however, most municipalities implementing this process do so through a blend of reserve funds, operating contributions and debt.

As has been discussed, the age of municipal infrastructure across municipalities in Ontario varies widely. Larger and older urban areas may have systems dating back to the early 1900's whereas smaller municipalities may have younger systems built in the late 1960's/early 1970's when the province promoted municipal water systems. Factors which affect the condition of these systems include the material type (material types have varying useful lives), maintenance practices, etc. Should the province wish to regulate infrastructure management practices, it could require an infrastructure conditions report to be undertaken on a, say, five year basis. To ensure that these needs are addressed by the municipality, it could also require a financial implementation report be provided to addressing financing of these works and to demonstrate the impact on municipal rates over the forecast period.

9.5 Privatization

As presented in Chapter 7, privatization can take many forms, ranging from operational or individual service contracts, to complete ownership and operational responsibility of the private company. The latter form has not had a significant presence within Ontario, perhaps either because of a price factor or because of concerns regarding the municipalities divesting control while maintaining (by Statutes) the ultimate responsibility for any problems which may arise. In regard to service contracts, these forms of private sector involvement have had a significant presence. In areas where the private sector may be cost competitive or where specialized expertise may be provided, various forms of private contracts are in place throughout Ontario.

In regard to the potential move to complete privatization of municipal systems, there are three main themes which are put forth in support of this directional move: (1) ability to raise the necessary capital (2) responsiveness and (3) cost effectiveness. These are discussed below.

(1) Ability to Raise Capital – It is recognized that municipalities have upper limits imposed upon them via provincial Regulations whereas a private company has the ability to raise capital via debt and equity financing. As noted earlier in this section, the perceived level of infrastructure deficiency ranges in the $1.9 billion range across Ontario, compared to the $13-20 billion in available capital financing across Ontario. Hence, this does not appear to be a major issue facing most Ontario municipalities. In addition, municipalities have the ability to impose special capital charges (development charges and section 221-*Municipal Act* charges) against new users to the system as a direct financing tool for new infrastructure. Comparatively, there may be reluctance by the private owners as this may affect their ability to capitalize the asset. Hence, for most Ontario municipalities, this does not appear to be a significant issue.

(2) Responsiveness – A major advantage identified for a privatized service is the ability of the company to react to issues quicker as a result of "less bureaucracy." Generally the decision process is shorter, resulting from an internal decision process. As well, potential increase profits can stimulate the need to streamline process, implement new technologies and address potential problems quicker. Many of these advantages are apparent, however, the slower process adopted by municipalities results from the need to conduct an open public process and to ensure that the expenditures made are in the best interest of the municipality. These advantages result from different "environments" vs. ineffectiveness of municipal staff and politicians. Whereas the private sector is profit driven, there is more incentive to take risks. Should any ineffective cost spending occur, it remains internal and, hence, is not often disclosed. On the contrary, municipalities operate in a very open environment with public watchdogs overseeing the spending of public dollars. Hence, more caution may be exercised in the public realm. Based on the above, there are opportunities for the private company to respond quicker.

One exception, however, may be in the area of capital replacement. Although the incentive to implement new technologies may be scrutinized closer by the private operator, considerations driven by bottom line profits may influence the decisions. Rules regarding depreciation may delay the implementation of new technologies. For example, in Canada, infrastructure within the steel industry can be written off quicker than in the U.S. This provides Canadian companies with a faster write-off of assets and an incentive to modernize facilities faster than their American counterparts. Similarly, if the asset depreciation is over a long period of time, disposal of an asset without the

offsetting write-off may slow decisions regarding technology upgrading. This decision, however, needs to be considered relative to operating cost savings resulting from the capital expenditures.

(3) Cost Effectiveness – This may be the most difficult to quantify. If measured at a micro level, certain areas of an operation may be more effectively performed by a private corporation. As discussed in Chapter 8, there may be areas where private entities may perform more effectively. At the macro level, it is questionable whether the net cost to consumers would be less expensive under a privatized service. Capitalization of the assets, higher overall interest costs and return on investment may cause the overall costs to be considerably higher than the present costs paid by consumers. If potential increased costs were used by municipalities to overcome any potential infrastructure deficiencies, it may more than overcome these costs at a less expensive cost to consumers. Recent observations by the Province of Ontario have indicated that privatization of the Hydro Industry may result in higher costs to the consumer. Similar experiences may arise through privatization of water.

Based on the above, the merits of moving towards privatization must be measured before proceeding in this direction. Significant increases in water prices can have a negative impact on high-usage industrial users, hence, a negative economic impact. In addition, private initiatives may be attainable for large municipal systems, however, there are many small operations, especially in the north, where private initiatives may not be of interest because of the small size of the operation.

9.6 Regionalization

Chapter 8 provided an example of a recent regionalization of water systems within the Ontario context. Regionalization occurred within Regional municipalities in the 1970's. Consolidation of these systems allowed for more specialized staff, a broader rate based to address issues and costs, a better planned allocation of resources to municipalities, standardization of quality of service levels, etc. Similar benefits have been observed in the case of Chatham-Kent.

Recent trends in the area of Solid Waste, Land Ambulance, and in some cases, Ontario Works/Childcare/Assisted Housing have been broadened, providing services elevated to the upper tier level. A similar direction for water service may provide cost effectiveness and a higher standard of service provision. Consideration of this approach may provide higher cost savings and a more standardized level of service without the need to move towards privatization.

9.7 Conclusion

The state of water service in Ontario is currently under great scrutiny. Ontario has generally been considered a leader in water delivery throughout the world, however, because of recent events, has come under close scrutiny. Analysing any service provided by private or public corporations will give rise to commentary on quality or cost effectiveness. Where municipalities have been criticized for various matters, over time, private companies have not been without similar criticism. Devalued share prices and bankruptcies are a sign that private companies are not removed from poor decision making or errors.

The current examination of the water service should give rise to discussion and debate on the most effective way of providing a much needed resource to Ontario consumers. As the condition of municipal water systems, management and quality will vary across jurisdictions, the overall direction of this process should be to strengthen the system in the most cost effective way possible. Provincial regulation and monitoring will continue to be needed under either a municipally-operated system or privately-operated system. Consideration of how the systems are operated (privately/publicly) should be closely considered. Opportunities may be there for some combination thereof. As well, a movement towards moving this responsibility to the upper tier in some cases, may also assist in this objective. Any and all opportunities should be considered, with the outcome always with direct consideration of the best interest of the water consumer.

APPENDIX A

DEBT CAPACITY OF MUNICIPALITIES WITH WATER SERVICES

ADDITIONAL DEBT CAPACITY CALCULATION BY MUNICIPALITY
(1997$)

Municipality	Population	Households	Own Fund Revenues			Debt Charges		Additional Debt Which Can Be Issued		Does the Municipality Have Municipal	
			Total Revenues	Less: Ontario Grants	Net Revenues	Total Debt Charges	Debt as a % of Net Revenues	10 Year	20 Year	Water	Sewer
	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Metropolitan Toronto R	2,183,655	928,039	3,661,919	1,176,727	2,485,192	167,875	6.8%	3,184,653	4,803,570	YES	YES
Toronto C	590,838	296,435	675,870	23,380	652,490	44,359	6.8%	834,148	1,258,186	YES	YES
Etobicoke C	302,451	122,664	191,540	6,738	184,802	14,852	8.0%	220,182	332,112	YES	YES
Scarborough C	507,680	188,693	235,675	14,121	221,554	1,612	0.7%	377,703	569,708	YES	YES
North York C	549,115	214,907	329,304	16,046	313,259	6,383	2.0%	505,215	762,041	YES	YES
York C	134,977	59,151	69,086	5,608	63,478	5,572	8.8%	72,325	109,092	YES	YES
East York B	98,594	46,189	52,921	5,288	47,633	3,221	6.8%	61,017	92,035	YES	YES
Durham R	421,824	160,374	325,288	97,507	227,781	6,696	2.9%	352,929	532,340	YES	YES
Oshawa C	127,813	51,431	75,721	4,439	71,281	2,959	4.2%	104,382	157,445	NO	YES
Ajax T	58,854	21,033	28,170	1,200	26,970	755	2.8%	42,052	63,429	NO	YES
Clarington T	53,842	20,764	24,455	1,434	23,021	860	3.7%	34,385	51,865	NO	YES
Pickering T	70,733	24,631	36,200	2,203	33,997	0	0.0%	59,692	90,037	NO	YES
Whitby T	67,039	24,787	35,541	1,784	33,757	1,044	3.1%	51,942	78,346	NO	YES
Brock Tp	10,991	4,787	5,488	836	4,652	229	4.9%	6,557	9,890	NO	NO
Scugog Tp	17,880	7,198	6,257	512	5,745	33	0.6%	9,857	14,869	NO	NO
Uxbridge Tp	14,672	5,743	6,730	516	6,214	3	0.1%	10,889	16,424	NO	NO
Haldimand - Norfolk R	96,586	41,966	77,020	28,528	48,493	3,044	6.3%	63,769	96,186	YES	YES
Nanticoke C	22,401	9,514	7,851	969	6,882	176	2.6%	10,846	16,360	NO	YES
Dunnville T	11,908	5,296	4,616	554	4,062	103	2.5%	6,406	9,662	NO	NO
Haldimand T	21,151	8,688	8,185	1,185	7,000	28	0.4%	12,096	18,245	NO	NO
Simcoe T	14,896	6,427	8,866	453	8,413	338	4.0%	12,396	18,697	NO	YES
Delhi Tp	15,134	6,967	5,253	507	4,746	81	1.7%	7,762	11,708	NO	NO
Norfolk Tp	11,096	5,074	4,519	893	3,626	37	1.0%	6,109	9,215	NO	NO
Halton R	315,557	119,069	206,753	40,667	166,086	19,539	11.8%	154,399	232,887	YES	YES
Burlington C	128,453	50,858	72,852	4,512	68,340	3,521	5.2%	95,270	143,700	NO	YES
Halton Hills T	38,763	14,332	16,833	1,229	15,604	732	4.7%	22,260	33,576	NO	YES
Milton T	30,278	10,552	15,494	1,244	14,251	731	5.1%	19,892	30,004	NO	YES
Oakville T	118,063	43,327	76,517	3,882	72,635	2,947	4.1%	106,845	161,159	NO	YES
Hamilton - Wentworth R	452,745	185,620	487,846	151,643	336,203	26,766	8.0%	402,341	606,871	YES	YES
Hamilton C	315,109	135,142	182,658	7,228	175,430	15,610	8.9%	198,398	299,253	YES	YES
Stoney Creek C	51,865	18,765	23,070	610	22,460	1,510	6.7%	28,830	43,485	NO	YES
Ancaster T	22,496	7,814	10,612	923	9,689	873	9.0%	10,879	16,409	NO	YES
Dundas T	22,154	8,697	10,205	443	9,762	785	8.0%	11,627	17,538	NO	NO
Flamborough T	30,972	11,574	13,733	737	12,996	1,617	12.4%	11,460	17,285	NO	YES
Glanbrook Tp	10,149	3,628	4,336	264	4,072	98	2.4%	6,461	9,745	NO	NO
Niagara R	390,260	165,129	321,926	102,748	219,178	25,132	11.5%	208,336	314,244	YES	YES

ADDITIONAL DEBT CAPACITY CALCULATION BY MUNICIPALITY
(1997$)

Municipality	Population	Households	Own Fund Revenues			Debt Charges		Additional Debt Which Can Be Issued		Does the Municipality Have Municipal	
			Total Revenues	Less: Ontario Grants	Net Revenues	Total Debt Charges	Debt as a % of Net Revenues	10 Year	20 Year	Water	Sewer
	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Niagara Falls C	74,915	31,249	52,279	2,255	50,024	1,994	4.0%	73,831	111,363	YES	YES
Port Colborne C	18,389	8,246	12,285	929	11,357	881	7.8%	13,755	20,747	YES	YES
St Catharines C	125,887	54,595	81,900	5,081	76,818	5,754	7.5%	94,469	142,493	YES	YES
Welland C	47,423	20,094	29,510	1,688	27,822	2,179	7.8%	33,551	50,606	YES	YES
Thorold C	17,586	7,102	10,865	499	10,366	90	0.9%	17,569	26,500	YES	YES
Fort Erie T	26,221	13,068	17,643	1,250	16,393	1,181	7.2%	20,490	30,907	YES	YES
Grimsby T	18,925	7,059	9,149	507	8,641	474	5.5%	11,847	17,870	YES	YES
Lincoln T	17,318	6,692	9,196	610	8,587	277	3.2%	13,129	19,803	YES	YES
Niagara-on-the-Lake T	12,695	5,189	8,824	431	8,394	684	8.1%	9,937	14,989	YES	YES
Pelham T	13,702	5,242	4,103	415	3,688	102	2.8%	5,757	8,683	YES	YES
Wainfleet Tp	6,139	2,903	2,655	452	2,202	88	4.0%	3,251	4,903	NO	NO
West Lincoln Tp	11,060	3,690	5,129	946	4,183	239	5.7%	5,663	8,542	YES	YES
Ottawa - Carleton R	692,898	291,452	983,545	334,738	648,806	64,659	10.0%	685,098	1,033,367	YES	YES
Ottawa C	313,971	151,351	261,776	6,562	255,214	38,447	15.1%	178,091	268,623	NO	YES
Vanier C	17,562	9,042	8,882	1,607	7,275	327	4.5%	10,474	15,799	NO	YES
Kanata C	43,362	15,830	21,659	697	20,963	1,416	6.8%	26,861	40,516	NO	YES
Nepean C	111,264	41,897	54,342	2,042	52,300	267	0.5%	89,955	135,684	NO	YES
Gloucester C	99,024	35,054	49,054	2,462	46,592	1,348	2.9%	72,344	109,121	YES	YES
Rockcliffe Park V	2,183	767	2,287	101	2,186	0	0.0%	3,838	5,789	NO	YES
Cumberland Tp	44,630	15,003	16,268	1,077	15,190	278	1.8%	24,721	37,288	NO	YES
Goulbourn Tp	17,964	6,623	6,195	386	5,808	291	5.0%	8,155	12,301	NO	YES
Osgoode Tp	15,207	5,346	6,185	1,001	5,184	123	2.4%	8,241	12,430	NO	NO
Rideau Tp	12,106	4,294	4,337	431	3,906	112	2.9%	6,074	9,162	NO	NO
West Carleton Tp	15,625	6,245	6,094	1,045	5,049	240	4.8%	7,180	10,830	NO	YES
Peel R	753,116	271,072	471,051	109,195	361,856	472	0.1%	632,067	953,377	YES	YES
Brampton C	236,319	81,932	128,161	4,992	123,168	10,070	8.2%	145,544	219,531	NO	YES
Mississauga C	480,170	175,878	282,043	15,636	266,407	339	0.1%	465,401	701,987	NO	YES
Caledon T	36,627	13,262	19,937	1,093	18,844	623	3.3%	28,715	43,313	NO	YES
Sudbury R	154,576	68,177	171,116	78,984	92,132	2,599	2.8%	143,521	216,480	YES	YES
Sudbury C	87,087	41,406	58,732	9,093	49,639	0	0.0%	87,161	131,470	NO	YES
Capreol T	3,621	1,508	1,516	488	1,028	0	0.0%	1,805	2,722	NO	YES
Nickel Centre T	12,129	4,860	4,539	1,414	3,125	46	1.5%	5,162	7,786	NO	NO
Onaping Falls T	5,068	2,131	3,208	683	2,525	159	6.3%	3,321	5,009	YES	YES
Rayside - Balfour T	14,816	5,903	5,950	1,762	4,188	59	1.4%	6,938	10,465	NO	NO
Valley East T	22,102	7,932	7,626	2,224	5,402	130	2.4%	8,574	12,932	NO	YES
Walden T	9,753	4,437	6,302	1,489	4,813	0	0.0%	8,450	12,746	NO	NO

ADDITIONAL DEBT CAPACITY CALCULATION BY MUNICIPALITY
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Municipality	Population	Households	Own Fund Revenues			Debt Charges		Additional Debt Which Can Be Issued		Does the Municipality Have Municipal	
			Total Revenues	Less: Ontario Grants	Net Revenues	Total Debt Charges	Debt as a % of Net Revenues	10 Year	20 Year	Water	Sewer
	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Waterloo R	383,319	153,591	288,254	95,219	193,036	33,437	17.3%	104,104	157,026	YES	YES
Cambridge C	95,260	36,599	60,802	3,031	57,771	2,072	3.6%	86,888	131,058	YES	YES
Kitchener C	167,540	69,815	122,836	5,693	117,144	5,267	4.5%	168,701	254,460	YES	YES
Waterloo C	75,274	31,283	48,078	2,569	45,509	4,418	9.7%	48,880	73,728	YES	YES
North Dumfries Tp	7,090	2,643	3,492	165	3,328	0	0.0%	5,843	8,813	YES	YES
Wellesley Tp	8,309	2,536	2,635	375	2,260	146	6.5%	2,942	4,437	YES	YES
Wilmot Tp	13,135	4,843	5,839	343	5,496	783	14.2%	4,151	6,261	YES	YES
Woolwich Tp	16,711	5,872	7,227	459	6,769	179	2.6%	10,627	16,029	YES	YES
York R	518,010	184,530	280,321	77,159	203,162	23,649	11.6%	190,632	287,539	YES	YES
Vaughan C	116,360	38,588	93,939	2,670	91,269	3,769	4.1%	133,788	201,800	YES	YES
Aurora T	30,392	11,649	18,766	549	18,216	0	0.0%	31,986	48,246	YES	YES
Markham T	151,518	50,361	97,502	5,214	92,289	608	0.7%	157,780	237,987	YES	NO
Newmarket T	49,645	18,389	27,933	1,143	26,790	1,305	4.9%	37,875	57,129	YES	YES
Richmond Hill T	85,970	32,092	71,166	1,904	69,262	829	1.2%	115,793	174,656	YES	YES
Whitchurch - Stouffville T	17,796	6,793	10,118	427	9,691	174	1.8%	15,796	23,826	YES	YES
East Gwillimbury T	18,023	6,180	8,514	456	8,058	510	6.3%	10,567	15,939	YES	YES
Georgina T	30,802	14,301	17,089	1,100	15,989	1,264	7.9%	19,195	28,953	YES	YES
King Tp	17,504	6,177	8,281	456	7,825	14	0.2%	13,644	20,580	YES	YES
Muskoka D	45,017	41,688	50,613	16,065	34,548	4,927	14.3%	26,056	39,302	YES	YES
Bracebridge T	11,675	7,145	6,454	453	6,001	131	2.2%	9,616	14,504	NO	NO
Gravenhurst T	8,941	7,344	5,032	427	4,605	70	1.5%	7,594	11,455	NO	NO
Huntsville T	14,342	8,725	7,597	792	6,806	230	3.4%	10,332	15,584	NO	YES
Georgian Bay Tp	2,074	4,923	2,553	142	2,410	0	0.0%	4,232	6,383	NO	NO
Lake of Bays Tp	2,588	4,438	2,685	216	2,469	0	0.0%	4,335	6,539	NO	NO
Muskoka Lakes Tp	5,397	9,113	5,656	482	5,175	0	0.0%	9,086	13,705	NO	NO
Oxford Co	94,959	37,389	57,798	20,628	37,170	1,719	4.6%	53,191	80,231	YES	YES
Woodstock C	31,252	13,269	23,936	1,564	22,372	2,388	10.7%	22,507	33,948	NO	YES
Ingersoll T	9,545	3,929	7,072	446	6,626	576	8.7%	7,591	11,449	NO	YES
Tillsonburg T	12,729	5,700	11,268	536	10,732	1,548	14.4%	7,969	12,020	NO	YES
Blandford - Blenheim Tp	7,157	2,589	3,216	468	2,748	110	4.0%	4,051	6,110	NO	NO
East Zorra - Tavistock Tp	7,370	2,486	2,768	435	2,334	287	12.3%	2,080	3,137	NO	NO
Norwich Tp	10,302	3,500	4,479	337	4,142	95	2.3%	6,603	9,959	NO	YES
South-West Oxford Tp	8,422	2,905	2,660	478	2,182	89	4.1%	3,210	4,841	NO	NO
Zorra Tp	8,182	3,011	4,604	603	4,002	323	8.1%	4,755	7,172	NO	NO
Brant Co	28,569	10,622	18,175	11,186	6,989	77	1.1%	11,732	17,695	NO	NO
Brantford C	81,074	33,956	114,509	24,572	89,938	6,709	7.5%	110,803	167,130	YES	YES

ADDITIONAL DEBT CAPACITY CALCULATION BY MUNICIPALITY
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	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Paris T	8,552	3,326	9,333	2,736	6,597	798	12.1%	5,977	9,015	YES	YES
Brantford Tp	6,241	2,197	3,521	285	3,236	7	0.2%	5,633	8,497	YES	YES
Burford Tp	5,712	2,053	2,624	329	2,295	39	1.7%	3,757	5,666	NO	NO
South Dumfries Tp	5,103	2,019	2,793	152	2,641	77	2.9%	4,098	6,181	YES	YES
Oakland Tp	1,336	477	443	67	375	0	0.0%	659	994	NO	NO
Onondaga Tp	1,625	550	690	79	611	7	1.1%	1,024	1,545	NO	NO
Bruce Co	62,053	34,975	29,214	17,090	12,124	0	0.0%	21,288	32,110	NO	NO
Chesley T	1,815	850	1,256	279	977	0	0.0%	1,716	2,588	YES	YES
Kincardine T	6,318	2,778	6,111	638	5,473	319	5.8%	7,368	11,114	YES	YES
Port Elgin T	6,772	3,000	7,261	982	6,279	378	6.0%	8,374	12,630	YES	YES
Southampton T	3,065	1,980	3,931	620	3,311	13	0.4%	5,722	8,631	YES	YES
Walkerton T	4,735	2,056	4,165	515	3,650	44	1.2%	6,102	9,204	YES	YES
Wiarton T	2,291	1,087	2,856	374	2,482	239	9.6%	2,679	4,041	YES	YES
Hepworth V	462	186	120	13	108	0	0.0%	189	285	NO	NO
Lion's Head V	520	308	502	45	457	13	2.9%	710	1,070	YES	NO
Lucknow V	1,162	560	861	145	716	0	0.0%	1,256	1,895	YES	YES
Mildmay V	1,069	461	781	127	654	118	18.0%	323	487	YES	YES
Paisley V	1,024	475	1,269	198	1,072	92	8.6%	1,234	1,861	YES	YES
Tara V	863	376	608	90	518	0	0.0%	909	1,371	YES	YES
Teeswater V	1,027	463	930	127	803	0	0.0%	1,411	2,128	YES	NO
Tiverton V	796	335	553	86	467	0	0.0%	820	1,237	YES	YES
Albemarle Tp	1,127	1,437	832	220	613	0	0.0%	1,076	1,622	NO	NO
Amabel Tp	3,577	3,805	2,668	435	2,234	35	1.6%	3,675	5,543	YES	NO
Arran Tp	1,621	581	977	437	539	108	19.9%	191	289	NO	NO
Brant Tp	3,267	1,373	1,444	481	963	46	4.7%	1,371	2,068	YES	NO
Bruce Tp	1,515	808	2,505	960	1,545	29	1.9%	2,507	3,781	YES	NO
Carrick Tp	2,365	790	1,390	583	807	34	4.2%	1,179	1,779	YES	NO
Culross Tp	1,647	589	990	391	599	20	3.4%	911	1,374	NO	NO
Eastnor Tp	1,280	1,774	1,183	258	925	16	1.7%	1,513	2,282	NO	YES
Elderslie Tp	1,158	432	791	392	399	49	12.2%	359	542	NO	NO
Greenock Tp	1,684	609	960	428	532	60	11.2%	515	776	YES	NO
Kincardine Tp	2,894	1,401	1,787	477	1,311	39	3.0%	2,026	3,056	YES	YES
Kinloss Tp	1,172	466	787	453	333	63	18.8%	146	220	NO	NO
Lindsay Tp	484	855	603	216	387	0	0.0%	679	1,025	NO	NO
St Edmunds Tp	929	1,400	1,102	210	892	0	0.0%	1,566	2,362	NO	YES
Saugeen Tp	1,759	1,186	1,204	222	982	27	2.8%	1,534	2,314	YES	NO

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	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Huron Tp	3,655	2,554	2,741	540	2,201	214	9.7%	2,365	3,567	YES	YES
Dufferin Co	40,997	16,431	16,713	7,517	9,196	263	2.9%	14,299	21,568	NO	NO
Orangeville T	19,036	7,496	14,235	836	13,399	118	0.9%	22,701	34,240	YES	YES
Shelburne T	3,450	1,413	2,944	253	2,691	0	0.0%	4,724	7,126	YES	YES
Amaranth Tp	3,187	1,151	1,533	484	1,049	101	9.6%	1,132	1,708	YES	NO
East Garafraxa Tp	2,012	716	1,054	172	882	18	2.0%	1,422	2,145	YES	NO
Melancthon Tp	2,286	994	1,081	476	605	25	4.2%	885	1,335	NO	NO
Mono Tp	5,980	2,330	2,673	269	2,404	0	0.0%	4,221	6,367	YES	NO
Mulmur Tp	2,509	1,366	1,471	462	1,009	103	10.2%	1,049	1,583	YES	NO
East Luther Grand Valley Tp	2,537	965	1,826	299	1,526	34	2.3%	2,438	3,678	YES	YES
Elgin Co	44,335	17,479	26,030	13,132	12,898	0	0.0%	22,647	34,160	NO	NO
St Thomas C	29,758	13,156	40,267	10,112	30,155	2,876	9.5%	32,753	49,402	YES	YES
Aylmer T	6,275	2,663	5,096	349	4,747	308	6.5%	6,172	9,309	YES	YES
Belmont V	1,474	567	994	46	949	0	0.0%	1,665	2,512	YES	YES
Dutton V	1,198	483	1,080	75	1,006	149	14.8%	721	1,087	YES	YES
Port Burwell V	882	460	751	159	592	86	14.5%	436	658	YES	YES
Port Stanley V	2,183	1,317	2,422	276	2,147	282	13.1%	1,789	2,699	YES	YES
Springfield V	669	236	155	33	122	0	0.0%	215	324	NO	YES
Vienna V	443	169	236	47	190	0	0.0%	333	502	YES	YES
West Lorne V	1,367	607	1,242	89	1,153	31	2.7%	1,809	2,729	YES	YES
Bayham Tp	4,152	1,564	1,768	324	1,444	28	1.9%	2,342	3,532	YES	NO
South Dorchester Tp	1,806	653	759	210	550	30	5.4%	757	1,142	NO	NO
Dunwich Tp	2,279	881	1,385	347	1,038	263	25.4%	(26)	(39)	YES	NO
Malahide Tp	5,671	1,903	2,365	240	2,125	115	5.4%	2,926	4,414	YES	NO
Southwold Tp	4,431	1,477	1,682	296	1,387	59	4.2%	2,023	3,051	YES	YES
Yarmouth Tp	7,733	2,736	2,928	455	2,473	152	6.2%	3,274	4,939	YES	YES
Aldborough Tp (new)	3,772	1,763	2,825	416	2,409	410	17.0%	1,350	2,036	YES	YES
Essex Co	143,809	55,487	58,008	23,835	34,173	889	2.6%	53,763	81,093	NO	NO
Windsor C	193,657	82,905	343,762	63,767	279,995	22,300	8.0%	335,016	505,321	YES	YES
Amherstburg T	9,707	3,771	8,068	651	7,417	675	9.1%	8,285	12,497	YES	YES
Belle River T	4,353	1,674	4,411	960	3,451	184	5.3%	4,768	7,192	YES	YES
Essex T	6,745	2,599	4,836	434	4,402	375	8.5%	5,096	7,686	YES	YES
Harrow T	2,656	1,015	2,035	122	1,914	18	1.0%	3,233	4,876	YES	YES
Kingsville T	5,841	2,328	4,164	382	3,782	269	7.1%	4,750	7,165	YES	YES
Leamington T	14,629	6,172	14,945	1,557	13,388	888	6.6%	17,273	26,054	YES	YES
Tecumseh T	11,913	4,285	7,184	307	6,878	387	5.6%	9,362	14,121	YES	YES

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	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
LaSalle T	18,797	6,827	13,911	1,373	12,538	857	6.8%	15,994	24,125	YES	YES
St Clair Beach V	3,495	1,298	2,345	127	2,218	10	0.4%	3,827	5,772	NO	YES
Anderdon Tp	5,596	1,923	3,786	238	3,548	170	4.8%	5,037	7,598	YES	YES
Colchester North Tp	3,891	1,435	1,173	207	966	101	10.4%	988	1,490	YES	YES
Colchester South Tp	5,625	2,617	3,880	296	3,584	614	17.1%	1,984	2,993	YES	YES
Gosfield North Tp	4,500	1,561	2,375	114	2,261	151	6.7%	2,912	4,392	YES	YES
Gosfield South Tp	7,604	2,940	3,827	321	3,506	233	6.7%	4,518	6,814	YES	NO
Maidstone Tp	10,714	4,104	5,421	407	5,014	484	9.7%	5,404	8,151	NO	YES
Malden Tp	3,220	1,324	2,390	146	2,244	145	6.5%	2,920	4,404	YES	YES
Mersea Tp	8,494	3,306	5,599	447	5,152	595	11.6%	4,865	7,339	YES	YES
Pelee Tp	261	357	1,148	148	1,000	25	2.5%	1,578	2,381	YES	NO
Rochester Tp	4,384	1,673	1,877	227	1,650	306	18.6%	747	1,126	YES	NO
Sandwich South Tp	6,260	2,146	4,135	180	3,955	153	3.9%	5,870	8,855	YES	YES
Tilbury North Tp	3,469	1,494	2,263	189	2,073	382	18.4%	961	1,450	YES	YES
Tilbury West Tp	1,655	638	1,297	172	1,125	152	13.5%	908	1,369	YES	YES
Frontenac Co	71,099	35,114	19,520	10,559	8,961	0	0.0%	15,735	23,733	NO	NO
Kingston C	55,939	28,656	106,550	32,216	74,334	6,533	8.8%	84,641	127,668	YES	YES
Barrie Tp	706	1,318	613	149	464	4	0.8%	787	1,186	NO	NO
Bedford Tp	945	2,160	1,032	338	693	0	0.0%	1,216	1,834	NO	NO
Clarendon and Miller Tp	483	1,072	546	222	324	0	0.0%	569	858	NO	NO
Hinchinbrooke Tp	1,118	925	757	403	354	0	0.0%	621	936	NO	NO
Howe Island Tp	421	322	378	173	205	2	1.0%	346	522	NO	NO
Kennebec Tp	733	1,049	810	451	360	0	0.0%	631	952	NO	NO
Kingston Tp	39,679	15,552	27,048	5,030	22,018	1,631	7.4%	27,206	41,036	YES	YES
Loughborough Tp	4,436	2,266	1,995	472	1,523	63	4.2%	2,230	3,364	NO	NO
Olden Tp	830	710	712	394	318	0	0.0%	559	843	NO	NO
Oso Tp	1,189	949	948	448	499	24	4.7%	711	1,072	NO	NO
Palmerston & N & S Canonto Tp	348	649	403	117	286	12	4.1%	420	633	NO	NO
Pittsburgh Tp	10,675	3,293	13,953	875	13,078	14	0.1%	22,865	34,488	YES	YES
Portland Tp	4,529	1,979	2,223	786	1,437	0	0.0%	2,522	3,805	NO	NO
Storrington Tp	3,914	2,059	2,053	424	1,629	0	0.0%	2,860	4,313	NO	YES
Wolfe Island Tp	1,093	811	828	338	490	22	4.4%	709	1,070	NO	NO
Grey Co	61,124	32,313	29,642	17,942	11,699	0	0.0%	20,543	30,986	NO	NO
Owen Sound C	20,399	9,460	29,518	4,098	25,420	1,483	5.8%	34,223	51,620	YES	YES
Durham T	2,546	1,184	2,200	351	1,849	0	0.0%	3,247	4,898	YES	YES
Hanover T	6,538	2,992	6,036	390	5,647	318	5.6%	7,678	11,582	YES	YES

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	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Meaford T	4,330	2,142	5,020	614	4,405	278	6.3%	5,785	8,726	YES	YES
Thornbury T	1,612	1,125	2,233	305	1,928	2	0.1%	3,370	5,083	YES	YES
Chatsworth V	482	210	319	50	269	0	0.0%	472	712	YES	NO
Dundalk V	1,566	707	1,247	166	1,081	0	0.0%	1,898	2,863	YES	YES
Flesherton V	575	292	552	66	486	6	1.2%	811	1,223	NO	YES
Markdale V	1,193	643	1,469	238	1,231	78	6.3%	1,617	2,439	YES	YES
Neustadt V	542	250	396	42	353	13	3.6%	531	800	YES	YES
Shallow Lake V	457	185	291	22	269	0	0.0%	472	712	YES	NO
Artemesia Tp	2,506	1,887	1,275	475	800	0	0.0%	1,405	2,119	NO	NO
Bentinck Tp	3,396	1,490	1,208	389	819	7	0.8%	1,391	2,099	NO	NO
Collingwood Tp	3,251	3,892	4,411	331	4,080	284	7.0%	5,169	7,797	YES	YES
Derby Tp	2,856	1,065	1,096	180	916	13	1.5%	1,513	2,283	YES	YES
Egremont Tp	2,391	1,046	1,120	459	661	70	10.5%	671	1,013	NO	NO
Euphrasia Tp	1,374	979	1,249	338	911	28	3.1%	1,403	2,116	YES	YES
Glenelg Tp	2,006	1,085	1,044	454	590	2	0.4%	1,022	1,541	NO	NO
Holland Tp	2,748	1,327	1,395	668	727	17	2.3%	1,160	1,749	YES	NO
Keppel Tp	3,751	2,082	1,622	419	1,203	1	0.1%	2,108	3,179	YES	NO
Normanby Tp	2,550	1,055	1,286	433	853	99	11.6%	806	1,216	NO	NO
Osprey Tp	1,996	1,028	1,009	477	532	0	0.0%	934	1,409	YES	NO
Proton Tp	1,783	830	1,119	609	511	26	5.0%	716	1,080	NO	NO
St Vincent Tp	2,296	1,288	1,256	284	972	26	2.7%	1,524	2,298	NO	NO
Sarawak Tp	2,727	1,102	1,080	179	901	0	0.0%	1,582	2,386	YES	NO
Sullivan Tp	2,655	1,052	1,105	565	540	26	4.8%	766	1,155	NO	NO
Sydenham Tp	2,997	1,375	1,351	506	844	10	1.1%	1,415	2,134	YES	NO
Haliburton Co	13,895	20,630	13,046	8,921	4,125	0	0.0%	7,244	10,926	NO	NO
Anson Hindon and Minden Tp	3,160	3,286	2,991	245	2,746	546	19.9%	986	1,488	YES	YES
Cardiff Tp	674	1,360	763	102	661	0	0.0%	1,160	1,750	NO	NO
Dysart et al Tp	4,702	6,426	3,640	644	2,996	0	0.0%	5,261	7,936	NO	YES
Glamorgan Tp	619	1,448	608	90	518	18	3.4%	784	1,183	NO	NO
Lutterworth Tp	900	1,657	666	93	573	0	0.0%	1,007	1,518	NO	NO
Monmouth Tp	767	1,045	606	131	476	0	0.0%	836	1,260	NO	NO
Sherborne McClintock et al Tp	553	1,949	779	105	674	21	3.1%	1,034	1,560	NO	NO
Snowdon Tp	803	884	438	74	364	12	3.2%	558	841	NO	NO
Stanhope Tp	1,174	2,257	983	159	824	46	5.5%	1,126	1,699	NO	NO
Bicroft Tp	543	318	447	57	390	0	0.0%	685	1,032	YES	YES
Hastings Co	56,708	29,743	61,170	47,202	13,968	0	0.0%	24,527	36,995	NO	NO

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(1997$)

			Own Fund Revenues			Debt Charges		Additional Debt		Does the Municipality	
								Which Can Be Issued		Have Municipal	
Municipality	Population	Households	Total Revenues	Less: Ontario Grants	Net Revenues	Total Debt Charges	Debt as a % of Net Revenues	10 Year	20 Year	Water	Sewer
	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Belleville C	34,954	16,499	59,712	16,823	42,890	4,712	11.0%	42,214	63,674	YES	YES
Trenton C	16,404	7,304	17,082	1,117	15,965	2,901	18.2%	7,658	11,551	YES	YES
Deseronto T	1,728	754	1,870	222	1,648	155	9.4%	1,804	2,721	YES	YES
Bancroft T	2,280	1,194	2,725	338	2,387	372	15.6%	1,575	2,376	YES	YES
Deloro V	156	66	76	9	67	0	0.0%	118	178	YES	YES
Frankford V	1,971	863	2,287	201	2,086	376	18.0%	1,023	1,543	YES	YES
Madoc V	1,296	637	1,176	142	1,034	107	10.4%	1,061	1,600	YES	YES
Marmora V	1,442	648	1,216	181	1,034	0	0.0%	1,816	2,739	YES	YES
Stirling V	1,998	841	1,609	183	1,426	8	0.6%	2,449	3,694	YES	YES
Tweed V	1,477	733	1,700	179	1,521	35	2.3%	2,422	3,654	YES	YES
Bangor Wicklow and McClure Tp	1,007	1,578	891	333	559	0	0.0%	981	1,480	NO	NO
Carlow Tp	422	313	301	163	138	0	0.0%	242	366	NO	NO
Dungannon Tp	1,285	671	633	107	526	11	2.0%	850	1,282	NO	NO
Elzevir and Grimsthorpe Tp	731	511	404	197	207	0	0.0%	364	548	NO	NO
Faraday Tp	1,416	1,264	631	159	472	40	8.4%	550	830	NO	NO
Herschel Tp	1,226	1,214	686	177	509	27	5.4%	701	1,057	NO	NO
Hungerford Tp	3,024	1,553	1,288	692	596	5	0.9%	1,009	1,521	NO	NO
Huntingdon Tp	2,216	1,176	837	271	565	2	0.3%	979	1,476	NO	NO
Limerick Tp	322	542	333	73	260	0	0.0%	456	688	NO	NO
Madoc Tp	1,831	786	776	380	396	0	0.0%	696	1,050	NO	NO
Marmora and Lake Tp	2,054	1,677	968	264	705	0	0.0%	1,237	1,866	NO	NO
Mayo Tp	384	321	265	130	134	0	0.0%	236	356	NO	NO
Monteagle Tp	1,186	665	479	255	223	0	0.0%	392	592	NO	NO
Rawdon Tp	2,618	1,018	1,031	476	555	29	5.3%	769	1,160	NO	NO
Sidney Tp	12,890	5,190	6,103	643	5,460	32	0.6%	9,364	14,124	YES	YES
Thurlow Tp	7,327	2,793	3,461	267	3,194	190	5.9%	4,274	6,447	YES	YES
Tudor and Cashel Tp	598	763	389	144	245	0	0.0%	430	649	NO	NO
Tyendinaga Tp	3,201	1,234	1,021	398	623	3	0.5%	1,074	1,620	NO	NO
Wollaston Tp	622	738	430	118	312	0	0.0%	548	826	NO	NO
Huron Co	59,068	26,515	26,917	11,190	15,728	0	0.0%	27,616	41,655	NO	NO
Clinton T	3,182	1,425	2,792	385	2,407	126	5.2%	3,340	5,039	YES	YES
Exeter T	4,384	1,920	3,741	321	3,420	141	4.1%	5,014	7,563	YES	YES
Goderich T	7,500	3,354	7,478	710	6,769	0	0.0%	11,885	17,927	YES	YES
Seaforth T	2,223	986	2,387	294	2,093	151	7.2%	2,614	3,943	YES	YES
Wingham T	2,921	1,286	3,861	580	3,281	110	3.4%	4,988	7,523	YES	YES
Bayfield V	847	675	777	83	694	14	2.0%	1,123	1,694	YES	YES

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Municipality	Population	Households	Own Fund Revenues			Debt Charges		Additional Debt Which Can Be Issued		Does the Municipality Have Municipal	
			Total Revenues	Less: Ontario Grants	Net Revenues	Total Debt Charges	Debt as a % of Net Revenues	10 Year	20 Year	Water	Sewer
	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Blyth V	964	409	786	72	714	0	0.0%	1,254	1,891	YES	YES
Brussels V	1,127	483	1,137	102	1,035	0	0.0%	1,818	2,742	YES	YES
Hensall V	1,210	479	848	48	800	0	0.0%	1,404	2,118	YES	YES
Zurich V	845	365	639	152	486	12	2.6%	766	1,156	YES	YES
Ashfield Tp	1,836	1,349	1,243	387	856	282	32.9%	(474)	(716)	YES	NO
Colborne Tp	2,030	1,127	814	176	638	52	8.1%	758	1,143	YES	NO
Goderich Tp	2,503	1,412	1,008	315	692	63	9.1%	775	1,170	YES	NO
Grey Tp	2,036	663	1,299	586	713	151	21.2%	191	289	NO	NO
Hay Tp	2,184	1,518	1,303	241	1,062	169	15.9%	675	1,019	YES	YES
Howick Tp	3,546	1,265	1,927	604	1,323	61	4.6%	1,895	2,859	YES	NO
Hullett Tp	1,843	628	915	311	604	70	11.7%	566	854	NO	NO
McKillop Tp	1,427	445	1,045	302	743	242	32.6%	(397)	(598)	NO	NO
Morris Tp	1,771	636	1,113	402	711	85	12.0%	647	977	YES	NO
Stanley Tp	1,613	1,114	1,162	160	1,002	247	24.7%	23	35	YES	NO
Stephen Tp	4,182	1,864	2,560	278	2,282	134	5.9%	3,067	4,626	YES	YES
Tuckersmith Tp	3,036	1,088	1,799	562	1,237	150	12.1%	1,118	1,686	YES	NO
Turnberry Tp	1,739	612	920	280	639	42	6.5%	830	1,251	NO	NO
Usborne Tp	1,529	534	934	250	684	60	8.8%	777	1,172	NO	NO
East Wawanosh Tp	1,137	398	752	231	521	35	6.7%	669	1,009	YES	NO
West Wawanosh Tp	1,453	480	647	293	354	140	39.5%	(360)	(543)	YES	NO
Kent Co	62,159	26,120	36,191	20,728	15,463	0	0.0%	27,152	40,955	NO	NO
Chatham C	39,815	17,867	51,392	12,071	39,321	1,681	4.3%	57,240	86,337	YES	YES
Blenheim T	4,567	1,961	4,166	313	3,853	311	8.1%	4,584	6,914	YES	YES
Bothwell T	912	411	920	91	829	115	13.9%	646	975	YES	NO
Dresden T	2,492	1,047	3,133	316	2,817	115	4.1%	4,137	6,239	YES	YES
Ridgetown T	3,234	1,426	3,056	455	2,601	140	5.4%	3,586	5,409	YES	YES
Tilbury T	4,254	1,730	4,500	658	3,842	450	11.7%	3,584	5,406	YES	YES
Wallaceburg T	10,992	4,713	13,331	1,243	12,088	1,328	11.0%	11,898	17,947	YES	YES
Erieau V	482	342	323	27	297	2	0.5%	510	769	YES	NO
Erie Beach V	236	125	111	13	98	2	1.9%	159	239	YES	NO
Highgate V	418	176	130	16	115	10	8.8%	130	197	NO	NO
Thamesville V	925	402	734	132	603	0	0.0%	1,058	1,596	YES	YES
Wheatley V	1,557	642	2,175	126	2,049	170	8.3%	2,404	3,625	YES	YES
Camden Tp	2,067	806	966	222	744	120	16.2%	462	697	YES	NO
Chatham Tp	5,987	2,519	3,199	403	2,796	389	13.9%	2,177	3,284	YES	NO
Dover Tp	3,973	1,594	2,718	409	2,309	244	10.6%	2,342	3,533	YES	YES

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Municipality	Population	Households	Own Fund Revenues			Debt Charges		Additional Debt Which Can Be Issued		Does the Municipality Have Municipal	
			Total Revenues	Less: Ontario Grants	Net Revenues	Total Debt Charges	Debt as a % of Net Revenues	10 Year	20 Year	Water	Sewer
	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Harwich Tp	6,116	2,793	5,468	559	4,910	636	12.9%	4,157	6,270	YES	NO
Howard Tp	2,249	947	1,588	312	1,277	198	15.5%	850	1,282	NO	NO
Orford Tp	1,283	501	880	287	593	184	31.1%	(254)	(383)	NO	NO
Raleigh Tp	5,209	1,934	2,185	371	1,814	258	14.2%	1,375	2,074	YES	YES
Romney Tp	1,946	823	1,189	137	1,052	96	9.1%	1,173	1,770	NO	YES
Tilbury East Tp	2,273	817	1,702	384	1,319	314	23.8%	109	165	YES	YES
Zone Tp	987	411	392	130	261	30	11.4%	249	376	NO	NO
Lambton Co	52,419	22,820	63,595	31,166	32,429	3,021	9.3%	35,722	53,881	YES	NO
Sarnia C	69,657	30,322	54,188	3,036	51,152	3,923	7.7%	62,261	93,912	YES	YES
Forest T	2,795	1,238	2,407	306	2,101	24	1.2%	3,517	5,304	YES	YES
Petrolia T	4,809	1,853	4,530	649	3,881	169	4.4%	5,627	8,487	YES	YES
Bosanquet T	4,899	3,598	3,702	460	3,242	237	7.3%	4,028	6,075	YES	NO
Alvinston V	977	420	667	83	583	0	0.0%	1,024	1,545	YES	YES
Arkona V	511	196	445	50	394	56	14.2%	299	452	YES	YES
Grand Bend V	954	1,096	1,506	95	1,411	85	6.0%	1,884	2,841	YES	YES
Oil Springs V	728	294	406	83	322	42	12.9%	274	413	YES	YES
Point Edward V	2,277	968	2,800	151	2,649	304	11.5%	2,518	3,798	YES	YES
Thedford V	814	339	488	129	359	23	6.4%	469	707	YES	YES
Watford V	1,633	666	1,219	173	1,046	70	6.7%	1,342	2,024	YES	YES
Wyoming V	2,077	811	1,089	169	920	88	9.6%	995	1,501	YES	YES
Brooke Tp	1,877	656	1,801	436	1,365	209	15.3%	929	1,401	YES	NO
Dawn Tp	1,503	542	1,674	327	1,347	305	22.7%	222	335	YES	NO
Enniskillen Tp	3,159	1,120	2,453	545	1,908	419	22.0%	407	614	YES	NO
Euphemia Tp	1,076	412	791	374	418	80	19.3%	168	254	YES	NO
Moore Tp	10,684	4,033	8,266	347	7,919	530	6.7%	10,182	15,358	YES	YES
Plympton Tp	5,119	2,014	3,642	548	3,094	442	14.3%	2,328	3,511	YES	YES
Sombra Tp	4,081	1,724	3,019	380	2,639	346	13.1%	2,206	3,328	YES	YES
Warwick Tp	2,446	840	1,973	449	1,525	484	31.8%	(725)	(1,094)	YES	YES
Lanark Co	54,451	27,323	25,845	15,675	10,171	425	4.2%	14,875	22,436	NO	NO
Smiths Falls ST	9,001	4,079	14,764	3,338	11,425	2,228	19.5%	4,414	6,658	YES	YES
Almonte T	4,352	1,822	4,258	591	3,667	196	5.4%	5,060	7,632	YES	YES
Carleton Place T	7,483	3,346	9,454	760	8,694	2,455	28.2%	(1,975)	(2,979)	YES	YES
Perth T	5,524	2,894	6,255	611	5,644	0	0.0%	9,911	14,949	YES	YES
Bathurst Tp	2,971	1,274	1,080	299	780	9	1.1%	1,311	1,977	NO	NO
Beckwith Tp	4,689	2,302	1,910	335	1,575	53	3.4%	2,395	3,612	NO	NO
North Burgess Tp	1,134	1,241	556	87	469	1	0.2%	818	1,234	NO	NO

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			Total Revenues	Less: Ontario Grants	Net Revenues	Total Debt Charges	Debt as a % of Net Revenues	10 Year	20 Year	Water	Sewer
	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Drummond Tp	2,866	1,594	1,231	272	959	5	0.5%	1,649	2,487	NO	NO
North Elmsley Tp	2,824	1,333	835	136	700	0	0.0%	1,229	1,853	NO	NO
Montague Tp	2,830	1,199	1,539	491	1,048	33	3.2%	1,605	2,421	YES	YES
Pakenham Tp	1,872	835	1,242	200	1,042	45	4.3%	1,512	2,280	NO	NO
Ramsay Tp	4,011	1,579	1,833	365	1,468	67	4.6%	2,108	3,180	NO	NO
South Sherbrooke Tp	670	865	539	77	462	2	0.4%	797	1,202	NO	NO
Lanark Highlands Tp	4,224	2,960	3,359	1,446	1,912	5	0.2%	3,326	5,017	NO	NO
Leeds & Grenville Co	68,840	34,450	35,055	24,802	10,253	191	1.9%	16,663	25,133	NO	NO
Brockville C	21,103	9,933	36,142	7,598	28,544	3,924	13.7%	22,556	34,022	YES	YES
Gananoque ST	4,973	2,364	7,627	1,511	6,116	383	6.3%	8,050	12,142	YES	YES
Prescott ST	3,999	2,066	5,293	304	4,989	498	10.0%	5,264	7,940	YES	YES
Kemptville T	2,721	1,363	3,299	365	2,933	436	14.9%	2,088	3,150	YES	YES
Athens V	947	419	583	66	517	58	11.3%	499	752	NO	NO
Cardinal V	1,580	788	1,607	95	1,512	123	8.2%	1,789	2,698	YES	YES
Merrickville V	995	462	1,301	135	1,166	0	0.0%	2,047	3,088	YES	YES
Newboro V	283	170	170	21	149	3	1.7%	245	369	NO	NO
Westport V	645	358	832	76	756	19	2.5%	1,196	1,804	YES	YES
Augusta Tp	7,285	2,836	2,144	361	1,783	8	0.5%	3,073	4,636	NO	NO
Bastard and South Burgess Tp	2,508	1,887	1,550	323	1,227	19	1.6%	2,018	3,044	NO	NO
North Crosby Tp	983	1,071	620	163	457	35	7.7%	556	839	NO	NO
South Crosby Tp	1,771	1,606	894	184	710	61	8.6%	818	1,234	NO	NO
Edwardsburgh Tp	4,566	1,968	2,356	297	2,059	58	2.8%	3,211	4,843	YES	YES
Elizabethtown Tp	7,240	2,772	2,030	588	1,442	71	4.9%	2,036	3,071	NO	NO
South Elmsley Tp	3,312	1,926	835	164	671	0	0.0%	1,179	1,778	NO	NO
Front of Escott Tp	1,194	778	520	95	426	0	0.0%	748	1,128	NO	NO
South Gower Tp	2,280	939	1,275	93	1,182	24	2.1%	1,905	2,873	YES	NO
Kitley Tp	2,236	939	995	308	686	7	1.0%	1,158	1,747	NO	NO
Front of Leeds & Lansdowne Tp	4,798	2,571	1,837	201	1,636	92	5.6%	2,226	3,358	YES	NO
Rear of Leeds & Lansdowne Tp	2,689	1,997	1,206	256	950	36	3.8%	1,416	2,136	NO	NO
Oxford (on Rideau) Tp	6,160	2,518	1,587	314	1,273	80	6.3%	1,672	2,522	YES	NO
Wolford Tp	1,455	671	602	163	439	17	3.8%	655	988	NO	NO
Front of Yonge Tp	2,337	1,141	727	125	602	3	0.5%	1,037	1,564	NO	NO
Rear of Yonge and Escott Tp	1,883	840	440	139	300	23	7.5%	368	555	NO	NO
Lennox and Addington Co	35,531	17,136	20,853	12,325	8,528	320	3.8%	12,727	19,198	NO	NO
Napanee T	4,955	2,546	5,958	1,033	4,926	420	8.5%	5,701	8,599	YES	YES
Bath V	1,274	577	2,135	66	2,069	61	3.0%	3,202	4,829	NO	YES

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			Total Revenues	Less: Ontario Grants	Net Revenues	Total Debt Charges	Debt as a % of Net Revenues	10 Year	20 Year	Water	Sewer
	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Newburgh V	712	295	212	38	174	4	2.3%	278	419	NO	NO
Adolphustown Tp	848	653	300	54	246	18	7.3%	307	462	NO	NO
Amherst Island Tp	386	262	1,739	1,347	392	7	1.7%	642	969	NO	NO
Camden East Tp	4,518	1,805	1,770	634	1,136	7	0.6%	1,943	2,931	YES	NO
Denbigh Abinger and Ashby Tp	628	1,096	491	270	221	27	12.4%	196	295	NO	NO
Ernestown Tp	11,343	4,338	7,445	546	6,899	132	1.9%	11,189	16,876	YES	YES
North Fredericksburgh Tp	3,095	1,275	904	144	760	37	4.9%	1,072	1,617	YES	YES
South Fredericksburgh Tp	1,147	518	804	94	710	17	2.4%	1,129	1,703	YES	NO
Kaladar Anglesea & Effingham Tp	1,429	1,279	733	167	566	0	0.0%	994	1,499	NO	NO
Richmond Tp	3,829	1,481	1,534	283	1,251	5	0.4%	2,160	3,259	NO	YES
Sheffield Tp	1,367	1,011	948	234	714	24	3.4%	1,084	1,635	NO	NO
Middlesex Co	61,407	22,547	24,176	14,098	10,078	358	3.6%	15,181	22,898	NO	YES
London C	320,099	141,056	445,417	129,677	315,740	18,262	5.8%	426,140	642,768	YES	YES
Parkhill T	1,677	667	1,287	169	1,119	0	0.0%	1,964	2,963	YES	YES
Strathroy T	10,981	4,393	8,987	866	8,122	1,562	19.2%	3,288	4,960	NO	YES
Ailsa Craig V	947	383	586	78	508	0	0.0%	892	1,346	YES	YES
Glencoe V	2,054	884	2,182	463	1,720	222	12.9%	1,460	2,202	YES	YES
Lucan V	1,845	708	1,959	165	1,794	244	13.6%	1,436	2,166	YES	YES
Newbury V	404	169	233	20	213	15	7.0%	270	407	YES	YES
Wardsville V	423	175	182	55	126	5	4.0%	187	282	NO	YES
Adelaide Tp	2,000	621	868	126	742	192	25.9%	(47)	(71)	YES	NO
Biddulph Tp	2,194	743	1,045	208	836	76	9.0%	937	1,414	YES	YES
Caradoc Tp	6,117	2,248	2,320	460	1,860	226	12.2%	1,675	2,526	YES	NO
Delaware Tp	2,465	751	1,102	210	892	79	8.8%	1,013	1,528	YES	NO
North Dorchester Tp	8,144	2,973	3,429	465	2,964	147	5.0%	4,170	6,290	YES	YES
Ekfrid Tp	2,202	830	1,037	386	650	109	16.7%	379	572	YES	NO
Lobo Tp	5,464	1,819	2,460	269	2,192	149	6.8%	2,802	4,226	YES	YES
London Tp	4,741	1,752	3,092	629	2,463	181	7.3%	3,057	4,611	YES	YES
McGillivray Tp	1,843	623	1,423	269	1,154	211	18.2%	548	827	YES	NO
Metcalfe Tp	1,033	341	452	148	304	51	16.9%	173	260	NO	NO
Mosa Tp	1,304	485	716	349	366	48	13.0%	307	464	YES	NO
West Nissouri Tp	3,347	1,217	1,412	223	1,189	155	13.0%	1,003	1,512	YES	NO
East Williams Tp	1,311	450	786	189	597	136	22.8%	93	140	YES	YES
West Williams Tp	911	315	752	168	584	45	7.6%	713	1,076	YES	YES
Northumberland Co	75,448	34,798	38,799	22,089	16,711	1,665	10.0%	17,647	26,617	NO	NO
Campbellford T	3,305	1,690	3,505	320	3,185	360	11.3%	3,063	4,620	YES	YES

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			Total Revenues	Less: Ontario Grants	Net Revenues	Total Debt Charges	Debt as a % of Net Revenues	10 Year	20 Year	Water	Sewer
	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Cobourg T	15,037	6,718	19,198	692	18,506	1,793	9.7%	19,903	30,021	YES	YES
Port Hope T	11,040	4,615	11,133	1,361	9,773	466	4.8%	13,889	20,950	YES	YES
Brighton T	4,199	2,002	2,205	374	1,831	104	5.7%	2,482	3,743	YES	YES
Colborne V	1,968	865	1,578	477	1,101	34	3.1%	1,692	2,553	YES	YES
Hastings V	1,106	535	1,222	177	1,045	62	5.9%	1,402	2,115	YES	YES
Alnwick Tp	973	951	450	97	353	0	0.0%	621	936	YES	NO
Brighton Tp	3,418	1,611	1,505	248	1,256	40	3.2%	1,926	2,906	NO	NO
Cramahe Tp	3,060	1,437	1,599	404	1,194	3	0.3%	2,074	3,129	NO	NO
Haldimand Tp	4,131	1,744	2,278	543	1,735	105	6.0%	2,310	3,484	YES	NO
Hamilton Tp	9,470	4,290	4,000	574	3,426	309	9.0%	3,843	5,796	YES	YES
Hope Tp	3,612	1,443	1,659	281	1,378	73	5.3%	1,907	2,877	NO	NO
Murray Tp	6,841	2,742	2,855	393	2,462	24	1.0%	4,153	6,264	NO	NO
Percy Tp	3,062	1,482	1,720	454	1,266	14	1.1%	2,125	3,205	YES	YES
Seymour Tp	4,226	2,673	1,637	503	1,134	8	0.7%	1,933	2,915	NO	NO
Perth Co	42,038	15,265	12,955	7,418	5,537	79	1.4%	9,169	13,830	NO	NO
Stratford C	27,563	12,186	38,940	5,247	33,692	1,934	5.7%	45,576	68,744	YES	YES
St Marys ST	5,493	2,378	7,452	807	6,645	547	8.2%	7,829	11,809	YES	YES
Listowel T	5,262	2,306	5,647	337	5,310	910	17.1%	2,934	4,426	YES	YES
Mitchell T	3,518	1,470	2,834	322	2,512	155	6.2%	3,325	5,015	YES	YES
Milverton V	1,539	621	967	230	738	28	3.8%	1,097	1,655	YES	YES
Blanshard Tp	1,953	646	1,045	195	850	89	10.5%	866	1,305	NO	NO
Downie Tp	2,338	811	950	196	754	96	12.8%	647	975	YES	NO
North Easthope Tp	2,102	712	967	191	776	59	7.6%	951	1,435	YES	NO
South Easthope Tp	1,837	631	657	118	539	52	9.6%	584	880	NO	NO
Ellice Tp	3,104	1,030	1,536	347	1,189	253	21.3%	311	470	YES	NO
Elma Tp	3,978	1,351	2,255	396	1,858	212	11.4%	1,777	2,680	YES	NO
Fullarton Tp	1,627	532	921	244	678	115	17.0%	380	573	NO	YES
Hibbert Tp	1,340	461	1,254	220	1,034	105	10.2%	1,076	1,623	NO	NO
Logan Tp	2,184	690	1,201	282	919	208	22.7%	151	228	NO	NO
Mornington Tp	3,381	907	1,215	269	946	223	23.6%	93	141	YES	NO
Wallace Tp	2,382	719	1,380	223	1,158	82	7.1%	1,458	2,199	YES	NO
Peterborough Co	49,417	31,227	12,366	5,880	6,486	0	0.0%	11,389	17,179	NO	NO
Peterborough C	66,494	29,742	109,886	30,672	79,213	6,858	8.7%	90,921	137,140	YES	YES
Havelock V	1,307	573	1,491	609	882	66	7.5%	1,087	1,639	YES	YES
Lakefield V	2,387	1,097	4,831	803	4,028	414	10.3%	4,163	6,280	YES	YES
Norwood V	1,349	614	1,838	610	1,228	304	24.7%	23	35	YES	YES

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			Total Revenues	Less: Ontario Grants	Net Revenues	Total Debt Charges	Debt as a % of Net Revenues	10 Year	20 Year	Water	Sewer
	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Millbrook V	1,210	524	1,308	164	1,145	32	2.8%	1,788	2,697	YES	YES
Asphodel Tp	2,418	1,042	1,482	650	832	5	0.6%	1,425	2,149	YES	NO
Belmont and Methuen Tp	2,877	3,478	1,885	707	1,178	17	1.4%	1,950	2,941	NO	NO
Burleigh and Anstruther Tp	1,391	2,196	1,545	291	1,254	0	0.0%	2,202	3,322	NO	NO
Chandos Tp	633	1,418	832	195	636	0	0.0%	1,117	1,685	NO	NO
Douro Tp	3,511	1,371	1,380	400	980	0	0.0%	1,720	2,595	NO	NO
Dummer Tp	2,847	1,854	1,487	414	1,073	1	0.0%	1,881	2,837	NO	YES
Ennismore Tp	4,239	1,984	2,257	390	1,867	0	0.0%	3,278	4,945	YES	NO
Galway and Cavendish Tp	685	2,123	1,174	175	999	0	0.0%	1,754	2,646	NO	NO
Harvey Tp	3,059	3,262	2,684	613	2,071	60	2.9%	3,217	4,852	YES	NO
North Monaghan Tp	1,158	413	452	67	385	0	0.0%	676	1,020	NO	NO
Otonabee Tp	5,060	2,008	2,248	719	1,529	41	2.7%	2,395	3,613	YES	NO
Smith Tp	8,692	4,514	3,548	923	2,625	0	0.0%	4,609	6,952	YES	YES
Cavan Tp	5,344	1,905	2,108	320	1,788	46	2.5%	2,819	4,252	NO	NO
South Monaghan Tp	1,250	851	557	134	424	13	3.0%	656	990	NO	NO
Prescott and Russell Co	70,505	27,717	29,980	19,060	10,920	70	0.6%	18,682	28,178	NO	NO
Hawkesbury T	9,871	4,355	10,694	497	10,197	1,252	12.3%	9,113	13,746	YES	YES
Rockland T	7,547	2,875	5,373	754	4,619	1,291	28.0%	(959)	(1,447)	YES	YES
Vankleek Hill T	1,941	873	1,830	318	1,512	26	1.7%	2,474	3,731	YES	YES
Casselman V	2,586	1,029	1,584	86	1,498	50	3.4%	2,277	3,435	YES	YES
L'Orignal V	1,971	826	1,078	118	960	58	6.1%	1,276	1,925	YES	YES
St. Isidore V	740	336	804	49	755	0	0.0%	1,326	2,000	YES	YES
Caledonia Tp	1,441	550	1,228	326	902	271	30.1%	(322)	(485)	NO	YES
Cambridge Tp	6,002	2,160	2,484	391	2,093	443	21.2%	564	851	YES	YES
Clarence Tp	10,069	3,654	4,446	780	3,666	388	10.6%	3,708	5,594	YES	YES
East Hawkesbury Tp	3,153	1,338	1,633	320	1,313	275	20.9%	374	565	NO	YES
West Hawkesbury Tp	2,957	1,139	1,048	209	838	28	3.3%	1,279	1,929	YES	YES
Longueuil Tp	1,336	605	658	59	600	12	2.0%	969	1,462	NO	NO
South Plantagenet Tp	1,788	685	1,544	441	1,103	208	18.9%	474	715	NO	NO
Russell Tp	11,417	3,938	6,213	437	5,775	775	13.4%	4,696	7,084	YES	YES
Alfred and Plantagenet Tp	7,686	3,354	4,314	874	3,440	403	11.7%	3,209	4,840	YES	YES
Prince Edward Co	22,504	11,331	10,637	6,239	4,398	0	0.0%	7,722	11,648	NO	NO
Picton T	4,077	2,161	4,361	492	3,869	60	1.6%	6,371	9,610	YES	YES
Bloomfield V	667	280	443	82	361	65	18.0%	176	266	YES	YES
Wellington V	1,470	804	1,479	83	1,396	241	17.2%	760	1,146	YES	YES
Ameliasburgh Tp	5,119	2,335	1,926	306	1,620	84	5.2%	2,256	3,403	YES	NO

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			Total Revenues	Less: Ontario Grants	Net Revenues	Total Debt Charges	Debt as a % of Net Revenues	10 Year	20 Year	Water	Sewer
	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Athol Tp	1,290	687	339	107	232	4	1.9%	376	567	NO	NO
Hallowell Tp	4,101	1,849	1,240	265	975	14	1.4%	1,615	2,435	NO	YES
Hillier Tp	1,700	901	607	170	436	0	0.1%	763	1,151	NO	NO
North Marysburgh Tp	1,165	753	413	66	347	12	3.6%	522	787	NO	NO
South Marysburgh Tp	848	552	398	89	309	1	0.3%	537	810	NO	NO
Sophiasburgh Tp	2,067	1,009	1,423	115	1,309	4	0.3%	2,273	3,429	NO	NO
Renfrew Co	77,036	36,944	28,987	14,452	14,535	1,226	8.4%	16,910	25,506	NO	NO
Pembroke C	13,445	6,161	18,447	3,150	15,298	1,518	9.9%	16,201	24,438	YES	YES
Arnprior T	6,376	3,036	8,443	1,324	7,119	909	12.8%	6,114	9,222	YES	YES
Deep River T	4,278	1,891	5,147	342	4,805	193	4.0%	7,083	10,684	YES	YES
Renfrew T	7,665	3,555	8,481	2,212	6,269	179	2.9%	9,750	14,707	YES	YES
Petawawa T	14,446	3,828	6,268	1,313	4,954	341	6.9%	6,306	9,512	YES	YES
Barry's Bay V	1,055	531	1,379	277	1,103	28	2.5%	1,740	2,625	YES	YES
Beachburg V	803	357	504	96	408	25	6.0%	544	821	YES	NO
Braeside V	546	222	280	38	241	0	0.0%	424	639	YES	NO
Chalk River V	923	389	709	192	517	19	3.6%	777	1,172	YES	YES
Cobden V	902	461	948	215	734	122	16.7%	429	648	YES	YES
Eganville V	1,255	596	1,573	387	1,186	214	18.0%	580	875	YES	YES
Killaloe V	656	324	620	196	424	29	6.9%	540	815	YES	YES
Admaston Tp	1,528	755	823	426	397	18	4.5%	571	861	NO	NO
North Algona Tp	596	590	347	132	214	0	0.0%	376	568	NO	NO
South Algona Tp	328	375	310	186	124	0	0.0%	218	329	NO	NO
Alice and Fraser Tp	3,955	1,482	1,605	513	1,092	75	6.8%	1,394	2,102	NO	NO
Bagot and Blythfield Tp	1,256	1,401	1,044	365	678	1	0.2%	1,181	1,781	NO	NO
Bromley Tp	1,170	455	806	345	461	46	9.9%	490	739	NO	NO
Brougham Tp	227	401	424	87	338	0	0.0%	593	895	NO	NO
Brudenell and Lyndoch Tp	734	560	536	263	273	0	0.0%	479	723	NO	NO
Grattan Tp	1,248	661	772	484	288	0	0.0%	505	762	NO	NO
Griffith and Matawatchan Tp	339	552	409	153	256	0	0.0%	450	679	NO	NO
Hagarty and Richards Tp	1,604	1,206	870	391	479	0	0.0%	842	1,269	NO	NO
Head Clara and Maria Tp	264	314	268	89	178	0	0.0%	313	472	NO	NO
Horton Tp	2,325	1,144	1,109	420	689	45	6.6%	890	1,342	NO	NO
McNab Tp	5,523	2,439	2,389	874	1,515	2	0.1%	2,645	3,990	NO	NO
Radcliffe Tp	1,058	974	533	230	303	0	0.0%	531	801	NO	NO
Raglan Tp	834	493	415	210	204	20	9.8%	218	328	NO	NO
Rolph Buchanan Wylie & McKay Tp	1,822	977	1,469	225	1,244	0	0.0%	2,184	3,295	YES	YES

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	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Ross Tp	1,873	891	997	417	580	6	1.1%	973	1,468	YES	NO
Sebastopol Tp	559	585	420	220	199	0	0.0%	350	528	NO	NO
Sherwood Jones and Burns Tp	2,047	1,253	973	452	520	0	0.0%	914	1,378	NO	NO
Westmeath Tp	2,442	1,341	1,314	554	761	29	3.9%	1,130	1,705	NO	NO
Wilberforce Tp	1,796	990	936	477	459	0	0.0%	806	1,215	NO	NO
Stafford & Pembroke Tps	4,603	1,915	1,930	431	1,499	97	6.5%	1,947	2,936	YES	YES
Simcoe Co	205,990	99,541	99,412	50,528	48,884	1,751	3.6%	73,534	110,915	NO	NO
Barrie C	71,413	29,475	86,680	11,425	75,255	3,325	4.4%	108,786	164,087	YES	YES
Orillia C	26,072	11,627	37,808	8,154	29,654	2,215	7.5%	36,513	55,075	YES	YES
Collingwood T	14,673	7,839	18,322	737	17,585	1,311	7.5%	21,670	32,686	YES	YES
Midland T	14,284	6,170	12,606	707	11,899	1,028	8.6%	13,671	20,621	YES	YES
Penetanguishene T	6,794	2,893	5,912	666	5,246	838	16.0%	3,328	5,019	YES	YES
Wasaga Beach T	7,463	7,174	9,353	1,178	8,175	1,772	21.7%	1,907	2,877	YES	YES
Innisfil T	22,523	10,742	12,865	1,004	11,860	1,137	9.6%	12,841	19,369	YES	YES
Bradford - West Gwillimbury T	18,222	6,520	18,784	621	18,163	722	4.0%	26,820	40,454	YES	YES
New Tecumseth T	20,767	8,269	13,833	1,048	12,785	1,061	8.3%	14,995	22,617	YES	YES
Essa Tp	15,745	4,495	3,738	836	2,902	130	4.5%	4,180	6,305	YES	YES
Tiny Tp	8,204	8,398	4,335	981	3,353	136	4.0%	4,936	7,445	YES	NO
Adjala-Tosorontio Tp	8,896	3,019	3,037	554	2,483	40	1.6%	4,078	6,151	YES	NO
Clearview Tp	11,684	5,044	6,238	1,773	4,466	345	7.7%	5,421	8,176	YES	YES
Oro-Medonte Tp	15,516	7,232	6,507	1,262	5,245	17	0.3%	9,092	13,714	YES	YES
Ramara Tp	7,331	5,437	5,012	921	4,091	29	0.7%	6,978	10,525	YES	YES
Severn Tp	9,757	5,723	6,075	819	5,255	93	1.8%	8,572	12,930	YES	YES
Springwater Tp	14,073	5,230	5,826	851	4,975	369	7.4%	6,144	9,267	YES	YES
Tay Tp	10,058	5,356	6,179	1,246	4,933	391	7.9%	5,918	8,926	YES	YES
Stormont,Dundas & Glengarry Co	60,739	25,034	25,289	17,758	7,531	0	0.0%	13,224	19,946	NO	NO
Cornwall C	46,802	20,222	82,100	26,526	55,574	5,765	10.4%	57,091	86,113	YES	YES
Alexandria T	3,272	1,573	4,163	183	3,980	307	7.7%	4,830	7,286	YES	YES
Chesterville V	1,458	637	1,347	112	1,236	184	14.9%	874	1,319	YES	YES
Finch V	441	202	366	32	335	2	0.6%	573	865	YES	YES
Iroquois V	1,206	564	1,242	59	1,183	8	0.6%	2,025	3,055	YES	YES
Lancaster V	727	335	588	121	467	63	13.5%	378	570	YES	YES
Maxville V	826	327	628	77	551	1	0.3%	958	1,445	NO	YES
Morrisburg V	2,362	1,108	1,936	129	1,807	116	6.4%	2,354	3,551	YES	YES
Winchester V	2,275	963	2,131	101	2,029	163	8.0%	2,418	3,647	YES	YES
Charlottenburgh Tp	7,670	3,139	3,833	605	3,228	258	8.0%	3,855	5,814	YES	YES

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	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Cornwall Tp	6,608	2,519	3,052	289	2,763	220	8.0%	3,305	4,986	YES	YES
Finch Tp	2,582	950	1,174	331	842	187	22.2%	163	246	YES	YES
Kenyon Tp	3,336	1,430	1,718	474	1,244	133	10.7%	1,248	1,882	YES	NO
Lancaster Tp	3,684	1,766	1,542	342	1,200	0	0.0%	2,108	3,179	NO	NO
Lochiel Tp	2,921	1,195	1,776	727	1,048	108	10.3%	1,081	1,631	YES	YES
Matilda Tp	3,321	1,301	1,779	318	1,461	204	14.0%	1,132	1,707	NO	NO
Mountain Tp	3,319	1,271	1,199	399	799	0	0.0%	1,403	2,117	NO	NO
Osnabruck Tp	4,568	1,862	2,709	518	2,191	115	5.3%	3,038	4,583	YES	YES
Roxborough Tp	3,383	1,304	2,146	555	1,590	383	24.1%	105	158	YES	YES
Williamsburgh Tp	3,335	1,346	1,377	306	1,072	70	6.6%	1,388	2,094	NO	YES
Winchester Tp	3,445	1,242	1,461	451	1,009	201	19.9%	361	545	NO	YES
Victoria Co	62,944	33,917	34,921	21,706	13,215	747	5.7%	17,955	27,083	NO	NO
Lindsay T	16,590	7,662	20,328	913	19,414	2,621	13.5%	15,677	23,647	YES	YES
Bobcaygeon V	2,472	1,464	2,122	83	2,039	204	10.0%	2,150	3,242	YES	YES
Fenelon Falls V	1,806	1,029	1,905	104	1,801	0	0.0%	3,163	4,771	YES	YES
Omemee V	1,097	521	651	76	575	0	0.0%	1,009	1,522	YES	YES
Sturgeon Point V	89	127	96	12	84	0	0.0%	148	224	YES	NO
Woodville V	688	295	641	40	601	92	15.3%	411	621	YES	NO
Bexley Tp	1,209	1,276	1,024	93	931	25	2.7%	1,456	2,196	NO	YES
Carden Tp	803	788	623	132	491	1	0.2%	855	1,289	NO	NO
Dalton Tp	426	299	226	90	136	0	0.0%	239	361	NO	NO
Eldon Tp	2,804	1,677	1,074	346	728	19	2.5%	1,149	1,732	YES	NO
Emily Tp	6,254	2,681	2,103	381	1,723	171	9.9%	1,821	2,747	YES	NO
Fenelon Tp	5,567	3,773	1,922	434	1,488	0	0.0%	2,613	3,941	YES	NO
Laxton Digby and Longford Tp	994	1,047	593	103	489	0	0.0%	859	1,296	NO	NO
Mariposa Tp	6,839	2,841	2,889	635	2,254	85	3.8%	3,362	5,072	YES	NO
Ops Tp	4,107	1,659	1,646	179	1,467	18	1.2%	2,449	3,695	NO	NO
Somerville Tp	2,092	2,296	1,080	199	880	59	6.7%	1,133	1,709	NO	YES
Verulam Tp	3,950	2,479	1,287	309	978	4	0.4%	1,689	2,547	YES	NO
Manvers Tp	5,157	2,003	2,054	402	1,652	4	0.2%	2,875	4,337	YES	NO
Wellington Co	69,348	27,269	38,325	22,265	16,059	392	2.4%	25,448	38,384	NO	NO
Guelph C	89,257	37,622	105,733	14,896	90,837	10,020	11.0%	89,125	134,431	YES	YES
Fergus T	8,008	3,353	11,404	362	11,042	1,482	13.4%	8,976	13,539	YES	YES
Harriston T	1,900	815	1,440	251	1,189	0	0.0%	2,088	3,150	YES	YES
Mount Forest T	4,164	1,977	3,091	427	2,664	0	0.0%	4,678	7,056	YES	YES
Palmerston T	2,350	959	1,764	266	1,498	0	0.0%	2,630	3,968	YES	YES

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			Total Revenues	Less: Ontario Grants	Net Revenues	Total Debt Charges	Debt as a % of Net Revenues	10 Year	20 Year	Water	Sewer
	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Arthur V	1,960	824	1,743	140	1,603	111	6.9%	2,038	3,074	YES	YES
Clifford V	722	326	839	66	774	0	0.0%	1,358	2,049	YES	YES
Drayton V	1,333	496	873	38	835	25	3.0%	1,288	1,943	YES	YES
Elora V	3,116	1,277	2,278	118	2,161	122	5.7%	2,934	4,425	YES	YES
Erin V	2,414	927	1,388	65	1,323	28	2.2%	2,123	3,202	YES	NO
Arthur Tp	2,472	904	1,267	342	924	255	27.6%	(166)	(250)	NO	NO
Eramosa Tp	5,764	2,108	2,547	196	2,351	169	7.2%	2,939	4,433	YES	YES
Erin Tp	7,468	2,808	2,589	401	2,188	41	1.9%	3,557	5,366	YES	NO
West Garafraxa Tp	3,341	1,587	1,920	236	1,684	59	3.5%	2,539	3,830	NO	NO
Guelph Tp	3,045	1,069	1,302	73	1,230	10	0.8%	2,089	3,151	YES	YES
West Luther Tp	1,114	419	619	232	387	93	24.1%	23	35	NO	NO
Maryborough Tp	2,573	1,213	1,519	140	1,380	180	13.1%	1,157	1,746	YES	YES
Minto Tp	2,357	870	1,505	377	1,129	106	9.4%	1,238	1,867	NO	NO
Nichol Tp	3,999	1,349	1,466	138	1,328	26	1.9%	2,151	3,244	NO	YES
Peel Tp	4,294	1,293	1,510	286	1,224	141	11.6%	1,156	1,743	NO	NO
Pilkington Tp	2,369	810	1,074	147	926	14	1.5%	1,527	2,303	NO	NO
Puslinch Tp	4,585	1,885	1,975	337	1,637	2	0.1%	2,859	4,312	NO	NO
Algoma D											
Sault Ste Marie C	78,399	32,711	126,193	49,815	76,379	8,363	11.0%	75,371	113,686	YES	YES
Elliot Lake C	12,387	6,272	27,734	14,037	13,697	472	3.4%	20,737	31,279	YES	YES
Blind River T	3,911	1,893	4,213	1,439	2,774	63	2.3%	4,432	6,685	YES	YES
Bruce Mines T	589	311	775	213	563	37	6.5%	730	1,102	YES	YES
Thessalon T	1,371	616	2,429	1,232	1,197	81	6.8%	1,532	2,310	YES	YES
Hilton Beach V	223	157	403	45	359	47	13.0%	302	456	YES	YES
Iron Bridge V	716	367	522	213	309	0	0.0%	543	819	NO	NO
Day and Bright Additional Tp	255	409	324	165	159	0	0.0%	279	421	NO	NO
Hilton Tp	223	300	341	102	240	0	0.0%	421	635	NO	NO
Jocelyn Tp	248	337	350	96	254	45	17.5%	133	201	NO	NO
Johnson Tp	667	502	819	289	530	21	3.9%	784	1,183	YES	YES
Laird Tp	986	505	561	239	322	4	1.2%	538	811	NO	NO
Macdonald Meredith et al Tp	1,504	747	849	292	556	9	1.6%	913	1,377	NO	NO
Michipicoten Tp	3,744	1,750	5,618	529	5,089	672	13.2%	4,217	6,361	YES	YES
Plummer Additional Tp	664	487	825	394	430	28	6.6%	558	841	YES	NO
Prince Tp	965	430	521	163	358	22	6.2%	473	713	NO	NO
St Joseph Tp	1,108	903	1,053	376	677	45	6.7%	871	1,314	YES	YES
Tarbutt and Tarbutt Add'nl Tp	432	394	386	94	292	27	9.4%	321	484	NO	NO

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	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Thessalon Tp	709	405	508	252	255	2	0.7%	436	658	NO	NO
Thompson Tp	105	113	144	68	76	0	0.0%	133	201	NO	NO
Hornepayne Tp	1,424	604	2,785	866	1,919	5	0.3%	3,331	5,024	YES	YES
The North Shore Tp	665	388	743	360	382	0	0.0%	671	1,013	YES	YES
White River Tp	933	459	1,737	495	1,243	47	3.7%	1,855	2,799	YES	YES
Shedden Tp	809	405	784	317	467	0	0.0%	821	1,238	YES	YES
Dubreuilville Tp	864	340	1,134	293	841	0	0.0%	1,477	2,227	YES	YES
Cochrane D											
Timmins C	45,692	19,133	68,791	24,834	43,957	3,501	8.0%	52,595	79,332	YES	YES
Cochrane T	4,339	1,848	6,203	1,689	4,514	1,046	23.2%	582	878	YES	YES
Hearst T	5,529	2,409	9,007	2,719	6,287	644	10.2%	6,517	9,830	YES	YES
Iroquois Falls T	5,581	2,400	6,590	1,105	5,486	1,157	21.1%	1,503	2,268	YES	YES
Kapuskasing T	9,658	4,171	20,211	9,373	10,838	1,334	12.3%	9,660	14,570	YES	YES
Smooth Rock Falls T	1,877	786	2,624	238	2,386	110	4.6%	3,418	5,156	YES	YES
Black River - Matheson Tp	3,178	1,459	4,562	1,658	2,905	20	0.7%	4,958	7,478	YES	YES
Moonbeam Tp	1,185	981	992	445	546	22	4.1%	802	1,209	YES	YES
Glackmeyer Tp	1,059	515	602	357	245	16	6.6%	316	476	NO	YES
Fauquier-Strickland Tp	671	392	1,017	266	751	32	4.2%	1,096	1,653	YES	YES
Val Rita-Harty Tp	1,085	411	869	315	554	35	6.4%	724	1,092	YES	YES
Mattice - Val Cote Tp	888	406	1,069	283	786	0	0.0%	1,381	2,082	YES	YES
Opasatika Tp	358	145	615	184	431	0	0.0%	756	1,141	YES	YES
Moosonee Dev Area Bd	1,539	669	3,279	1,254	2,025	142	7.0%	2,560	3,862	YES	YES
Kenora D											
Dryden T	6,300	2,822	20,491	6,322	14,169	171	1.2%	23,681	35,719	YES	YES
Keewatin T	1,994	929	3,950	1,978	1,972	119	6.0%	2,629	3,965	YES	YES
Kenora T	9,715	4,387	24,994	8,846	16,148	535	3.3%	24,593	37,095	YES	YES
Sioux Lookout T	3,073	1,401	7,203	2,041	5,163	501	9.7%	5,548	8,368	YES	YES
Jaffray Melick T	4,012	1,704	4,950	2,541	2,409	212	8.8%	2,739	4,132	YES	YES
Ignace Tp	1,605	909	2,300	830	1,470	73	5.0%	2,069	3,120	YES	YES
Machin Tp	1,037	638	1,175	355	820	20	2.4%	1,299	1,960	YES	NO
Red Lake Tp	2,061	969	3,871	1,238	2,633	323	12.3%	2,353	3,550	NO	YES
Ear Falls Tp	1,097	544	2,643	842	1,801	22	1.2%	3,007	4,536	YES	YES
Barclay Tp	1,416	619	760	129	631	53	8.5%	733	1,105	NO	NO
Pickle Lake Tp	489	276	1,425	525	900	0	0.0%	1,580	2,383	YES	YES
Golden Tp	2,183	974	4,105	733	3,372	203	6.0%	4,498	6,785	YES	YES
Sioux Narrows Tp	360	548	710	275	436	0	0.0%	765	1,154	NO	NO

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	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Manitoulin D											
Gore Bay T	895	412	1,031	288	743	0	0.0%	1,304	1,967	YES	YES
Little Current T	1,450	687	4,189	2,219	1,970	76	3.9%	2,926	4,414	YES	YES
Assiginack Tp	751	724	1,146	438	708	0	0.0%	1,244	1,876	YES	YES
Barrie Island Tp	59	78	93	58	35	0	0.0%	62	94	NO	NO
Billings Tp	481	584	602	217	385	4	1.2%	645	973	YES	NO
Burpee Tp	219	183	164	69	95	0	0.0%	167	252	NO	NO
Carnarvon Tp	1,043	675	1,326	423	904	6	0.7%	1,543	2,327	YES	YES
Cockburn Island Tp	2	84	113	59	54	2	3.9%	79	120	NO	NO
Gordon Tp	448	466	337	129	208	2	0.9%	352	530	YES	NO
Howland Tp	928	875	1,396	424	972	0	0.0%	1,707	2,574	YES	NO
Rutherford & George Island Tp	379	222	451	126	325	35	10.6%	328	494	YES	YES
Sandfield Tp	245	308	289	84	205	0	0.0%	359	542	NO	NO
Tehkummah Tp	339	339	466	189	277	3	1.1%	466	703	YES	NO
Nipissing D											
North Bay C	55,165	22,541	79,942	26,411	53,531	5,741	10.7%	53,671	80,954	YES	YES
Cache Bay T	673	252	467	172	295	15	5.0%	414	625	YES	NO
Mattawa T	2,428	1,045	2,114	558	1,556	124	8.0%	1,861	2,807	YES	YES
Sturgeon Falls T	6,161	2,693	16,139	9,395	6,744	631	9.4%	7,409	11,175	YES	YES
Airy Tp	796	416	530	191	339	0	0.0%	595	898	NO	NO
Bonfield Tp	2,027	949	1,096	420	677	0	0.0%	1,188	1,792	NO	NO
Caldwell Tp	1,569	791	1,475	415	1,060	18	1.7%	1,736	2,618	YES	YES
Calvin Tp	562	261	564	111	454	0	0.0%	797	1,202	NO	NO
Chisholm Tp	1,191	563	786	350	436	22	5.0%	612	923	NO	NO
East Ferris Tp	4,153	1,779	1,933	487	1,446	0	0.0%	2,538	3,829	NO	YES
Field Tp	639	389	467	188	280	17	6.2%	369	557	NO	YES
Mattawan Tp	102	80	173	44	128	0	0.0%	226	340	NO	NO
Springer Tp	2,434	1,088	1,214	362	852	62	7.3%	1,058	1,596	YES	NO
Temagami Tp	864	642	1,399	435	964	21	2.2%	1,545	2,330	YES	YES
Papineau-Cameron Tp	925	482	650	170	480	0	0.0%	843	1,271	NO	NO
Parry Sound D											
Kearney T	706	1,064	970	260	710	30	4.2%	1,037	1,564	NO	NO
Parry Sound T	5,991	2,811	8,137	1,586	6,551	580	8.9%	7,428	11,204	YES	YES
Powassan T	1,122	458	1,169	221	948	95	10.0%	999	1,507	YES	YES
Trout Creek T	669	228	332	80	252	7	2.7%	396	597	NO	NO
Burk's Falls V	909	466	840	240	599	0	0.0%	1,052	1,587	YES	YES

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	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Magnetawan V	230	150	276	56	220	0	0.0%	386	583	NO	NO
Rosseau V	284	161	211	35	175	0	0.0%	308	465	NO	NO
South River V	1,080	481	1,150	230	920	0	0.0%	1,616	2,437	YES	NO
Sundridge V	979	472	962	187	775	0	0.0%	1,361	2,053	NO	YES
Armour Tp	1,289	1,140	940	275	665	60	9.1%	744	1,122	NO	NO
Carling Tp	989	1,525	1,452	221	1,231	0	0.0%	2,161	3,259	NO	NO
Chapman Tp	594	722	533	159	374	0	0.0%	657	991	NO	NO
Christie Tp	541	916	728	171	557	0	0.0%	977	1,474	NO	NO
Foley Tp	1,427	1,380	1,717	235	1,482	0	0.0%	2,602	3,925	NO	NO
Hagerman Tp	452	868	646	124	522	0	0.0%	916	1,382	NO	NO
North Himsworth Tp	2,993	1,326	4,257	1,743	2,515	143	5.7%	3,413	5,148	YES	YES
South Himsworth Tp	1,518	615	892	271	621	37	6.0%	828	1,249	NO	NO
Humphrey Tp	1,049	1,736	1,948	261	1,687	0	0.0%	2,962	4,468	NO	NO
Joly Tp	258	214	237	87	150	0	0.0%	264	398	NO	NO
Machar Tp	868	808	1,000	297	704	13	1.9%	1,141	1,721	NO	NO
McDougall Tp	2,162	1,237	2,024	280	1,744	0	0.0%	3,062	4,619	YES	YES
McKellar Tp	854	1,287	962	244	717	0	0.0%	1,260	1,900	NO	NO
McMurrich Tp	552	533	513	188	325	0	0.0%	570	860	NO	NO
Nipissing Tp	1,501	1,107	935	339	596	2	0.3%	1,032	1,557	NO	NO
Perry Tp	2,023	1,416	1,142	341	801	0	0.0%	1,407	2,122	NO	YES
Ryerson Tp	582	527	601	205	396	0	0.0%	696	1,050	NO	NO
Strong Tp	1,349	879	954	279	675	0	0.0%	1,186	1,788	NO	NO
The Archipelago Tp	634	3,130	14,785	10,945	3,839	73	1.9%	6,227	9,392	NO	YES
Rainy River D											
Fort Frances T	8,514	3,788	25,030	8,442	16,588	747	4.5%	23,881	36,020	YES	YES
Rainy River T	921	461	1,354	443	911	113	12.5%	802	1,210	YES	YES
Alberton Tp	904	328	444	88	356	0	0.0%	624	942	NO	NO
Atikokan Tp	3,632	1,651	7,168	2,080	5,088	458	9.0%	5,714	8,619	YES	YES
Chapple Tp	893	373	1,125	584	541	45	8.4%	631	952	YES	YES
Emo Tp	1,197	506	1,399	454	945	0	0.0%	1,659	2,502	YES	YES
La Vallee Tp	1,036	370	583	309	274	0	0.0%	481	725	NO	NO
McCrosson and Tovell Tp	208	160	247	128	120	0	0.0%	211	318	NO	NO
Morley Tp	500	181	576	281	295	1	0.2%	514	775	NO	NO
Morson Tp	188	336	216	81	135	0	0.0%	238	358	NO	NO
Dawson Tp	582	320	625	470	155	0	0.0%	272	410	NO	NO

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Sudbury D											
Espanola T	5,144	2,177	6,554	772	5,783	6	0.1%	10,114	15,255	YES	YES
Massey T	1,063	482	738	269	469	44	9.3%	517	780	YES	NO
Webbwood T	554	235	282	105	177	44	24.7%	4	6	NO	YES
Baldwin Tp	646	336	343	110	233	1	0.4%	403	608	NO	NO
Casimir Jennings & Appleby Tp	1,142	711	1,599	425	1,174	111	9.5%	1,279	1,929	NO	YES
Chapleau Tp	2,872	1,225	3,614	1,038	2,577	82	3.2%	3,950	5,958	YES	YES
Cosby Mason and Martland Tp	1,493	927	1,313	401	912	25	2.8%	1,424	2,149	NO	YES
Hagar Tp	881	376	798	382	415	28	6.6%	536	808	NO	YES
Nairn Tp	400	200	385	55	330	0	0.0%	579	874	YES	NO
Ratter and Dunnet Tp	1,248	517	810	424	386	12	3.0%	595	898	YES	YES
The Spanish River Tp	1,476	763	1,170	623	547	73	13.4%	447	674	NO	YES
Thunder Bay D											
Thunder Bay C	113,562	47,586	192,223	57,909	134,315	5,557	4.1%	196,814	296,865	YES	YES
Geraldton T	2,578	1,274	6,121	2,764	3,358	422	12.6%	2,929	4,418	YES	YES
Longlac T	1,833	768	2,866	822	2,044	102	5.0%	2,874	4,335	YES	YES
Marathon T	4,702	1,790	11,039	3,257	7,782	1,385	17.8%	3,938	5,941	YES	YES
Conmee Tp	682	264	761	272	490	0	0.0%	860	1,297	NO	NO
Dorion Tp	465	211	515	192	323	28	8.7%	369	556	NO	NO
Gillies Tp	487	206	347	196	152	4	2.5%	240	362	NO	NO
Neebing Tp	902	566	786	387	399	16	4.0%	587	886	NO	NO
Nipigon Tp	2,095	895	2,012	497	1,516	77	5.1%	2,123	3,202	YES	YES
O'Connor Tp	708	261	498	284	213	0	0.0%	375	565	NO	NO
Oliver Tp	2,488	895	1,287	453	834	53	6.4%	1,089	1,642	NO	NO
Paipoonge Tp	3,064	1,096	1,923	508	1,415	31	2.2%	2,268	3,421	YES	NO
Schreiber Tp	1,762	772	2,444	731	1,713	140	8.2%	2,027	3,058	YES	YES
Shuniah Tp	2,144	2,039	2,078	526	1,551	0	0.0%	2,724	4,109	NO	NO
Terrace Bay Tp	2,309	909	3,503	420	3,083	0	0.0%	5,413	8,164	YES	YES
Manitouwadge Tp	3,554	1,400	4,966	933	4,034	310	7.7%	4,907	7,402	YES	YES
Beardmore Tp	391	228	1,139	294	846	0	0.0%	1,485	2,239	YES	NO
Nakina Tp	536	327	1,446	481	966	0	0.0%	1,695	2,557	YES	YES
Red Rock Tp	1,237	510	2,700	291	2,409	45	1.9%	3,912	5,901	YES	YES
Timiskaming D											
Charlton T	275	118	207	73	134	0	0.0%	235	355	YES	NO
Cobalt T	1,351	613	1,848	672	1,177	164	14.0%	913	1,377	YES	YES
Englehart T	1,655	741	1,898	770	1,128	12	1.0%	1,899	2,865	YES	YES

ADDITIONAL DEBT CAPACITY CALCULATION BY MUNICIPALITY
(1997$)

Municipality	Population	Households	Own Fund Revenues			Debt Charges		Additional Debt Which Can Be Issued		Does the Municipality Have Municipal	
			Total Revenues	Less: Ontario Grants	Net Revenues	Total Debt Charges	Debt as a % of Net Revenues	10 Year	20 Year	Water	Sewer
	#	#	$000	$000	$000	$000	%	$000	$000	(Yes/No)	(Yes/No)
Haileybury T	4,666	1,966	5,395	2,446	2,948	68	2.3%	4,701	7,091	YES	YES
Kirkland Lake T	10,330	5,093	20,550	9,156	11,394	555	4.9%	16,112	24,302	YES	YES
Latchford T	328	192	559	220	339	0	0.0%	596	898	YES	YES
New Liskeard T	4,986	2,189	5,788	1,884	3,904	51	1.3%	6,499	9,803	YES	YES
Thornloe V	130	49	105	51	54	4	7.8%	65	98	NO	YES
Armstrong Tp	1,303	510	1,374	399	975	60	6.1%	1,292	1,949	YES	YES
Brethour Tp	170	62	195	146	49	0	0.0%	86	129	NO	NO
Casey Tp	411	146	308	213	95	12	12.4%	84	127	NO	YES
Chamberlain Tp	366	156	385	201	185	4	2.1%	296	447	NO	NO
Coleman Tp	489	299	662	191	471	2	0.3%	816	1,230	YES	NO
Dack Tp	462	168	286	166	120	20	16.6%	71	108	NO	NO
Dymond Tp	1,242	432	1,337	243	1,094	78	7.1%	1,377	2,077	YES	YES
Evanturel Tp	513	204	426	200	225	18	8.0%	270	407	NO	NO
Harley Tp	617	210	441	287	153	0	0.0%	269	406	NO	NO
Harris Tp	535	228	184	107	77	0	0.0%	134	203	NO	NO
Hilliard Tp	245	88	303	193	110	10	9.0%	124	187	NO	NO
Hudson Tp	455	307	288	162	126	0	0.0%	221	333	NO	NO
James Tp	491	268	642	147	495	0	0.0%	868	1,310	YES	YES
Kerns Tp	408	140	272	156	116	14	12.5%	102	153	NO	NO
Larder Lake Tp	925	538	1,054	377	677	0	0.0%	1,188	1,792	YES	YES
McGarry Tp	1,050	488	1,556	635	921	48	5.2%	1,283	1,934	YES	YES
Gauthier Tp	134	69	175	84	91	0	0.0%	159	240	NO	YES
Matachewan Tp	427	270	296	118	178	0	0.0%	312	470	YES	NO