TOWN OF AMHERSTBURG

WATER RATE STUDY

IN ASSOCIATION WITH

CH2M HILL CANADA LIMITED

MARCH, 2005

PLANNING FOR GROWTH

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1. INTRODUCTION

1. INTRODUCTION

1.1 Background

The Town of Amherstburg has a population of approximately 20,905 (2004), which is provided with municipal water from the Amherstburg Water Treatment Plant (WTP). In addition to residents and business located in the town, Amherstburg's WTP also provides water to neighbouring areas in the Towns of LaSalle and Essex. The combined population of these two areas is about 1,354. Therefore the total population serviced by the Amherstburg WTP is about 22,259, with approximately 7,700 service connections

Amherstburg's WTP has a rated production capacity of 18,184 m^3/day. The plants raw water is obtained directly from the Detroit River. Its unit processes include low lift pumping, coagulation, filtration, and high lift pumping along with chlorine, aluminum sulphate, polymer, and fluoride addition at various points in the treatment process. Treated water storage consists of a 14,800 m^3 reservoir and a 2,273 m^3 elevated storage tank.

Amherstburg's existing water rate was set in 1998. Currently water customers are charged for their metered water use based on a declining block rate structure. Charges are $3.15 per 1,000 US gallons ($0.8321/$m^3$) for the first 10,000 US gallons used and $2.70 per 1,000 US gallons ($0.7133/m3) for any amount in excess of 10,000 US gallons. Residents that use less than $8.00 worth of water (2,540 US gallons) are charged a minimum of $8.00.

With the legislative changes being made for water systems across Ontario, as a result of the Walkerton crisis, Municipalities are required to conform to new statutes regulating operation, monitoring and reporting of water systems that have been implemented in the previous three years. In addition they will be required to conform to new statutes governing the management of water systems that are currently in the process of being implemented by the Province. C.N. Watson and Associates Ltd. and CH2M HILL Canada Ltd. have been retained by the Town to assist in addressing these changes in a proactive manner. The assessment provided herein addresses these changes based on most current information and forecasts the implications onto water rates over the next ten year period.

1.2 Study Process

As noted, C.N. Watson and Associates Ltd. and CH2M Hill Canada Ltd. were retained by the Town of Amherstburg to undertake a water rate study. The objectives of the study and the steps involved in carrying out this assignment are summarized below:

- Identify all current and future water system capital needs to assess the immediate and longer-term implications.
- Identify potential methods of cost recovery from the capital needs listing. These recovery methods may include other statutory authorities (e.g. Development Charges, *Municipal Act*, etc.) as an offset to recovery through the water rates.
- Identify existing operating costs by component and estimate future operating costs over the next ten years. This assessment identifies fixed and variable costs in order to project those costs sensitive to changes to the existing infrastructure inventory, as well as costs which may increase commensurate with growth.
- Determine potential rate structure(s) to be considered by the Town.
- Recommend appropriate rate structures along with associated policies to implement and manage the rate structures over the next ten years.
- Provide discussion papers and policy recommendations to staff and Council, relative to the findings.

1.3 Regulatory Changes in Ontario

Resulting from the water crisis in Walkerton, significant regulatory changes have been made in Ontario over the past two years. Ontario Regulation 459/00 has already been imposed which has resulted in additional capital and operating costs. This regulation has increased municipal spending in the following areas:

- sampling and reporting protocols
- disinfection (operating and capital)
- operations (licensing and additional staff)
- quality monitoring.

During the Walkerton Inquiry, discussions and presentations were also undertaken which may see further regulatory changes and require additional municipal spending in the future. These issues have been considered by the Commission and 93 recommendations have been made by the Walkerton Inquiry Part II report. Areas of recommendation include:

- watershed management and source protection
- quality management
- preventative maintenance
- research and development
- new performance standards
- sustainable asset management
- lifecycle costing.

Results from the Walkerton Inquiry discussions were finding their way into legislation prior to the release of the Part II report (May, 2002). On December 12, 2001, the Honourable Chris Hodgson, Minister of Municipal Affairs and Housing introduced Bill 155, the "Sustainable Water and Sewage System Act" (only given first reading). This legislation was re-introduced in the Fall 2002 legislature as Bill 175, by the Minister of the Environment, Chris Stockwell and was given Royal Assent on December 13, 2002.

In brief, Bill 175 will require full cost pricing of municipal water systems. The Act has defined full cost to include:

> "operating costs, financing costs, renewal and replacement costs and improvement costs associated with extracting, treating or distributing water to the public and collecting, treating or discharging waste water, and such other costs which may be specified by regulation."

In regards to the other recommendations made by Judge O'Conner, 50 of the 93 Walkerton Inquiry Recommendations were addressed by Bill 195, The Safe Drinking Water Act. The Bill was given first reading on October 29, 2002 and subsequently received Royal Assent on December 13, 2002. Highlights of the Bill are as follows:

- Mandatory licensing and accreditation of testing labs
- New standards for treatment, distribution quality and testing
- Mandatory operator training

- Mandatory licensing of municipal water providers
- Stronger enforcement and compliance provisions
- "Standard of care" requirements for municipalities

It is noted that the initial requirements of Bill 175 have been addressed in this study. While all requirements from this Bill will not be known until regulations are made (expected during this next year), the principles on which the Bill directs have been incorporated into this study's approach. Subsequent refinements will be required upon finalization of the Regulations. Similarly, the detailed requirements of Bill 195 are also not fully known at this time and will require consideration in the future. It is noted that Bill 195 is being implemented in segments which are anticipated to continue throughout the next year.

1.4 Summary of Bill 175

As noted earlier, the Sustainable Water and Sewage Systems Act was proclaimed on Dec. 13, 2002. The intent of the Act is to introduce the requirement for municipalities to undertake an assessment of the "full cost" of providing their water and the wastewater services. It is noted that, at the time of writing, the regulations, which accompany the Act, have not been issued. Hence, the full breadth of the Act is yet to be assessed until that information is available. In total, there are 40 areas within the Act to which the Minister may make Regulations.

Full costs for water service is defined in subsection 3(7) of the Act and includes "source protection costs, operating costs, financing costs, renewal and replacement costs and improvement costs associated with extracting, treating or distributing water to the public and such other costs which may be specified by regulation." Similar provisions are made for wastewater services in subsection 4(7) respecting the "collecting, treating or discharging waste water".

The Act will require the preparation of two reports for submission to the Ministry of the Environment (or such other member of the Executive Council as may be assigned the administration of this Act under the Executive Council Act). The first report is on the "full cost of services" and the second is the "cost recovery plan". Once these reports have been reviewed and approved by the Ministry, the municipality will be required to implement the plans within a specified time period.

In regards to the "Full Cost of Services" report, the municipality (deemed a regulated entity under the Act) must prepare and approve a report concerning the provision of water and sewage services. This report must include an inventory of the infrastructure, a management plan providing for the long-term integrity of the systems and address the full cost of providing the services (other matters may be specified by the regulations) along with the revenue obtained to provide them. A professional engineer must certify the inventory and management plan portion of the report. The municipality's auditor will be required to provide a written opinion on the report. The report must be approved by the municipality and then be forwarded to the Ministry along with the engineer's certification and the auditor's opinion. The regulations will stipulate the timing for this report.

The second report is referred to as a "Cost Recovery Plan" and will address how the municipality intends to pay for the full costs of providing the service. The regulations may specify limitations on what sources of revenue the municipality may use. The regulations may also provide limits as to the level of increases any customer or class of customer may experience over any period of time. Provision is made for the municipality to implement increases above these limits however ministerial approval would be required first. Similar to the first report, the municipal auditor must provide a written opinion on the report prior to Council's adoption, and this opinion must accompany the report when submitted to the Province.

The Act provides the Minister the power to approve or not approve the plans. If the Minister is not satisfied with the report or if a municipality does not submit a plan, the Minister may have a plan prepared. The cost to the Crown for preparing the plan will be recovered from the municipality. As well, the Minister may direct two or more regulated municipalities to prepare a joint plan. This joint plan may be directed at the onset or be directed by the Minister after receiving the individual plans from the municipalities.

The Minister also has to power to order a municipality to generate revenue from a specific revenue source or in a specified manner. The Minister may also order a regulated entity to do or refrain from doing such things as the Minister considers advisable to ensure that the entity pays the full cost of providing the services to the public.

Once the plans are approved and in place, the municipality will be required to submit progress reports. The timing of these reports and the information to be contained therein will be

established by the regulations. A municipal auditor's opinion must be provided with the progress report. Municipalities may also revise the plans if they deem the estimate does not reflect the full cost of providing the services, as a result of a change in circumstances, regulatory or other changes that affect their plan, etc. The municipality must then revise its prior plan, provide an auditor's opinion, and submit the plan to the Minister.

As noted earlier, the regulations to accompany the Act will provide significant detail to the specific requirements that municipalities will have to conform to. As the timing of the regulations along with the timing provided to conform to the Regulations and Act is unclear at this time, it is not possible to address all matters contemplated by the Province. However, this report will address many of the matters in principle pending finalization of the regulations.

1.5 New *Municipal Act* – Rate Setting

As of January 1, 2003, a new Municipal Act has come into force, which provides changes to the regulatory regime for the municipalities. Section 391 of the Act provides the authority for imposing user fees. For the purposes of the Act, water and wastewater rates are deemed as user fees.

Ontario Regulation 244/02, section 12 set out specific requirements related to establishing water and wastewater rules. In summary:

- the amount of the fees and charges must not exceed the cost of providing the system(s)
- by-laws passed to implement the rates will expire (if not repealed earlier) by December 31 of the year following the year the by-law was passed.
- amendments to the by-law do not effect the term
- prior to passage of the of the by-law:
    - hold at least one public meeting
    - notice of the public meeting required at least 21 days before meeting
    - make available information regarding service description, cost of service, amount of the charge and rationale for the charge
    - at the public meeting, any person attending has the opportunity to speak to the matter

1.6 Water Use Efficiency

In 2003 the Town completed an environmental assessment study on the need to expand the Amherstburg WTP. The purpose of the study was to determine the preferred solution to provide water supply service to meet the needs of the town to the year 2018. One of the recommendations of the study was that the Town implement a water use efficiency program to better manage peak day water consumption and defer the need to expand the plant.

In 2004 Amherstburg completed a Water Use Efficiency Study that reviewed water use efficiency alternatives, proposed a strategy based on the preferred plan components and developed an implementation plan based on the strategy. The details of the study and the Implementation Plan are contained in a separate report. The basics of the rational for implementing water use efficiency measures are briefly outlined below.

Figure 1 shows maximum daily flows from the Amherstburg water plant for the years 2001 to 2003. Some days during the summer months, the plant was operating near its capacity of 18,184 m^3/d. This is particularly evident in 2001 and 2002. The average day flow from the plant in 2001 and 2002 was about 9,392m^3 however, the peak day flow was about 17,500m^3 which is very close to the plant's capacity of 18,184m^3/day. The peaking factor (maximum day to average day) ratio for 2001 and 2002 was about 1.85. For comparison purposes it is noted that the peaking factor in the City of Windsor is about 1.4.

Figure 1: Maximum Daily Flow from the Amherstburg Water Plant

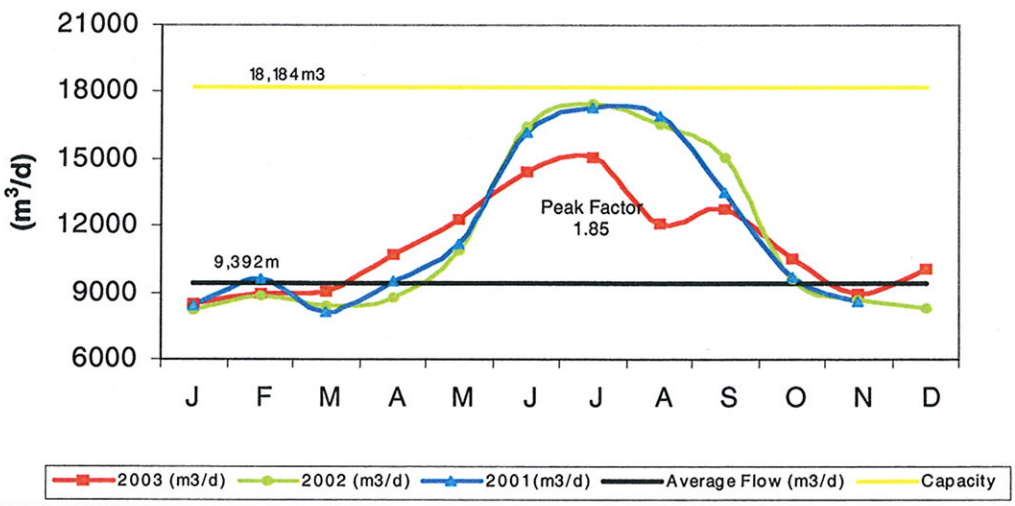
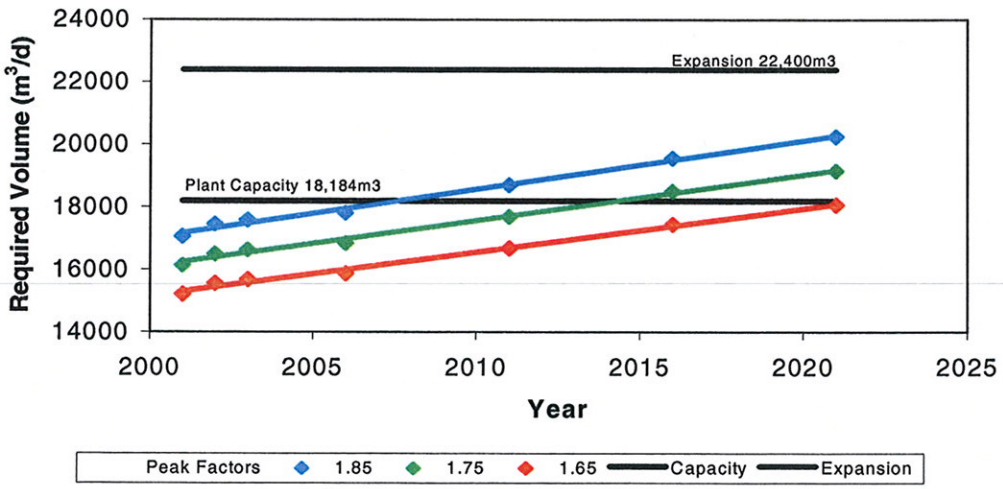


Figure 1-1 Projected Flows for Amherstburg WTP



A forecast of development based on the Town's Official Plan Growth Forecasts and a review of historic building activity was developed for the 10 year period.

Water Consumption Forecast (m^3) Option 2 - Growth with Efficiency (1.75)

Block	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Block 1										
Existing Residential & Small GS	1,723,899	1,723,899	1,723,899	1,723,899	1,723,899	1,723,899	1,723,899	1,723,899	1,723,899	1,723,899
Existing General Services	77,126	77,126	77,126	77,126	77,126	77,126	77,126	77,126	77,126	77,126
New Residential & Small GS	7,223	21,669	36,115	50,561	65,007	79,453	93,899	108,345	122,791	137,237
New General Services	0	0	0	0	0	0	0	0	0	0
Subtotal Block 1	1,808,248	1,822,694	1,837,140	1,851,586	1,866,032	1,880,478	1,894,924	1,909,370	1,923,816	1,938,262
Block 2										
Existing Residential & Small GS	206,758	206,758	206,758	206,758	206,758	206,758	206,758	206,758	206,758	206,758
Existing General Services	686,159	686,159	686,159	686,159	686,159	686,159	686,159	686,159	686,159	686,159
New Residential & Small GS	862	2,587	4,312	6,037	7,762	9,487	11,211	12,936	14,661	16,386
New General Services	0	0	0	0	0	0	0	0	0	0
Subtotal Block 2	893,779	895,504	897,229	898,954	900,679	902,403	904,128	905,853	907,578	909,303
Total	2,702,027	2,718,198	2,734,369	2,750,540	2,766,711	2,782,881	2,799,052	2,815,223	2,831,394	2,847,565

If nothing is done to reduce the peaking factor from its current value of 1.85 the construction of a plant expansion is required immediately. Lowering the peaking factor to 1.75 could defer the need to construct a plant expansion until 2014. Lowering the peak to 1.65 could defer the need until 2021.

The water use efficiency implementation plan sets a short term goal of lowering the peaking factor to 1.75 within a two to three years timeframe and a longer term goal of lowering the peaking factor to 1.65. The recommended rate presented in this report is based on a peaking factor of 1.75.

1.7 Forecast Growth and Servicing Requirements

A review of the Town's billing information was undertaken for the year 2003. Based on this data, the annual consumption for each block and user type was determined:

Consumption Per User (m^3)

Sector	Connections	1st Block Consumption	2nd Block Consumption	Totals
Residential	7,390	1,723,899	319,124	2,043,023
General Service	310	77,126	730,583	807,709
Totals	7,700	1,801,026	1,049,707	2,850,732

A forecast of growth in the service area of the Amherstburg WTP was undertaken. In this regard, forecasts from the Town's Official Plan were consulted. Future flow projections for three different peaking factors (1.65, 1.75 and 1.85) were completed. Based on that review, the following forecast was developed to the year 2021. The Town is currently considering implementing a Water Use Efficiency Program in order to reduce peaking factors experienced at the water plant. It is estimated that future peaking factor at the plant will be 1.75.

2. CAPITAL INFRASTRUCTURE NEEDS

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2.1 Water Treatment Plant

In 2003 the Town completed an environmental assessment study on the need to expand the Amherstburg WTP. The purpose of the study was to determine the preferred solution to provide water supply service to meet the needs of the town to the year 2018. The recommendations of the EA can be summarized as follows:

- Construction of a Watermain to Service Boblo Island
- Decommissioning of the Boblo Island Water Treatment Plant and Raw Water Intake
- Expansion of Amherstburg Water Treatment Plant (Pre Design, Design & Construction)
- Implementation of a Demand Management/Water Conservation Program

The recommendation to expand the plant was based on the fact that peak day water use in 2001 and 2002 at 17,500m^3/day was very close to the plant's capacity of 18,184m^3/day. However, during the same period the average day flow from the plant was only 9,392m^3/day or about 50% of the plant's capacity. The recommendation to implement demand management was made to lower peak day flows and postponed the need to expand the water treatment plant.

As part of the mediation process to resolve a Part II Order Request on the Environmental Assessment the Town agreed to do Cryptosporidium monitoring for one year prior to constructing any expansion to the plant and to consider the results of this monitoring in selecting the processes to be used (i.e. use of ozone or UV for primary disinfection) for treatment. This monitoring is currently underway, however it will not be completed and reviewed until March 2006.

The Town completed construction of the watermain to Boblo Island and the decommissioning of the Boblo Island WTP raw water intake in 2004.

In 2004 the town completed a Water Use Efficiency Study and developed an Implementation Plan setting a short term goal of lowering the peaking factor to 1.75 within a two to three year timeframe.

The estimated cost to upgrade the plant from its current capacity of 18,184m^3/day to 22,400m^3/day using chemically assisted filtration with disinfection, as recommended in the environmental assessment study report, is $5,250,000. Lowering the peak to average day water use ratio to 1.75 could postpone the need for this expansion until 2014.

2.2 Water Tower

Inspections of the water tower completed in fall of 2004 found a number of major deficiencies that included failure of one post tensioning cable and suspected deterioration of the remaining (19) cables that surround and strengthen the concrete tank, cracking and spalling at the edge of the dome ring beam that supports the roof of the elevated tank, severe deterioration of the sealing system and internal waterproofing system in the tank, cracks in the tank's vertical shaft, some minor cracks in the tanks roof as well as problems related to safe access and compliance with current labour code requirements.

Recommendations in the report of inspection findings are that the Town undertake the immediate replacement of post-tensioning cables and repair of the dome ring beam as soon as practical in 2005 and complete the necessary planning and design activities to have a new elevated storage tank constructed by 2009. In order to complete this work it was recommended that the Town budget $225,000 in 2005 for external post-tensioning cable replacement and dome ring beam repair, $10,000 per year for budget years 2006, 2007 and 2008 for tower inspections with a contingency of $50,000 in total for these years to address interim repairs to the extent required to maintain safe operation and $1,500,000 for the replacement of the existing water tower by 2009.

2.3 Water Storage Reservoir

In 2003 the Town conducted emergency repairs to control extensive leakage of treated water from the underground storage reservoir at the Amherstburg Water Treatment Plant. The report that was prepared on the cause of this leakage and the monitoring of the repairs included

recommendations to carry out follow-up visual assessment and testing in the spring of 2004 and every five years thereafter, adjusting the frequency as required based on the observations of each assessment. The report recommendations also noted that the existing single celled reservoir did not provide the Town with the flexibility to carryout normal inspection and maintenance activities without disrupting water service. It was noted that most modern reservoirs are constructed with two or three cells to provide the operating staff the flexibility required to take one cell out of operation at any time should the need arise. For that reason it was recommended that the Town develop a plan to subdivide the existing cell or add another cell to the existing reservoir in the short to medium term. Based on this recommendation a budget amount of $2,750,000 was set to complete this work in the 2010 to 2014 timeframe.

2.4 Water Distribution System Upgrades

The Town is currently completing a Water System Master Plan to determine their long-term water distribution requirements. The analysis being undertaken as part of this study includes the identification of existing system deficiencies and systems expansions required to meet long-term growth related needs. To date the study has identified several system improvements including increases to pipe sizing and grid system extensions that are required to provide system security to meet existing water use requirements. Amounts of $500,000 in budget years 2005 to 2014 have been included in the long-term capital plan to complete these works.

2.5 Capital Forecast

Table 2-1 provides a 10-year capital forecast for Water Service from the Amherstburg Water Treatment Plant. The basis for this forecast is the engineering assessments described above and discussions with staff. The forecast provides for $17.1 million in capital spending (uninflated), summarized as follows:

- Inspections and Reports - $208,500
- Water Conservation Program - $141,600
- Cryptosporidium Monitoring/Contingency Planning – $40,000
- Water Main Replacements - $1,288,000
- Water Meter Replacements - $498,000

- Distribution System Upgrades - $ 5,000,000
- Miscellaneous Improvements- $100,010
- Water Treatment Plant Upgrades (EA) - $5,525,000
- Water Tower – $1,500,000
- Water Reservoir - $2,750,000

TABLE 2-1: UNINFLATED (2004 $)

Project Description and Location	2005	2006	2007	2008	2009	2010-2014	Total Project Cost
Inspections & Reports	$60,500	$7,500	$10,500	$52,500	$77,500		$208,500
Water Conservation Program	$95,875	$45,725					$141,600
Cryptosporidium Monitoring / Contingency Planning	$40,000						$40,000
Watermain Replacements	$783,000	$405,000	$100,000				$1,288,000
Water Meter Replacements	$138,000	$90,000	$90,000	$90,000	$90,000		$498,000
Distribution System Upgrades	$500,000	$500,000	$500,000	$500,000	$500,000	$2,500,000	$5,000,000
Miscellaneous Improvements	$100,010						$100,010
Water Treatment Plant Upgrades (EA)						$5,525,000	$5,525,000
Water Tower					$1,500,000		$1,500,000
Water Reservoir						$2,750,000	$2,750,000
Total	$1,719,390	$1,048,225	$700,500	$642,500	$2,167,500	$10,775,000	$17,051,110

3. LIFE CYCLE COSTING

3. LIFE CYCLE COSTING

3.1 Overview of Life Cycle Costing

3.1.1 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.

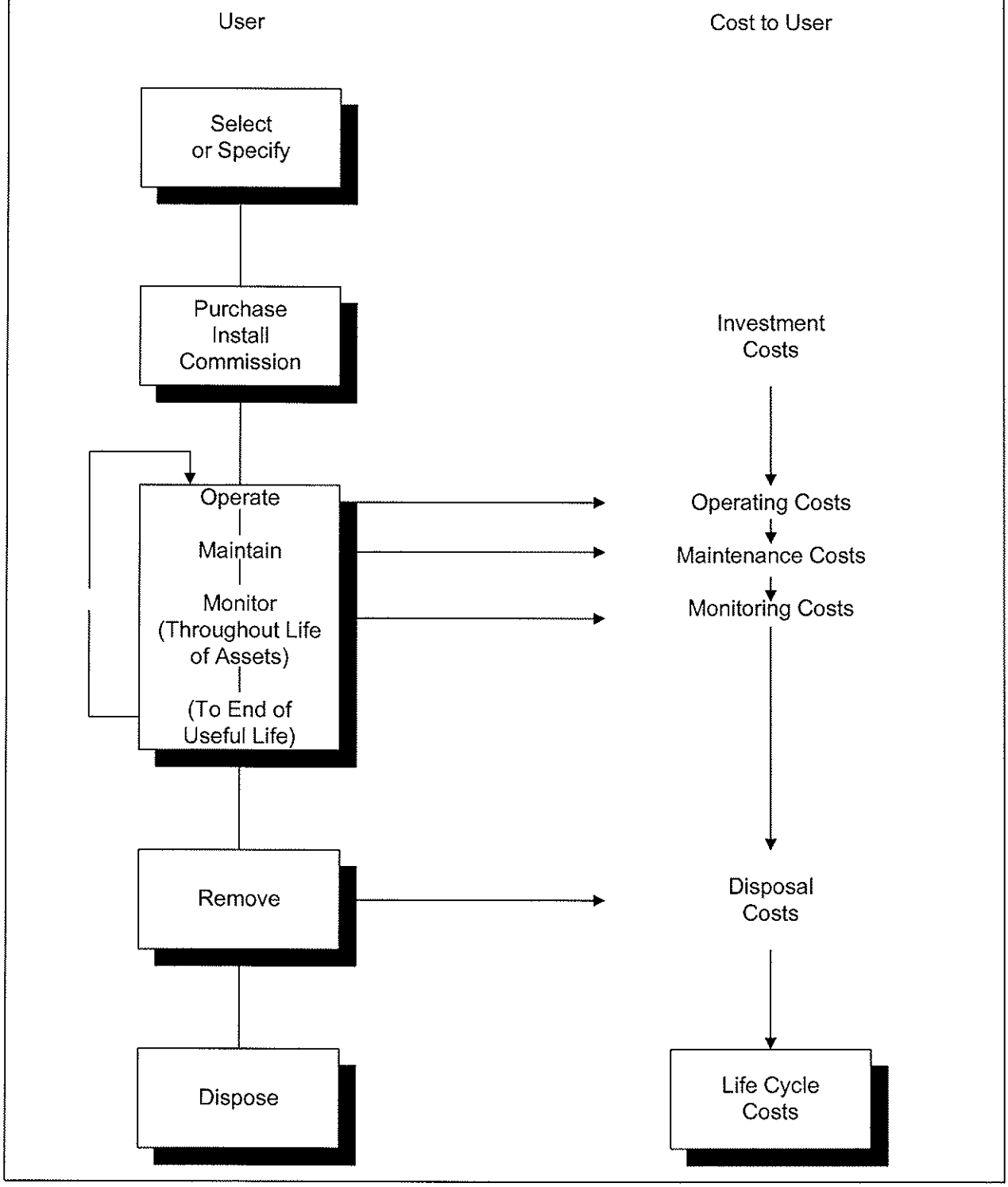
By definition, life cycle costs are all the costs which are incurred during the life cycle of a physical asset, from the time its acquisition is first considered, to the time it is taken out of service for disposal or redeployment. The stages which the asset goes through in its life cycle are specification,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

3.1.2 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 tax/rate payers. 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 3-1
Life Cycle Costing



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.

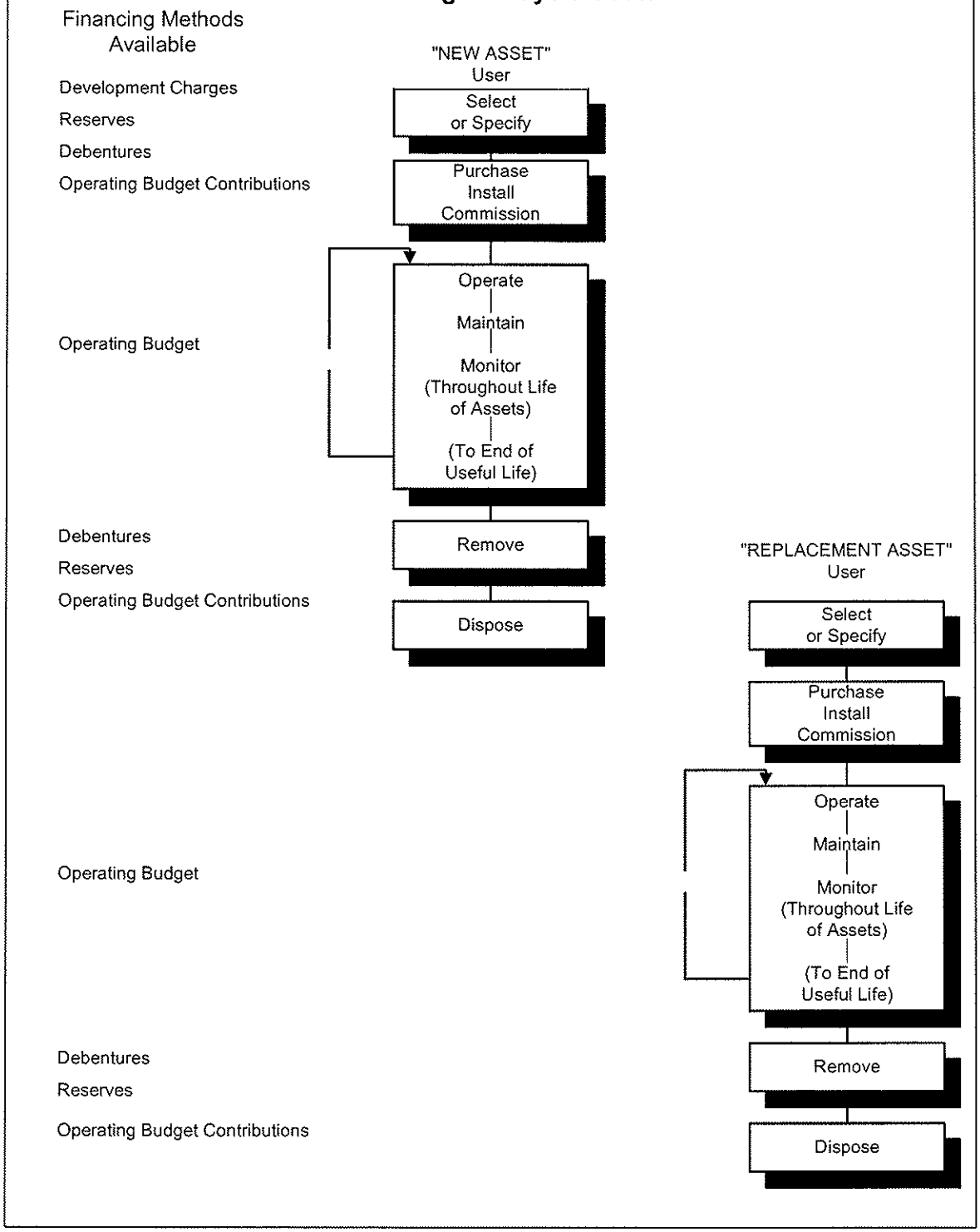
However, capital construction to replace existing infrastructure is largely not growth-related and will therefore not yield development charges or developer contributions to assist in financing these works. Hence, a municipality will be dependent upon debentures, reserves and contributions from the operating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

Figure 3-2 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 the non-growth related component of 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; "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 3-2
Financing Life Cycle Costs



position is taken that the future tax/rate 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. The same 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.

3.1.3 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.

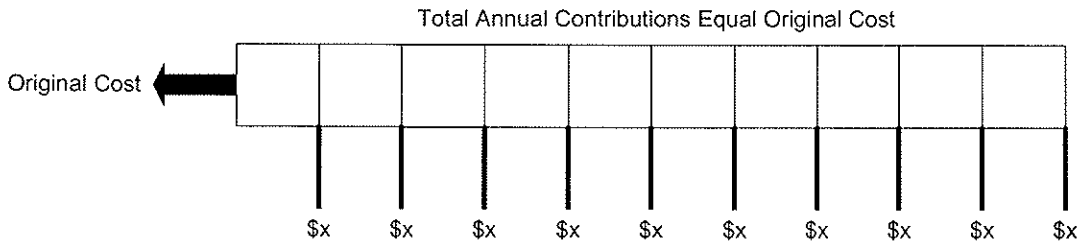
The straight line method is calculated by taking the original cost of the asset, subtracting its estimated salvage value (estimated value of the asset at the time it is disposed of) and dividing this by the estimated number of years of useful life. The reducing balance method is calculated by utilizing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

Of the two costing methods, the sinking fund method is preferred for municipalities. This method considers the potential investment earnings over time and is better able to accommodate changes in replacement costs and timing associated with periodic engineering assessment updates.

FIGURE 3-3

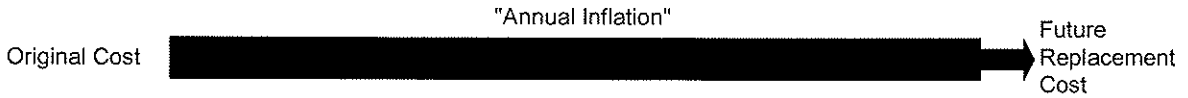
STRAIGHT LINE DEPRECIATION



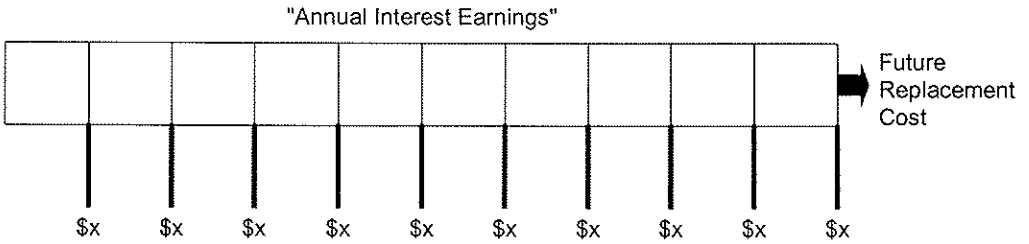
Formula: $\frac{\text{Original Cost - Salvage Cost}}{\text{Number of Years of Useful Life}}$

SINKING FUND METHOD

1. "Estimate Future Replacement Cost"



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



Formula: $\frac{\text{Interest Rate}}{(1 + \text{Interest Rate})^{\text{Term}} - 1}$ **X** Original Cost

Note: Interest Rate used would be the Investment Rate - Inflation Rate, e.g. 4% - 2% = 2% and is presented as 0.02.

3.2 Impact on Budgets

Detailed watermain inventory information was obtained from the Town. The age of the system dates back to the 1950s.

Plant inventory information was obtained from the information presented in the 2003 Environmental Assessment Study listing of water plant processes and conditions assessments.

The detailed watermain and water treatment plant inventories are provided in Appendix B. As well, the lifecycle "sinking fund" method calculation has also been provided to determine the level of investment the Town may wish to consider as part of its budgeting practices. This information is summarized below:

	Quantity		Replacement Cost (1,000 $)	Annual Lifecycle Contribution (1,000 $)
Watermains	296	km	101,005	906
Hydrants	950	each	3,325	29
Valves	565	each	848	8
Water Services	7,700	each	17,300	154
Sub-total			122,477	1,097
Water Plant & Tower			20,550	1,276
Total			143,027	2,373

It is noted that the inventory of the complete water system and plant will be required to be assessed and reported on by a professional engineer as part of the documentation required under Bill 175 (Sustainable Water and Sewage Systems Act). The detailed specifics of the required assessment and reporting will not be known until the Province has set these standards by regulation under the Sustainable Water and Sewage Systems Act. With respect to lifecycle costing the following information was taken into consideration:

- approximate age
- material type
- main lengths
- diameter of the mains
- estimated useful life
- estimated unit replacement cost

Provided within the operating budget forecast is a provision for contributions into a Lifecycle Reserve to ensure that adequate funds are available to construct the replacement of the infrastructure when required. In the early years the annual contribution is less than the calculated $2.37 million as it is being phased-in over an approximate seven year period (2005-2011). After 2011 the annual amounts are approximately $200,000 higher than the calculated contribution amount, to provide additional revenue to make up the shortfall in contributions during the phase-in period.

4. CAPITAL COST FINANCING OPTIONS

4. CAPITAL COST FINANCING OPTIONS

4.1 Summary of Capital Cost Financing Alternatives

Historically, the powers that municipalities have had to raise alternative revenues to taxation 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 Province passed a new *Municipal Act* which came into force on of January 1, 2003. Part XII of the Act and O.Reg. 244/02, govern a municipality's ability to impose fees and charges. In contrast to the previous Municipal Act, this Act provides municipalities with broadly defined powers and does not differentiate between fees for operating and capital purposes. It is anticipated that the powers to recover capital costs under the previous Municipal Act will continue within the new Statutes and Regulations, as indicated by s.9(2) and s.452 of the new Municipal Act.

Under s.484 of Municipal Act, 2001, the Local Improvement Act was repealed with the in force date of the Municipal Act (January 1, 2003). The municipal powers granted under the Local Improvement Act now fall under the jurisdiction of the Municipal Act. To this end, on December 20, 2002, O.Reg. 390/02 was filed, which allows for the Local Improvement Act to be deemed to remain in force until April 1, 2003.

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

RECOVERY METHODS	SECTION REFERENCE
• *Development Charges Act, 1997*	4.2
• *Municipal Act*	4.3
• Fees and Charges	
• Sewer and Water Area Charges	
• Connection Fees	

- Local Improvements

4.2 *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. (Education development charges are not to be significantly altered at this time.)

- 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.

- 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.

- Permit (but apparently not require) 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.

- Set out provisions for front-end financing capital projects (limited to essential services) required to service new development.

- Set out provisions for appeals and complaints, and transitional rules, including that municipalities will have up to 18 months from the date of proclamation of the new Act to establish new development charge by-laws, otherwise the old by-laws will expire.

4.3 ***Municipal Act***

4.3.1 Part XII of the *Municipal Act* provides municipalities with broad powers to impose fees and charges via passage of a by-law. These powers, as presented in s.391(1), include imposing fees or charges:

- "for services or activities provided or done by or on behalf of it;
- for costs payable by it for services or activities provided or done by or on behalf of any other municipality or local board; and
- for the use of its property including property under its control"

  Restrictions are provided to ensure that the form of the charge is not akin to a poll tax. Any charges not paid under this authority may be added to the tax roll and collected in a like manner. The fees and charges imposed under this part are not appealable to the OMB.

4.3.2 s.221 of the previous *Municipal Act*, permitted municipalities to impose charges, by by-law, on owners or occupants of land who would or might derive benefit from the construction of sewage (storm and sanitary) or water works being authorized (in a Specific Benefit Area). For a by-law imposed under this section of the previous Act:

- A variety of different means could be used to establish the rate and recovery of the costs could be imposed by a number of methods at the discretion of Council (i.e. lot size, frontage, number of benefiting properties, etc.);
- Rates could be imposed in respect to costs of major capital works, even though an immediate benefit was not enjoyed;
- Non-abutting owners could be charged;
- Recovery was authorized against existing works, where a new water or sewer main was added to such works, "notwithstanding that the capital costs of existing works has in whole or in part been paid."
- Charges on individual parcels could be deferred;
- Exemptions could be established;
- Repayment was secured; and
- OMB approval was not required.

While under the new *Municipal Act* no provisions are provided specific to the previous s.221, the intent to allow capital cost recovery through fees and charges is embraced within s.391. The new *Municipal Act* also maintains the ability of municipalities to impose capital charges for water and sewer services on landowners not receiving an immediate benefit from the works. Under s.391(2) of the Act, "a fee or charge imposed under subsection (1) for capital costs related to sewage or water services or activities may be imposed on persons not receiving an immediate benefit from the services or activities but who will receive a benefit at some later point in time." Also, capital charges imposed under s.391 are not appealable to the OMB on the grounds that the charges are "unfair or unjust".

4.3.3 s.222 of the previous *Municipal Act* permitted municipalities to pass a by-law requiring buildings to connect to the municipality's sewer and water systems, charging the owner for the cost of constructing services from the mains to the property line. Under the new *Municipal Act*, this power still exists under Part II, General Municipal Powers (s.9(3)b of the *Municipal Act*). Enforcement and penalties for this use of power are contained in s.427(1) of the *Municipal Act.*

4.3.4 Under the previous *Local Improvement Act*:

- A variety of different types of works could be undertaken, such as watermain, storm and sanitary sewer projects, supply of electrical light or power, bridge construction, sidewalks, road widening and paving.
- Council could 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 was required to go to the OMB, which might hold hearings and alter the by-law, particularly if there were objections.
- The entire cost of a work was 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.
- As noted, this Act was repealed as of April 1, 2003; however, O.Reg. 119/03 was enacted on April 19, 2003 which restores many of the previous *Local Improvement Act* provisions; however, the authority is now provided under the *Municipal Act*.

4.4 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. In mid-2000, initiatives from the Provincial and Federal level were announced; providing for a new program (OSTAR) to assist small cities, Towns and rural areas in addressing infrastructure improvements. As of November 2004, a new program (COMRIF) has been introduced. An overview of that program is provided below:

- the program is targeted at municipalities with a population of less than 250,000;
- the objectives of the program include enhancing/renewing aging infrastructure, improving quality of the environment, protecting the health and safety of citizens, support long term growth and building strong communities;
- the program funding will total $900 million to which one-third funding would be contributed each by the federal, provincial and local governments;
- application will be taken in three stages (January 10, 2005, Spring 2005, Spring 2006);
- for projects up to $15 million, approval may be granted by the Review Committee. For amounts over $15 million, cabinet approval is required;

- eligible services include water and sewage treatment, waste management, roads, bridges, public transit, municipal energy improvements, cultural, recreation and tourism.

4.5 Existing Reserves/Reserve Funds

The Town has established reserves for water capital cost. The balance in the water works reserve is $4,043,600.

4.6 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 403/02 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 provides for the most recent debt capacity letter from the Province. As of 2005, the Town has the ability to issue approximately $17 million based on debt with a ten year term or up to $24 million for debt with a twenty year term.

It should be noted, however, that the issuance of debt should be managed at levels sustainable by the municipality. Issuance of large amounts of debt in any one year can have dramatic impacts on taxes and rates. Hence, proper management of capital spending and the level of debt issued annually must be monitored and evaluated over the longer-term period.

4.7 Infrastructure Renewal Bonds

The Ontario Strategic Financing Authority (OSIFA) is a new crown agency, reporting to the Ministry of Finance, which has been set up as a tool to offer low-cost and longer-term financing to assist municipalities in renewing their infrastructure. OSIFA combines the infrastructure renewal needs of municipalities into an infrastructure investment "pool". OSIFA will raise

investment capital to finance loans to the public sector by selling a new investment produce called Infrastructure Renewal Bonds to individual and institutional investors.

OSIFA provides access to infrastructure capital that would not otherwise be available to smaller borrowers. Larger borrowers receive a longer term on their loans than they could obtain in the financial markets, and can also benefit from significant savings on transaction costs such as legal costs and underwriting commissions. Under the OSIFA approach, all borrowers receive the same low interest rate. OSIFA will enter into financial agreement with each municipality subject to technical and credit reviews, for a loan up to the maximum amount of the loan request.

The first round of OSIFA's 2004-05 infrastructure renewal program is focused on municipal priorities of clean water infrastructure, sewage treatment facilities, municipal roads and bridges, public transit and waste management infrastructure. The following outlines the percentage and estimated dollar value of the first round of loan requests in each priority area.

Priority	Percentage of Total Loan Program	Total Value ($ millions)
Clean Water Infrastructure	28%	270.8
Sewage Treatment Facilities	33%	316.7
Municipal Roads and Bridges	29%	279.7
Public Transit	7%	64.2
Waste Management Infrastructure	3%	33.6

As of the time of writing, the following interest rates were available to municipalities for the following term, based on a serial repayment schedule:

5 years	3.78%
10 years	4.44%
15 years	4.80%
20 years	5.03%
25 years	5.19%
30 years	5.30%

To be eligible to receive these loans, municipalities must submit a formal application along with pertinent financial information. Allotments are prioritized and distributed based upon the Province's assessment of need.

4.8 Recommended Approach

Of the various alternatives provided in this section, the following are recommended for further consideration of the Town of Amherstburg:

- Grants – Presently, the Town does not have grant funding approval for any of its projects. However, staff have applied under the COMRIF program. At this time no grants have been provided for until such time as funding is secured.

- Reserves – As noted, there are reserve balances available to fund a portion of the capital program. Contributions of $7.24 million for water (note additional transfer to this fund) have been provided.

- Debt – Debentures have been used to assist in financing the capital program. The debt issued is to assist in financing the growth-related portion of the capital works; hence development charge revenues will assist in paying for a portion of the annual debt charges.

- OSIFA Bonds – No provision for funding has been made at this time.

- Development Charges – Provision has been made for development charge payments. A calculation of the development charge was undertaken based upon the cost for the plant and for $500,000 annually in systems upgrades. The average residential charge would be $2,300 which is higher than the present charge of $716. Also, a non-residential charge of $2.52 was calculated, however, based on the Town's present policy of not charging non-residential growth, only the residential revenues were included herein. $723,000 has been forecast to be directly used for financing capital whereas the remaining revenue will be used to offset the debt charge payments.

Table 4-1 provides for the full capital expenditure and funding program by year.

Table 4-1
Town of Amherstburg
Water Service
Capital Budget Forecast
Inflated $

Description	Total	Budget	Forecast								
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Capital Expenditures											
Improvements to Water Plant as result of Environmental Assessment Report	8,059,991	0	0	0	0	0	0	0	0	0	8,059,991
Distribution System Upgrades	5,474,860	500,000	510,000	520,200	530,604	541,216	552,040	563,081	574,343	585,830	597,546
Scheduled Inspections & Reports	223,050	61,710	7,803	11,143	56,828	85,566	0	0	0	0	0
Water Conservation Program	145,365	97,793	47,572	0	0	0	0	0	0	0	0
Cryptosporidium Monitoring & Contingency Planning for Water Borne Spill	40,800	40,800	0	0	0	0	0	0	0	0	0
Watermain Replacements	1,326,143	798,660	421,362	106,121	0	0	0	0	0	0	0
Water Meter Replacements	526,617	140,687	93,636	95,509	97,419	99,367	0	0	0	0	0
Miscellaneous Improvements	102,010	102,010	0	0	0	0	0	0	0	0	0
Water Tower	1,656,121	0	0	0	0	1,656,121	0	0	0	0	0
Water Resevoir	3,222,063	0	0	0	0	0	0	0	3,222,063	0	0
Total Capital Expenditures	20,777,021	1,741,659	1,080,373	732,972	684,851	2,382,271	552,040	563,081	3,796,406	585,830	8,657,537
Capital Financing											
Provincial/Federal Grants	0	0	0	0	0	0	0	0	0	0	0
Development Charges	723,451	477,768	245,683	0	0	0	0	0	0	0	0
Debenture Requirements Non-Growth	1	0	0	0	0	0	0	0	0	0	0
Debenture Requirements Growth	12,811,401	22,232	264,317	520,200	530,604	541,216	552,040	563,081	574,343	585,830	8,657,537
Operating Contributions	0	0	0	0	0	0	0	0	0	0	0
Reserves and Reserve Funds	7,242,169	1,241,659	570,373	212,772	154,247	1,841,055	0	0	3,222,063	0	0
Total Capital Financing	20,777,021	1,741,659	1,080,373	732,972	684,851	2,382,271	552,040	563,081	3,796,406	585,830	8,657,537

5. OVERVIEW OF EXPENDITURES AND REVENUES

5. OVERVIEW OF EXPENDITURES AND REVENUES

5.1 Water Operating Expenditures

Forecast budget expenditures for the 2005 - 2014 period are based on the 2005 operating budget for the Town. The costs for each type of operating expenditure have been reviewed with staff to establish expenditures which would be affected by inflationary adjustments, growth (either by number of customers or increases in overall consumption) or other matters. Based on the review undertaken (see Table 5-1):

- all operating-related expenditures are adjusted for inflation annually;

- collection expenses, meter reading, meter repair and the OCWA contract have also been increased commensurate with forecast growth;

- additional expenses ($100,000 in 2005 dollars) have been included to recognize additional expenses related to the Water Treatment Plant expansion.

In addition to the above, the capital-related portion of the budget must also be considered. Generally, this portion of the budget provides for existing and/or future debt charges, reserve fund transfers or direct transfers to the capital program. The budget presented on Table 5-1 provides for:

- Existing Debt – The Town has existing debt charges for past borrowing to finance the capital program. Current payments are approximately $250,000 and will be fully paid off by 2010.

- New Debt – The capital program provides for funding of growth-related expenditures via debt. The repayment for amounts borrowed must be recovered in future years through the operating budget. Debt charges are expected to grow to almost $600,000 by the end of the forecast (debt calculations provided for in Appendix C). These expenses would partially be offset by DC revenues collected annually.

- Transfers to Reserves – The Town currently is transferring $600,000 to a reserve to assist in financing capital. As per the program set out in Chapter 3, this amount may be reduced over the forecast period as adequate funding will be available.

- Life cycle Reserves – As per Chapter 4, additional capital expenditures will be needed in future years to replace aging infrastructure. Commensurate with Bill 175, an Infrastructure Management Plan will need to be developed and submitted to the Province for approval. These contributions will be set aside to finance the needs arising from that plan.

The anticipated reduction to the peaking factor (from 1.85 to 1.75) is not expected to impact operating costs, since expenditures are based on overall water use (which will not be affected regardless of the operating peaking factor). However, if the peaking factor is not reduced and this results in the need to expand the water treatment plant operating costs will increase in response to the need to maintain a larger facility while overall water use will not change substantially.

Table 5-1 provides for the net expenditure amounts which will be required to be funded by water rates.

Table 5-1
Town of Amherstburg
Water Services
Operating Budget Forecast
Inflated $

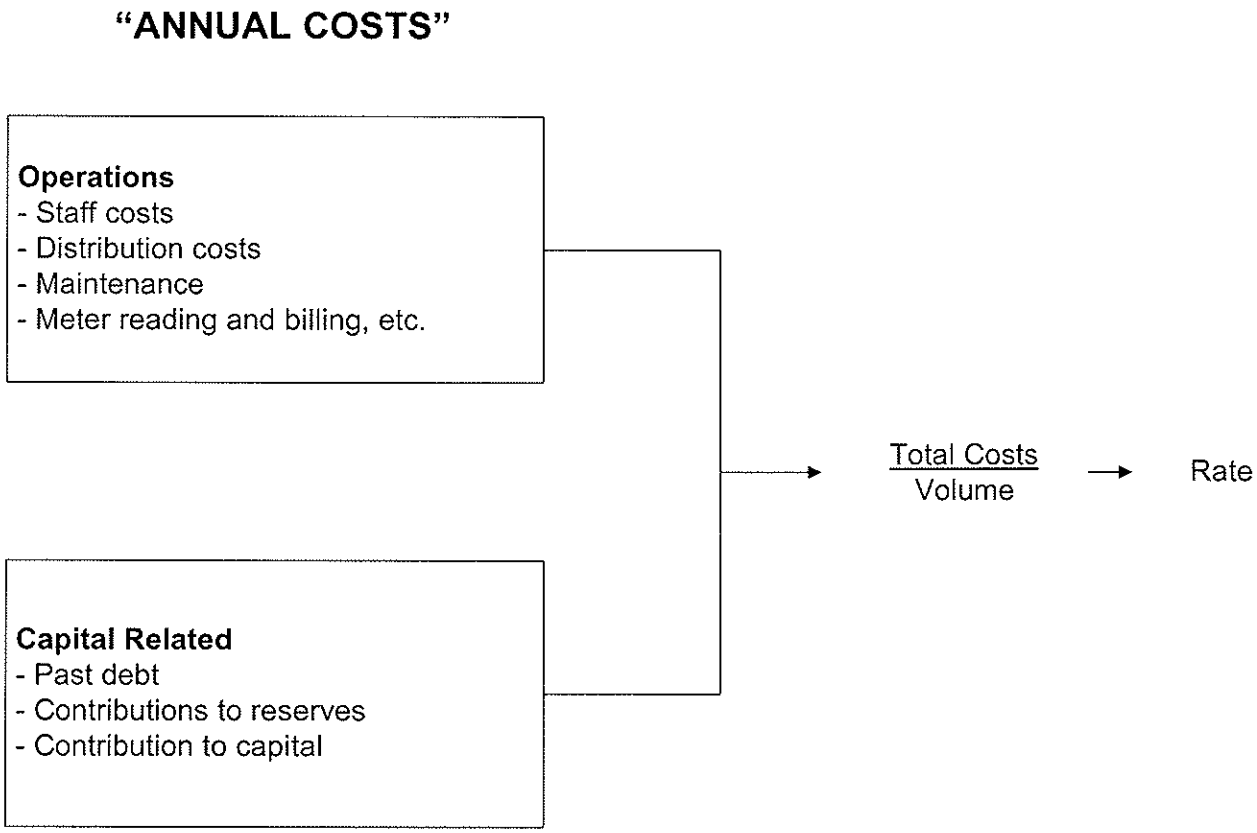
Description	Budget 2005	Forecast 2006	2007	2008	2009	2010	2011	2012	2013	2014
Expenditures										
Operating Costs										
SALARIES AND BENEFITS	306,000	312,120	318,362	324,730	331,224	337,849	344,606	351,498	358,528	365,698
TRAINING	12,240	12,485	12,734	12,989	13,249	13,514	13,784	14,060	14,341	14,628
CONVENTIONS & SEMINARS	2,040	2,081	2,122	2,165	2,208	2,252	2,297	2,343	2,390	2,438
CLOTHING	816	832	849	866	883	901	919	937	956	975
MEMBERSHIPS	2,040	2,081	2,122	2,165	2,208	2,252	2,297	2,343	2,390	2,438
HEALTH AND SAFETY	510	520	531	541	552	563	574	586	598	609
OFFICE SUPPLIES	4,080	4,162	4,245	4,330	4,416	4,505	4,595	4,687	4,780	4,876
ADVERTISING	612	624	637	649	662	676	689	703	717	731
INTERNET ACCESS	204	208	212	216	221	225	230	234	239	244
GENERAL INSURANCE	2,086	2,128	2,170	2,214	2,258	2,303	2,349	2,396	2,444	2,493
TELEPHONE	1,530	1,561	1,592	1,624	1,656	1,689	1,723	1,757	1,793	1,828
UTILITIES	16,830	17,167	17,510	17,860	18,217	18,582	18,953	19,332	19,719	20,113
BUILDING MAINTENANCE	5,100	5,202	5,306	5,412	5,520	5,631	5,743	5,858	5,975	6,095
GENERAL SUPPLIES	10,200	10,404	10,612	10,824	11,041	11,262	11,487	11,717	11,951	12,190
GENERAL MAINTENANCE	8,160	8,323	8,490	8,659	8,833	9,009	9,189	9,373	9,561	9,752
AUDIT FEES	4,386	4,474	4,563	4,654	4,748	4,842	4,939	5,038	5,139	5,242
PROFESSIONAL FEES	7,140	7,283	7,428	7,577	7,729	7,883	8,041	8,202	8,366	8,533
ENGINEERING FEES	22,273	22,718	23,173	23,636	24,109	24,591	25,083	25,584	26,096	26,618
INSURANCE DEDUCTIBLE	408	416	424	433	442	450	459	469	478	488
MISCELLANEOUS	1,020	1,040	1,061	1,082	1,104	1,126	1,149	1,172	1,195	1,219
VEHICLE & EQUIPMENT MTCE.	8,160	8,323	8,490	8,659	8,833	9,009	9,189	9,373	9,561	9,752
GASOLINE	4,590	4,682	4,775	4,871	4,968	5,068	5,169	5,272	5,378	5,485
VEHICLE & RADIO LICENCES	306	312	318	325	331	338	345	351	359	366
VEHICLE MTCE. - TIRES	3,060	3,121	3,184	3,247	3,312	3,378	3,446	3,515	3,585	3,657
EQUIPMENT MAINTENANCE	6,120	6,242	6,367	6,495	6,624	6,757	6,892	7,030	7,171	7,314
RADIO MAINTENANCE	510	520	531	541	552	563	574	586	598	609
COLLECTION EXPENSE	142,800	145,656	148,569	151,541	154,571	157,663	160,816	164,032	167,313	170,659
STONE	3,060	3,121	3,184	3,247	3,312	3,378	3,446	3,515	3,585	3,657
TRAFFIC & WARNING SIGN REPLACEMENT	2,040	2,081	2,122	2,165	2,208	2,252	2,297	2,343	2,390	2,438
VALVE MAINTENANCE (Ministry requirement)	5,100	5,202	5,306	5,412	5,520	5,631	5,743	5,858	5,975	6,095
EQUIPMENT & EQUIPMENT REPLACEMENT	12,240	12,485	12,734	12,989	13,249	13,514	13,784	14,060	14,341	14,628
CONTRACT O.C.W.A.	668,100	681,462	695,091	708,993	723,173	737,636	752,389	767,437	782,786	798,441
CONTRACT WITH HYDRO	153,000	156,060	159,181	162,365	165,612	168,924	172,303	175,749	179,264	182,849
WATER - MAIN MAINTENANCE	51,000	52,020	53,060	54,122	55,204	56,308	57,434	58,583	59,755	60,950
HYDRANTS	15,300	15,606	15,918	16,236	16,561	16,892	17,230	17,575	17,926	18,285
WATER - METER READING	4,896	4,994	5,094	5,196	5,300	5,406	5,514	5,624	5,736	5,851
WATER - METER REPAIRS	10,200	10,404	10,612	10,824	11,041	11,262	11,487	11,717	11,951	12,190
Additional Expenses due to Plant Expansion										121,899
Sub Total Operating	1,498,157	1,528,120	1,558,682	1,589,856	1,621,653	1,654,086	1,687,168	1,720,911	1,755,329	1,912,335
Capital-Related										
Existing Debt	252,751	252,743	252,983	252,399	252,979	78,588	0	0	0	0
New Debt Non-Growth	0	0	0	0	0	0	0	0	0	0
New Debt Growth	0	3,165	40,798	114,863	190,409	267,466	346,064	426,234	508,008	591,417
Capital From Current	0	0	0	0	0	0	0	0	0	0
Transfer to Rate Stabilization Reserve										
Transfer to Reserves and Reserve Funds	600,000	450,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Sub Total Capital Related	852,751	705,908	493,781	567,262	643,388	546,054	546,064	626,234	708,008	791,417
Total Expenditures	2,350,907	2,234,028	2,052,463	2,157,118	2,265,041	2,200,140	2,233,232	2,347,145	2,463,337	2,703,752
Revenues										
Transfer from DC Reserve Fund	0	3,165	253,824	258,901	264,079	269,360	274,748	280,243	285,848	291,564
Contributions from Reserves / Reserve Funds	0	0	0	0	0	0	0	0	0	0
Total Operating Revenue	0	3,165	253,824	258,901	264,079	269,360	274,748	280,243	285,848	291,564
Water Billing Recovery - Operating	2,350,907	2,230,863	1,798,639	1,898,217	2,000,962	1,930,780	1,958,484	2,066,903	2,177,490	2,412,188
Lifecycle Reserve Contribution ($)	313,600	721,000	1,228,600	1,736,500	1,994,500	2,252,800	2,560,000	2,560,000	2,580,000	2,580,000
Water Billing Recovery - Total	**2,664,507**	**2,951,863**	**3,027,239**	**3,634,717**	**3,995,462**	**4,183,580**	**4,518,484**	**4,626,903**	**4,757,490**	**4,992,188**

6. PRICING STRUCTURES

6. PRICING STRUCTURES

6.1 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, distribution costs, maintenance, administration, etc.) and capital-related costs (e.g. past debt to finance capital projects, transfers to reserves to finance future expenditures, etc.). The schematic below provides a simplified illustration of the rate calculation for water.



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
- 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, *Municipal Act*)

6.2 Alternative Pricing Structures

Throughout Ontario, and as well, Canada, the use of pricing mechanisms varies between municipalities. 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. (Note that with Bill 175 provisions to move to full cost pricing, this method will not be available in the future).

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 or 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.

6.3 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 consumption.

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. 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. By creating awareness of volumes consumed, the consumer can reduce his total costs by restricting consumption; however the incentive lessens as more water is consumed, because the marginal cost per unit declines as the consumer enters the next block pricing range. Similarly, those

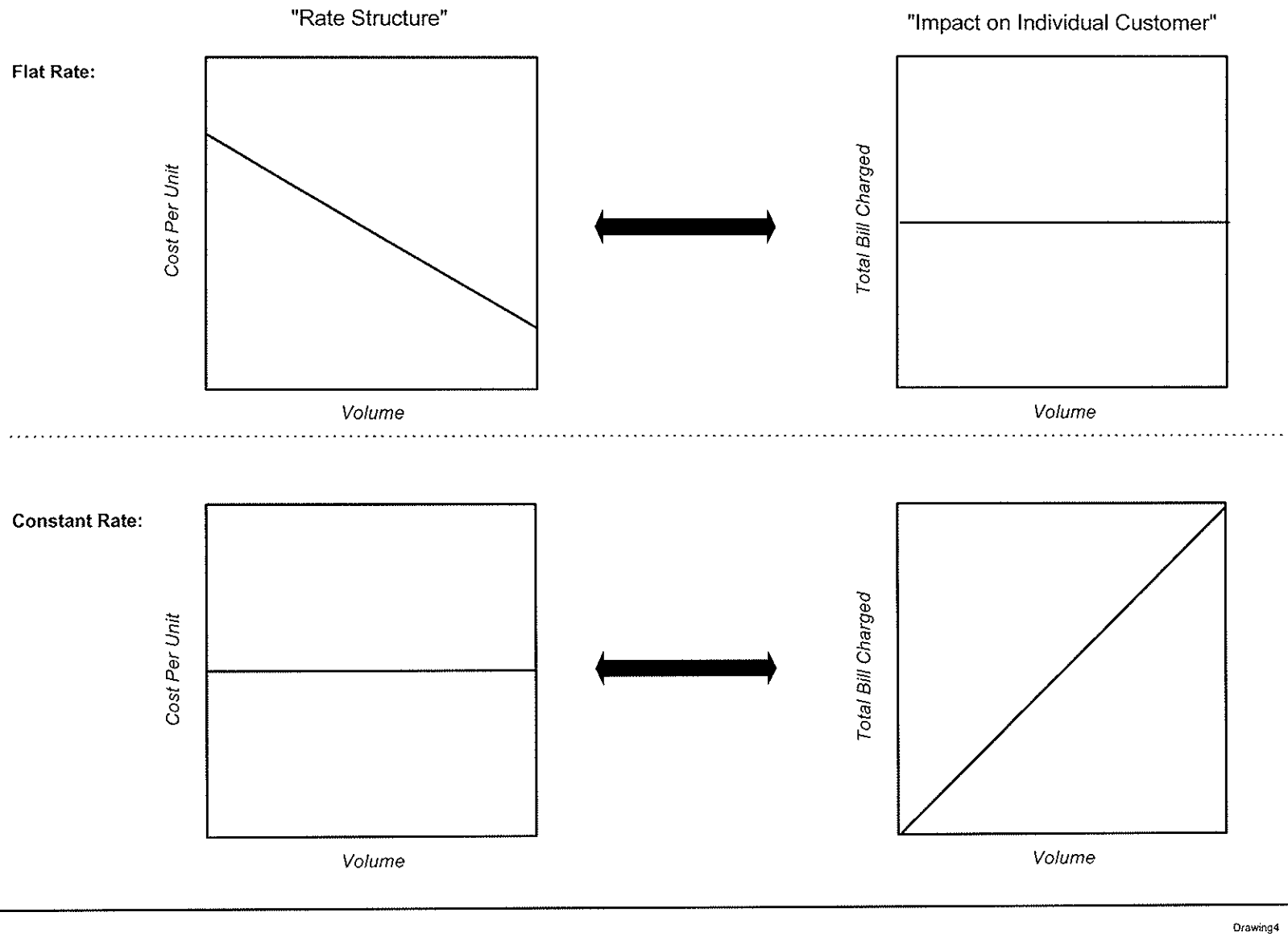
whose consumption level is at the top end of a block have reduced incentive to reduce consumption.

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 may also penalize legitimate high volume users if not properly structured.

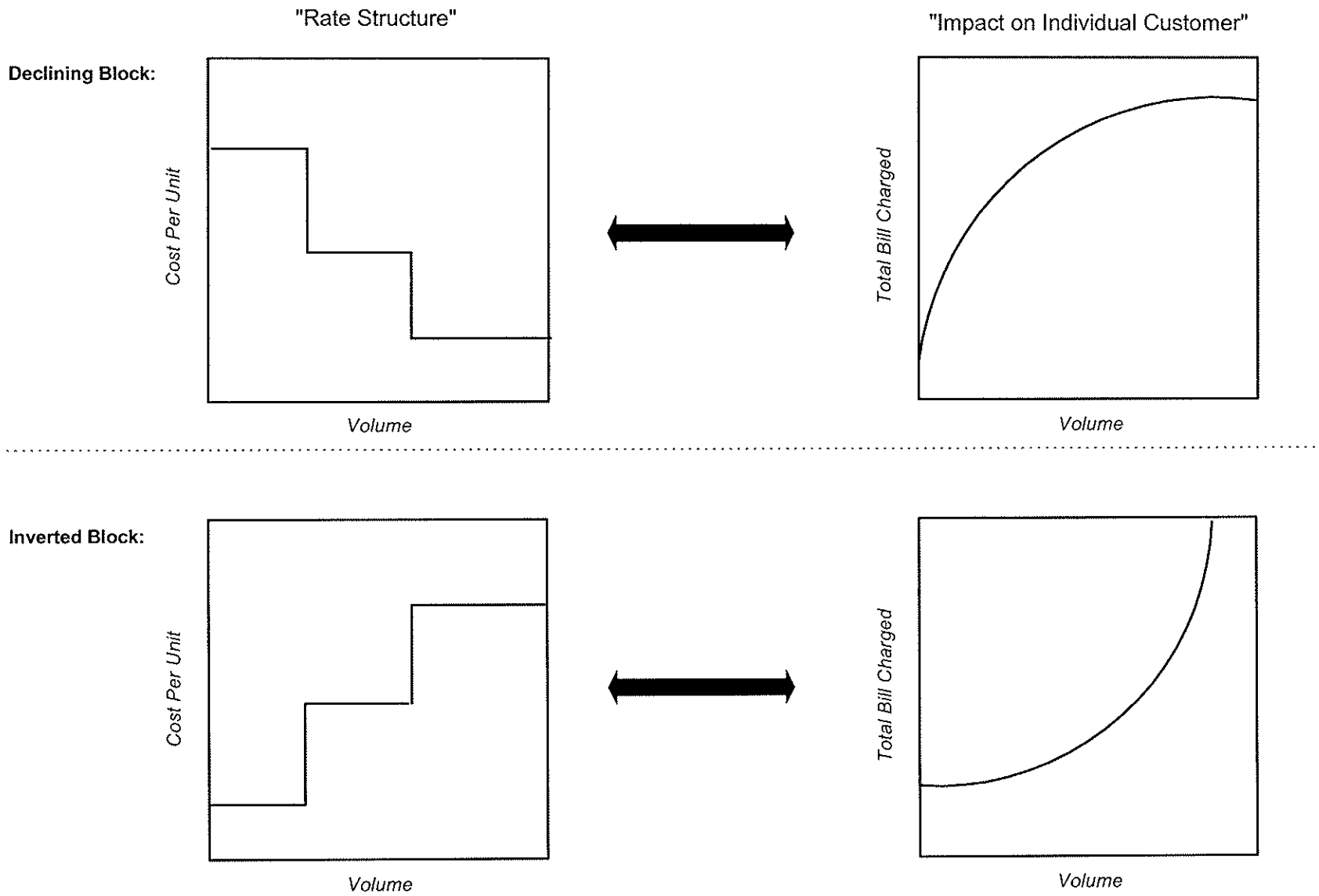
Figure 6-1 provides a schematic representation of the various rate structures (note property tax as a basis for revenue recovery has not been presented for comparison, as the proportion of taxes paid varies in direct proportion to the market value of the property). The graphs on the left-hand side of 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.

FIGURE 6-1
WATER RATE PRICING CONCEPTS



Drawing4

FIGURE 6-1 (Cont'd)
WATER RATE PRICING CONCEPTS



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

6.4 Rate Structures Elsewhere in Ontario

In a survey of over 100 municipalities, all forms of rate structures are in use by Ontario municipalities. The most common rate structure is the constant rate (for metered municipalities). Most municipalities who have volume rate structures also impose a base monthly charge.

In regards to non-metered municipalities, most use a flat rate charge for water services. Only a few municipalities collect all or a portion of their water charges by property taxation; however, resulting from Bill 175, these municipalities will need to develop individual rates, most likely on a flat rate basis.

A review of rates charged elsewhere in Essex County was undertaken. Table 6-1 provides for this summary. All municipalities provide a base monthly charge for metered consumers. For residential meters (5/8"), the monthly rate ranged from a low of $9.63 to a high of $13.50. For larger meter sizes, LaSalle, Tecumseh and Windsor increased the monthly charge as the meter size increased, whereas Leamington, Lakeshore and Essex imposed the same monthly charge.

In regard to volumetric rates ($/m^3), four of the municipalities used the constant rate structure while one used an increasing block (LaSalle) and one used a seasonal premium charge (Windsor).

6.5 Recommended Rate Structures

The Town presently uses a declining block rate structure with no base monthly charge (however a minimum bill is imposed).

Discussions were undertaken with staff and Council regarding the pros and cons of each of the rate structures. It is recommended that the constant rate be used as it balances conservation needs with economic development benefits. As well, it is recommended that a monthly base charge also be imposed. Rates similar to LaSalle's are recommended as they are at the mid-point for others in the area and the risks increase as the meter size increases. It is also recommended that these monthly rates be indexed for inflation annually. The following base charges are recommended for 2005:

Recommended Base Charge

Meter Size	Rate/mo.
5/8"	$12.00
3/4"	$12.00
1"	$16.00
1-1/4" – 1-1/2"	$20.00
2"	$30.00
3"	$40.00
4"	$75.00
6"	$200.00
8"	$300.00
10"	$300.00

Table 6-1
Town of Amherstburg
Comparison of Water Structures and Charges in Essex County Area
(2004)

Meter Size	LaSalle Rate/mo.	Tecumseh Rate/mo.	Windsor Rate/mo.	Leamington Rate/mo.	Lakeshore Rate/mo.	Essex Rate/mo.
5/8"	$12.00	$9.65	$9.63	$13.50	$12.00	$13.80
3/4"	$12.00	$9.65	$17.78	$13.50	$12.00	$13.80
1"	$16.00	$16.72	$26.12	$13.50	$12.00	$13.80
1 1/4"-1 1/2"	$20.00	$32.82	$61.19	$13.50	$12.00	$13.80
2"	$30.00	$48.92	$102.15	$13.50	$12.00	$13.80
3"	$40.00	$82.13	$183.58	$13.50	$12.00	$13.80
4"	$75.00	$132.56	$325.09	$13.50	$12.00	$13.80
6"	$200.00	$135.62	$593.58	$13.50	$12.00	$13.80
8"	$300.00		$989.03	$13.50	$12.00	$13.80
10"	$300.00		$1,629.29	$13.50	$12.00	$13.80

Consumption Charge						
Volume	Rate	Rate	Rate	Rate *	Rate	Rate
0-27 cubic metres	$0.66/m3	$0.41/m3	$0.266/m3	$0.40/m3	$0.66/m3	$0.75/m3
27-45 cubic metres	$0.77/m3	$0.41/m3	$0.266/m3	$0.40/m3	$0.66/m3	$0.75/m3
over 45 cubic metres	$0.85/m3	$0.41/m3	$0.266/m3	$0.40/m3	$0.66/m3	$0.75/m3
Summer Levy (Windsor)			$.249/m3			

7. ANALYSIS OF WATER RATES AND POLICY MATTERS

7. ANALYSIS OF WATER RATES AND POLICY MATTERS

7.1 Introduction

To summarize the analysis undertaken thus far, Chapter 2 reviewed capital-related issues and responds to the provincial directives to maintain and upgrade infrastructure to required levels. Chapter 4 provided a review of capital financing options to which lifecycle reserve contributions will be the predominant basis for financing future capital replacement. Chapter 5 established the 10-year operating forecast of expenditures including an annual lifecycle capital replacement reserve contribution. This chapter also identified non-rate revenues to assist in offsetting the charges for volumetric rates. Chapter 6 provided for a review of various rate structures and recommended that the constant rate structure (with a monthly base charge) will be calculated for Council's consideration.

This chapter will provide for the calculation of the rates over the next 10-year period. These calculations will be based on the net operating expenditures provided in Chapter 5, divided by the water consumption forecast provided in Section 1.6.

7.2 Base Charge

As noted in the last chapter, many municipalities impose a base monthly charge to its metered customers. This charge is imposed whether water is consumed during the period or not.

The establishment of a base charge is normally undertaken by policy; however, it may also be linked to certain components of the operating expenditures (i.e. to reflect the cost of billing, to recovery fixed costs within the system, etc.). Generally, the base charge will vary with the size of the meter (i.e. as the meter size increases, so does the base charge).

Based on surveys undertaken, the base charge can range from a few dollars per month up to approximately $18. As recommended in the last chapter, rates similar to LaSalle are being recommended. Table 7-1 provides for the calculation of the annual revenue expected to be raised via the recommended base charges. These charges have been indexed annually for

inflation and have also recognized the growth in the number of users commensurate with the growth forecast discussed in Chapter 1.

Table 7-1
Town of Amherstburg
Forecast Annual Base Charge Revenue

Water	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
5/8 & 3/4"	7,638	7,702	7,766	7,830	7,894	7,958	8,022	8,086	8,150	8,214
All Others	95	95	95	95	95	95	95	95	95	95
Subtotal Customers	7,733	7,797	7,861	7,925	7,989	8,053	8,117	8,181	8,245	8,309
Monthly Base Charge	$95,309	97,999	100,758	103,588	106,491	109,469	112,523	115,655	118,868	122,164
Total Annual Revenue	**$1,143,708**	**$1,175,982**	**$1,209,090**	**$1,243,052**	**$1,277,889**	**$1,313,622**	**$1,350,273**	**$1,387,865**	**$1,426,420**	**$1,465,963**

7.3 Water Rates

The water rate calculations are provided in Tables 7-2 and 7-3. Table 7-2 provides for the operating budget (as presented in Table 5-1) and includes the projected revenue to be generated from the base charge (Table 7-1). The "Water Billing Recovery – Total" line represents the amount to be recommended from the volumetric rates. Table 7-3 provides for the calculated rates. As can be seen, the overall rates are anticipated to increase annually by 10% on average over the forecast period. Factors which are affecting the rates (over and above inflation) are as follows:

- operating-related portion of the budget will increase inflation and growth pressures;
- capital-related portion will decrease with reduction in existing debt and reserve contributions – new debt is expected, after DC revenues, to generally be the same impact as existing debt;
- life cycle contributions are phased in over time.

7.4 Town's Commitment to Sustainable Asset Management

With the pending imposition of Bill 175 and its requirement for municipalities to move towards full cost recovery, it is important to highlight the Town's commitment towards sustainable asset management, as provided for in the plan. As discussed throughout the report, contributions for replacement/rehabilitation works are provided within the lifecycle reserve contributions. Table 7-4, following, summarizes the level of expenditures contained within the future rates over the next ten years.

Table 7-2
Town of Amherstburg
Water Services
Operating Budget Forecast
Inflated $

Description	Budget 2005	Forecast 2006	2007	2008	2009	2010	2011	2012	2013	2014
Expenditures										
Operating Costs										
SALARIES AND BENEFITS	306,000	312,120	318,362	324,730	331,224	337,849	344,606	351,498	358,528	365,698
TRAINING	12,240	12,485	12,734	12,989	13,249	13,514	13,784	14,060	14,341	14,628
CONVENTIONS & SEMINARS	2,040	2,081	2,122	2,165	2,208	2,252	2,297	2,343	2,390	2,438
CLOTHING	816	832	849	866	883	901	919	937	956	975
MEMBERSHIPS	2,040	2,081	2,122	2,165	2,208	2,252	2,297	2,343	2,390	2,438
HEALTH AND SAFETY	510	520	531	541	552	563	574	586	598	609
OFFICE SUPPLIES	4,080	4,162	4,245	4,330	4,416	4,505	4,595	4,687	4,780	4,876
ADVERTISING	612	624	637	649	662	676	689	703	717	731
INTERNET ACCESS	204	208	212	216	221	225	230	234	239	244
GENERAL INSURANCE	2,086	2,128	2,170	2,214	2,258	2,303	2,349	2,396	2,444	2,493
TELEPHONE	1,530	1,561	1,592	1,624	1,656	1,689	1,723	1,757	1,793	1,828
UTILITIES	16,830	17,167	17,510	17,860	18,217	18,582	18,953	19,332	19,719	20,113
BUILDING MAINTENANCE	5,100	5,202	5,306	5,412	5,520	5,631	5,743	5,858	5,975	6,095
GENERAL SUPPLIES	10,200	10,404	10,612	10,824	11,041	11,262	11,487	11,717	11,951	12,190
GENERAL MAINTENANCE	8,160	8,323	8,490	8,659	8,833	9,009	9,189	9,373	9,561	9,752
AUDIT FEES	4,386	4,474	4,563	4,654	4,748	4,842	4,939	5,038	5,139	5,242
PROFESSIONAL FEES	7,140	7,283	7,428	7,577	7,729	7,883	8,041	8,202	8,366	8,533
ENGINEERING FEES	22,273	22,718	23,173	23,636	24,109	24,591	25,083	25,584	26,096	26,618
INSURANCE DEDUCTIBLE	408	416	424	433	442	450	459	469	478	488
MISCELLANEOUS	1,020	1,040	1,061	1,082	1,104	1,126	1,149	1,172	1,195	1,219
VEHICLE & EQUIPMENT MTCE.	8,160	8,323	8,490	8,659	8,833	9,009	9,189	9,373	9,561	9,752
GASOLINE	4,590	4,682	4,775	4,871	4,968	5,068	5,169	5,272	5,378	5,485
VEHICLE & RADIO LICENCES	306	312	318	325	331	338	345	351	359	366
VEHICLE MTCE. - TIRES	3,060	3,121	3,184	3,247	3,312	3,378	3,446	3,515	3,585	3,657
EQUIPMENT MAINTENANCE	6,120	6,242	6,367	6,495	6,624	6,757	6,892	7,030	7,171	7,314
RADIO MAINTENANCE	510	520	531	541	552	563	574	586	598	609
COLLECTION EXPENSE	142,800	145,656	148,569	151,541	154,571	157,663	160,816	164,032	167,313	170,659
STONE	3,060	3,121	3,184	3,247	3,312	3,378	3,446	3,515	3,585	3,657
TRAFFIC & WARNING SIGN REPLACEMENT	2,040	2,081	2,122	2,165	2,208	2,252	2,297	2,343	2,390	2,438
VALVE MAINTENANCE (Ministry requirement)	5,100	5,202	5,306	5,412	5,520	5,631	5,743	5,858	5,975	6,095
EQUIPMENT & EQUIPMENT REPLACEMENT	12,240	12,485	12,734	12,989	13,249	13,514	13,784	14,060	14,341	14,628
CONTRACT O.C.W.A.	668,100	681,462	695,091	708,993	723,173	737,636	752,389	767,437	782,786	798,441
CONTRACT WITH HYDRO	153,000	156,060	159,181	162,365	165,612	168,924	172,303	175,749	179,264	182,849
WATER - MAIN MAINTENANCE	51,000	52,020	53,060	54,122	55,204	56,308	57,434	58,583	59,755	60,950
HYDRANTS	15,300	15,606	15,918	16,236	16,561	16,892	17,230	17,575	17,926	18,285
WATER - METER READING	4,896	4,994	5,094	5,196	5,300	5,406	5,514	5,624	5,736	5,851
WATER - METER REPAIRS	10,200	10,404	10,612	10,824	11,041	11,262	11,487	11,717	11,951	12,190
Additional Expenses due to Plant Expansion										121,899
Sub Total Operating	1,498,157	1,528,120	1,558,682	1,589,856	1,621,653	1,654,086	1,687,168	1,720,911	1,755,329	1,912,335
Capital-Related										
Existing Debt	252,751	252,743	252,983	252,399	252,979	78,588	0	0	0	0
New Debt Non-Growth	0	0	0	0	0	0	0	0	0	0
New Debt Growth	0	3,165	40,798	114,863	190,409	267,466	346,064	426,234	508,008	591,417
Capital From Current	0	0	0	0	0	0	0	0	0	0
Transfer to Rate Stabilization Reserve										
Transfer to Reserves and Reserve Funds	600,000	450,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Sub Total Capital Related	852,751	705,908	493,781	567,262	643,388	546,054	546,064	626,234	708,008	791,417
Total Expenditures	2,350,907	2,234,028	2,052,463	2,157,118	2,265,041	2,200,140	2,233,232	2,347,145	2,463,337	2,703,752
Revenues										
Base Charge	1,143,708	1,175,982	1,209,090	1,243,052	1,277,889	1,313,622	1,350,273	1,387,865	1,426,420	1,465,963
Transfer from DC Reserve Fund	0	3,165	253,824	258,901	264,079	269,360	274,748	280,243	285,848	291,564
Contributions from Reserves / Reserve Funds	0	0	0	0	0	0	0	0	0	0
Total Operating Revenue	1,143,708	1,179,147	1,462,915	1,501,953	1,541,968	1,582,983	1,625,021	1,668,108	1,712,268	1,757,527
Water Billing Recovery - Operating	1,207,199	1,054,881	589,548	655,165	723,073	617,157	608,211	679,038	751,069	946,225
Lifecycle Reserve Contribution ($)	313,600	721,000	1,228,600	1,736,500	1,994,500	2,252,800	2,560,000	2,560,000	2,580,000	2,580,000
Water Billing Recovery - Total	**1,520,799**	**1,775,881**	**1,818,148**	**2,391,665**	**2,717,573**	**2,869,957**	**3,168,211**	**3,239,038**	**3,331,069**	**3,526,225**

Table 7-3
Town of Amherstburg
Water Services
Water Rate Forecast
Inflated $

Description	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Water Billing Recovery	1,520,799	1,775,881	1,818,148	2,391,665	2,717,573	2,869,957	3,168,211	3,239,038	3,331,069	3,526,225
Total Consumption (m3)	2,702,027	2,718,198	2,734,369	2,750,540	2,766,711	2,782,881	2,799,052	2,815,223	2,831,394	2,847,565
Constant Rate	**0.56**	**0.65**	**0.66**	**0.87**	**0.98**	**1.03**	**1.13**	**1.15**	**1.18**	**1.24**

Table 7-4

Town of Amherstburg
Commitment to Bill 175 - Summary of Asset Replacement Expenditures

Year	Amherstburg Water System		
	Capital Expenditure	Lifecycle Fund Contributions	Total
2005	798,660	313,600	1,112,260
2006	421,362	721,000	1,142,362
2007	106,121	1,228,600	1,334,721
2008		1,736,500	1,736,500
2009		1,994,500	1,994,500
2010	-	2,252,800	2,252,800
2011	-	2,560,000	2,560,000
2012	-	2,560,000	2,560,000
2013	-	2,580,000	2,580,000
2014	-	2,580,000	2,580,000
Total	1,326,143	18,527,000	19,853,143

8. RECOMMENDATIONS

8. RECOMMENDATIONS

As presented within this report, operating expenditures have been identified and forecasted over a ten-year period for water services for the Amherstburg water system. In addition, a long-term lifecycle plan has been provided consistent with the requirements of Bill 175.

Based upon the foregoing, the following recommendations are put forth for Council's consideration:

1. That Council consider the Capital Plan for water as provided in Table 2-1 and the associated Capital Financing Plan as set out in Table 4-1.
2. That Council approve the phase-in provision for lifecycle costs for the replacement of water infrastructure, subject to the requirements of Bill 175 through regulations.
3. That Council adopt the monthly base charge rates as provided in Section 6.5.
4. That Council adopt the Constant Rate Charges presented in Chapter 7, which reflect the full cost of providing the water to the Amherstburg WTP service area.

APPENDIX A
2005 DEBT CAPACITY CALCULATIONS FROM THE PROVINCE

Ministry of Municipal Affairs and Housing
777 Bay Street,
Toronto, Ontario.
M5G 2E5

Ministère des affaires municipales et du logement
777 rue Bay
Toronto (Ontario)
M5G 2E5

ANNUAL REPAYMENT LIMIT
(UNDER ONTARIO REGULATION 403/02)

MMA CODE:	**45409**	
MUNID:	**37025**	
MUNICIPALITY:	**Amherstburg T**	
UPPER TIER:	**Essex Co**	
REPAYMENT LIMIT:		**C $2,295,183**

The repayment limit has been calculated based on data contained in the 2003 Financial Information Return, as submitted to the Ministry. This limit represents the maximum amount which the municipality had available as of December 31, 2003 to commit to payments relating to debt and financial obligations. Prior to the authorization by Council of a long term debt or financial obligation, this limit must be adjusted by the Treasurer in the prescribed manner. The limit is effective January 01, 2005.

FOR ILLUSTRATION PURPOSES ONLY,
the additional long-term borrowing which a municipality could undertake over a 5 - year, a 10 - year, a 15 - year and a 20 - year period is shown.

DETERMINATION OF ANNUAL DEBT REPAYMENT LIMIT

MUNICIPALITY: Amherstburg T	MMAH CODE: 45409

1.0		GROSS DEBT CHARGES		
	1.1	Principal	SLC 74 3099 01	1,450,916
	1.2	Interest	SLC 74 3099 02	769,513
	1.3	SUBTOTAL	Add Lines 1.1, 1.2	2,220,429
2.0		DEBT CHARGES ON O.C.W.A. PROVINCIAL PROJECT		
	2.1	Water Projects -- this municipality only	SLC 74 2810 03	0
	2.2	Water Projects -- share of integrated project(s)	SLC 74 2820 03	0
	2.3	Sewer Projects -- this municipality only	SLC 74 2830 03	0
	2.4	Sewer Projects -- share of integrated project(s)	SLC 74 2840 03	0
	2.5	SUBTOTAL	Add Lines 2.1 thru 2.4	0
3.0		PAYMENT IN RESPECT OF LONG TERM COMMITMENTS AND LIABILITIES	SLC 42 6010 01	0
4.0		**SUBTOTAL - DEBT CHARGES**	**Add Lines 1.3,2.5,3.0**	**2,220,429**
5.0		DEBT CHARGES FOR MUNICIPAL UTILITIES		
	5.1	Electricity	SLC 40 3099 02 + SLC 40 3099 08	0
	5.2	Gas	SLC 40 3299 02 + SLC 40 3299 08	0
	5.3	Telephone	SLC 40 3499 02 + SLC 40 3499 08	0
		Amounts Recovered from Unconsolidated Entities		
	5.4	Electricity (Principal)	SLC 74 3030 01	0
	5.5	Electricity (Interest)	SLC 74 3030 02	0
	5.6	Gas and Telephone (Principal)	SLC 74 3040 01 + SLC 74 3050 01	0
	5.7	Gas and Telephone (Interest)	SLC 74 3040 02 + SLC 74 3050 02	0
	5.8	SUBTOTAL	Add Lines 5.1 thru 5.7	0
6.0		PAYMENTS TO PROVINCE FOR DOWNTOWN REVITALIZATION PROGRAM LOANS	SLC 42 5410 01	0
7.0		DEBT CHARGES FOR TILE DRAINAGE AND SHORELINE ASSISTANCE	SLC 40 1850 02 + SLC 40 1850 08	53,187
8.0		**SUBTOTAL - DEBT CHARGES TO BE EXCLUDED**	**Add Lines 5.8,6.0,7.0**	**53,187**
9.0		**NET DEBT CHARGES**		**2,167,242**

Date Prepared: January 6, 2005

DETERMINATION OF ANNUAL DEBT REPAYMENT LIMIT

MUNICIPALITY: Amherstburg T **MMAH CODE: 45409**

10.0	TOTAL REVENUE FUND REVENUES		SLC 10 9910 01	18,337,155
11.0	FEES FOR REPAYING THE PROVINCE FOR DOWNTOWN REVITALIZATION LOANS		SLC 42 5410 01	0
12.0	FEES FOR TILE DRAINAGE AND SHORELINE ASSISTANCE		SLC 12 1850 04	0
13.0	GRANTS FROM GOVERNMENT OF ONTARIO, GOVERNMENT OF CANADA AND OTHER MUNICIPALITIES			
	13.1	Ontario Grants	SLC 10 0699 01 + SLC 10 0810 01	185,131
	13.2	Canada Grants	SLC 10 0820 01	163,580
	13.3	Other Municipalities	SLC 10 1099 01	138,745
	13.4	SUBTOTAL	Add Lines 13.1 thru 13.3	487,456
14.0	FEES AND REVENUES FOR JOINT LOCAL BOARDS FOR HOMES FOR THE AGED			0
15.0	**NET REVENUE FUND REVENUES**		**Lines 10 less Lines 11,12,13.4,14**	**17,849,699**
16.0	**25% OF NET REVENUE FUND REVENUE**			**4,462,425**
17.0	**ANNUAL REPAYMENT LIMIT** **25% of Net Revenue Fund Revenues less Net Debt Charges**			**2,295,183**

SLC denotes Schedule, Line, Column

FOR ILLUSTRATION PURPOSES ONLY

If the municipality could borrow at 7.0% or 9.0% annually, the annual repayment limit shown in 17 above would allow it to undertake additional long-term borrowing as follows:

	7.0% Interest Rate:	
(a)	20 years @ 7.0% p.a.	24,315,199
(b)	15 years @ 7.0% p.a.	20,904,327
(c)	10 years @ 7.0% p.a.	16,120,403
(d)	05 years @ 7.0% p.a.	9,410,702
	9.0% Interest Rate:	
(a)	20 years @ 9.0% p.a.	20,951,681
(b)	15 years @ 9.0% p.a.	18,500,753
(c)	10 years @ 9.0% p.a.	14,729,697
(d)	05 years @ 9.0% p.a.	8,927,460

APPENDIX B
SYSTEM INVENTORY DATA

WATER MAIN INVENTORY LENGTH (M) BY SIZE

Diameter	Cast Iron	Ductile Iron	Asbestos Cement	Hyprescon	PVC	Totals
50mm	0	0	0	0	19,137	19,137
100mm	0	853	0	0	40,192	41,045
150mm	3,734	19,071	8,992	0	111,050	142,847
200mm	798	2,451	11,500	0	23,443	38,192
250mm	0	0	0	0	6,176	6,176
300mm	3,961	598	1,197	0	31,988	37,744
400mm	0	0	3,168	0	0	3,168
450mm	0	114	0	0	0	114
500mm	0	0	0	5,301	0	5,301
600mm	0	0	0	2,125	0	2,125
Totals	8,493	23,087	24,857	7,426	231,986	295,849

WATER MAIN INVENTORY LENGTH (M) BY AGE

Decade	Cast Iron	Ductile Iron	Asbestos Cement	Hyprescon	PVC	Totals
1950 to 1959	7,609	0	0	0	0	7,609
1960 to 1969	0	399	0	0	0	399
1970 to 1979	798	7,625	24,857	7,426	56,824	97,530
1980 to 1989	86	12,234	0	0	33,318	45,638
1990 to 1999	0	2,829	0	0	136,459	139,288
2000 to 2004	0	0	0	0	5,385	5,385
Totals	8,493	23,087	24,857	7,426	231,986	295,849

WATER MAIN VALUE ($)

Decade	Cast Iron	Ductile Iron	Asbestos Cement	Hyprescon	PVC	Totals
1950 to 1959	2,648,040	0	0	0	0	2,648,040
1960 to 1969	0	150,480	0	0	0	150,480
1970 to 1979	279,300	2,554,375	8,640,400	3,702,720	19,846,950	35,023,745
1980 to 1989	28,643	4,140,440	0	0	10,905,025	15,074,108
1990 to 1999	0	941,725	0	0	45,361,080	46,302,805
2000 to 2004	0	0	0	0	1,805,405	1,805,405
Totals	2,955,983	7,787,020	8,640,400	3,702,720	77,918,460	101,004,583

ANNUAL LIFECYCLE CONTRIBUTION ($)

Decade	Cast Iron	Ductile Iron	Asbestos Cement	Hyprescon	PVC	Totals
1950 to 1959	62,484	0	0	0	0	62,484
1960 to 1969	0	2,403	0	0	0	2,403
1970 to 1979	3,200	29,269	99,007	42,428	227,417	401,322
1980 to 1989	244	35,288	0	0	92,941	128,473
1990 to 1999	0	6,116	0	0	294,596	300,712
2000 to 2004	0	0	0	0	10,304	10,304
Total	65,929	73,077	99,007	42,428	625,259	905,699

HYDRANTS

Installation Date	Number (Each)	Age (Years)	Asset Life (Years)	Total Replacement Cost ($)	Annual Lifecycle Contribution ($)
1950 to 1959	24	50	80	84,000	1,982
1960 to 1969	1	40	80	3,500	56
1970 to 1979	313	30	80	1,095,500	12,553
1980 to 1989	147	20	80	514,500	4,385
1990 to 1999	447	10	80	1,564,500	10,161
2000 to 2004	18	5	80	63,000	360
Total	950			3,325,000	29,496

VALVE INVENTORY

Decade	50mm	100mm	150mm	200mm	300mm	400mm	Totals
1950 to 1959				23	25		48
1960 to 1969					2		2
1970 to 1979	1		77	23	37	4	142
1980 to 1989	10	1	114	6	3		134
1990 to 1999	14	5	160	2	31		212
2000 to 2004	0		27	0			27
Total	25	6	378	54	98	4	565

VALVES VALUE ($)

Decade	50mm	100mm	150mm	200mm	300mm	400mm	Totals	Annual Lifecycle Contribution
1950 to 1959	0	0	0	34,500	37,500	0	72,000	1,699
1960 to 1969	0	0	0	0	3,000	0	3,000	48
1970 to 1979	1,500	0	115,500	34,500	55,500	6,000	213,000	2,441
1980 to 1989	15,000	0	171,000	9,000	4,500	0	199,500	1,700
1990 to 1999	21,000	1,500	240,000	3,000	46,500	0	312,000	2,026
2000 to 2004	0	7,500	40,500	0	0	0	48,000	274
Total	37,500	9,000	567,000	81,000	147,000	6,000	847,500	8,188

SERVICE INVENTORY (INCLUDING METERS)

Decade	18/20 mm	25 mm	40 mm	50 mm	80 mm	100 mm	150 mm	200 mm	Totals
1950 to 1959	195	1		1					197
1960 to 1969	10								10
1970 to 1979	2,508	9	3	16		1	1	1	2,539
1980 to 1989	1,174	4	1	7		1		1	1,188
1990 to 1999	3,580	13	6	22	1	1	1	1	3,625
2000 to 2004	138	1		2					141
Total	7605	28	10	48	1	3	2	3	7,700

SERVICE VALUE (INCLUDING METERS) ($)

Decade	18/20 mm	25 mm	40 mm	50 mm	80 mm	100 mm	150 mm	200 mm	Totals	Annual Lifecycle Contribution
1950 to 1959	436,800	2,440	0	2,840	0	0	0	0	442,080	10,431
1960 to 1969	22,400	0	0	0	0	0	0	0	22,400	358
1970 to 1979	5,617,920	21,960	7,920	45,440	0	3,440	3,840	4,240	5,704,760	65,368
1980 to 1989	2,629,760	9,760	2,640	19,880	0	3,440	0	4,240	2,669,720	22,753
1990 to 1999	8,019,200	31,720	15,840	62,480	3,040	3,440	3,840	4,240	8,143,800	52,890
2000 to 2004	309,120	2,440	0	5,680	0	0	0	0	317,240	1,811
Total	17,035,200	68,320	26,400	136,320	3,040	10,320	7,680	12,720	17,300,000	153,611

ANNUAL LIFECYCLE COST FOR WATER TREATMENT PLANT AND WATER TOWER

Process	Construction Date	Rehabilitation Date	Lifecycle	Renewal Date	Present Value	Years to Replacement	Annual Lifecycle Contribution
Plant Intake	1971		60	2031	$1,160,000	26	$34,451
Raw Water Screening	1971		20	1991	$600,000	10	$54,796
Treatment Plant Building	1971		60	2031	$2,500,000	26	$74,248
Raw Water Pumping	1971 & 1985	2001	15	2016	$575,000	11	$47,252
Clarification	1971		50	2021	$875,000	16	$46,944
Filtration	1971		30	2001	$10,000,000	10	$913,265
Treated Water Pumping	1971 & 1985	1985	15	2000	$575,000	10	$52,513
Primary & Final Disinfection	2002		30	2032	$180,000	27	$5,093
Coagulation	1971		20	1991	$75,000	10	$6,849
Fluoride	1971		20	1991	$55,000	10	$5,023
Powder Activated Carbon	1998		20	2018	$75,000	13	$5,109
Storage Reservoir	1971		50	2021	$2,750,000	16	In Capital Budget
Water Tower	1970	1982	50	2020	$800,000	15	In Capital Budget
Emergency Power	1971		30	2001	$80,000	10	$7,306
Instrumentation	1971		20	1991	$250,000	10	$22,832
Instrumentation	2002		10	2012	$200,000	10	$18,265
Total					$20,550,000		$1,275,681

NOTE: Lifecycle based on industry standard. Plant unit processes with renewal dates of 2005 or earlier have been assigned a years to replacement time of 10 years.

APPENDIX C
DETAILED WATER RATE CALCULATIONS

Table C-1
Town of Amherstburg
Water Service
Capital Budget Forecast
Inflated $

PF 1.75

Description	Total	Budget	Forecast								
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Capital Expenditures											
Improvements to Water Plant as result of Environmental Assessment Report	8,059,991	0	0	0	0	0	0	0	0	0	8,059,991
Distribution System Upgrades	5,474,860	500,000	510,000	520,200	530,604	541,216	552,040	563,081	574,343	585,830	597,546
Scheduled Inspections & Reports	223,050	61,710	7,803	11,143	56,828	85,566	0	0	0	0	0
Water Conservation Program	145,365	97,793	47,572	0	0	0	0	0	0	0	0
Cryptosporidium Monitoring & Contingency Planning for Water Borne Spill	40,800	40,800	0	0	0	0	0	0	0	0	0
Watermain Replacements	1,326,143	798,660	421,362	106,121	0	0	0	0	0	0	0
Water Meter Replacements	526,617	140,687	93,636	95,509	97,419	99,367	0	0	0	0	0
Miscellaneous Improvements	102,010	102,010	0	0	0	0	0	0	0	0	0
Water Tower	1,656,121	0	0	0	0	1,656,121	0	0	0	0	0
Water Resevoir	3,222,063	0	0	0	0	0	0	0	3,222,063	0	0
Total Capital Expenditures	20,777,021	1,741,659	1,080,373	732,972	684,851	2,382,271	552,040	563,081	3,796,406	585,830	8,657,537
Capital Financing											
Provincial/Federal Grants	0	0	0	0	0	0	0	0	0	0	0
Development Charges	723,451	477,768	245,683	0	0	0	0	0	0	0	0
Debenture Requirements Non-Growth	1	0	0	0	0	0	0	0	0	0	0
Debenture Requirements Growth	12,811,401	22,232	264,317	520,200	530,604	541,216	552,040	563,081	574,343	585,830	8,657,537
Operating Contributions	0	0	0	0	0	0	0	0	0	0	0
Reserves and Reserve Funds	7,242,169	1,241,659	570,373	212,772	154,247	1,841,055	0	0	3,222,063	0	0
Total Capital Financing	20,777,021	1,741,659	1,080,373	732,972	684,851	2,382,271	552,040	563,081	3,796,406	585,830	8,657,537

Table C-2
Town of Amherstburg
Water Service
Schedule of Non-DC Related Debenture Repayments
Inflated $

Internal Debenture Year	Principal (Inflated)	Year									
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2012
2005	0		0	0	0	0	0	0	0	0	0
2006	0			0	0	0	0	0	0	0	0
2007	0				0	0	0	0	0	0	0
2008	0					0	0	0	0	0	0
2009	0						0	0	0	0	0
2010	0							0	0	0	0
2011	0								0	0	0
2012	0									0	0
2013	0										0
2014	0										
Total Annual Debt Charges	**1**	0	0	0	0	0	0	0	0	0	0

Rate:

Table C-3
Town of Amherstburg
Water Service
Schedule of DC (Growth Related) Debenture Repayments
Inflated $

Internal Debenture Year	Principal (Inflated)	Year									
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2012
2005	22,232		3,165	3,165	3,165	3,165	3,165	3,165	3,165	3,165	3,165
2006	264,317			37,633	37,633	37,633	37,633	37,633	37,633	37,633	37,633
2007	520,200				74,065	74,065	74,065	74,065	74,065	74,065	74,065
2008	530,604					75,546	75,546	75,546	75,546	75,546	75,546
2009	541,216						77,057	77,057	77,057	77,057	77,057
2010	552,040							78,598	78,598	78,598	78,598
2011	563,081								80,170	80,170	80,170
2012	574,343									81,773	81,773
2013	585,830										83,409
2014	8,657,537										
Total Annual Debt Charges	**12,811,401**	0	3,165	40,798	114,863	190,409	267,466	346,064	426,234	508,008	591,417

Table C-4
Town of Amherstburg
Water Service
Water Reserves/ Reserve Funds Continuity
Inflated $

Description	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Opening Balance	4,043,642	3,572,083	3,624,295	3,792,099	4,029,745	2,508,125	2,843,531	3,195,708	182,327	401,443
Transfer to Reserve	600,000	450,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Transfer to Capital	1,241,659	570,373	212,772	154,247	1,841,055	0	0	3,222,063	0	0
Transfer to Operating	0	0	0	0	0	0	0	0	0	0
Closing Balance	3,401,983	3,451,710	3,611,523	3,837,852	2,388,690	2,708,125	3,043,531	173,644	382,327	601,443
Interest	170,099	172,585	180,576	191,893	119,435	135,406	152,177	8,682	19,116	30,072

Table C-5
Town of Amherstburg
Water Service
Water DC Reserve Funds Continuity
Inflated $

Description	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Opening Balance	233,800	0	-0	-0	-0	-0	-0	-0	-0	-0
DC Revenue	243,968	248,847	253,824	258,901	264,079	269,360	274,748	280,243	285,848	291,564
Transfer to Capital	477,768	245,683	0	0	0	0	0	0	0	0
Transfer to Operating	0	3,165	253,824	258,901	264,079	269,360	274,748	280,243	285,848	291,564
Closing Balance	0	-0	-0	-0	-0	-0	-0	-0	-0	-0
Interest	0	-0	-0	-0	-0	-0	-0	-0	-0	-0

Table C-6
Town of Amherstburg
Water Service
Life Cycle Reserve Funds Continuity
Inflated $

Description	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Opening Balance	0	329,280	1,102,794	2,447,964	4,393,687	6,707,596	9,408,416	12,566,837	15,883,179	19,386,338
Tranfer From Operating Budget	313,600	721,000	1,228,600	1,736,500	1,994,500	2,252,800	2,560,000	2,560,000	2,580,000	2,580,000
Transfer to Capital	0	0	0	0	0	0	0	0	0	0
Transfer to Operating	0	0	0	0	0	0	0	0	0	0
Closing Balance	313,600	1,050,280	2,331,394	4,184,464	6,388,187	8,960,396	11,968,416	15,126,837	18,463,179	21,966,338
Interest	15,680	52,514	116,570	209,223	319,409	448,020	598,421	756,342	923,159	1,098,317

Table C-7
Town of Amherstburg
Water Services
Operating Budget Forecast
Inflated $

Description	Budget 2005	Forecast 2006	2007	2008	2009	2010	2011	2012	2013	2014
Expenditures										
Operating Costs										
SALARIES AND BENEFITS	306,000	312,120	318,362	324,730	331,224	337,849	344,606	351,498	358,528	365,698
TRAINING	12,240	12,485	12,734	12,989	13,249	13,514	13,784	14,060	14,341	14,628
CONVENTIONS & SEMINARS	2,040	2,081	2,122	2,165	2,208	2,252	2,297	2,343	2,390	2,438
CLOTHING	816	832	849	866	883	901	919	937	956	975
MEMBERSHIPS	2,040	2,081	2,122	2,165	2,208	2,252	2,297	2,343	2,390	2,438
HEALTH AND SAFETY	510	520	531	541	552	563	574	586	598	609
OFFICE SUPPLIES	4,080	4,162	4,245	4,330	4,416	4,505	4,595	4,687	4,780	4,876
ADVERTISING	612	624	637	649	662	676	689	703	717	731
INTERNET ACCESS	204	208	212	216	221	225	230	234	239	244
GENERAL INSURANCE	2,086	2,128	2,170	2,214	2,258	2,303	2,349	2,396	2,444	2,493
TELEPHONE	1,530	1,561	1,592	1,624	1,656	1,689	1,723	1,757	1,793	1,828
UTILITIES	16,830	17,167	17,510	17,860	18,217	18,582	18,953	19,332	19,719	20,113
BUILDING MAINTENANCE	5,100	5,202	5,306	5,412	5,520	5,631	5,743	5,858	5,975	6,095
GENERAL SUPPLIES	10,200	10,404	10,612	10,824	11,041	11,262	11,487	11,717	11,951	12,190
GENERAL MAINTENANCE	8,160	8,323	8,490	8,659	8,833	9,009	9,189	9,373	9,561	9,752
AUDIT FEES	4,386	4,474	4,563	4,654	4,748	4,842	4,939	5,038	5,139	5,242
PROFESSIONAL FEES	7,140	7,283	7,428	7,577	7,729	7,883	8,041	8,202	8,366	8,533
ENGINEERING FEES	22,273	22,718	23,173	23,636	24,109	24,591	25,083	25,584	26,096	26,618
INSURANCE DEDUCTIBLE	408	416	424	433	442	450	459	469	478	488
MISCELLANEOUS	1,020	1,040	1,061	1,082	1,104	1,126	1,149	1,172	1,195	1,219
VEHICLE & EQUIPMENT MTCE.	8,160	8,323	8,490	8,659	8,833	9,009	9,189	9,373	9,561	9,752
GASOLINE	4,590	4,682	4,775	4,871	4,968	5,068	5,169	5,272	5,378	5,485
VEHICLE & RADIO LICENCES	306	312	318	325	331	338	345	351	359	366
VEHICLE MTCE. - TIRES	3,060	3,121	3,184	3,247	3,312	3,378	3,446	3,515	3,585	3,657
EQUIPMENT MAINTENANCE	6,120	6,242	6,367	6,495	6,624	6,757	6,892	7,030	7,171	7,314
RADIO MAINTENANCE	510	520	531	541	552	563	574	586	598	609
COLLECTION EXPENSE	142,800	145,656	148,569	151,541	154,571	157,663	160,816	164,032	167,313	170,659
STONE	3,060	3,121	3,184	3,247	3,312	3,378	3,446	3,515	3,585	3,657
TRAFFIC & WARNING SIGN REPLACEMENT	2,040	2,081	2,122	2,165	2,208	2,252	2,297	2,343	2,390	2,438
VALVE MAINTENANCE (Ministry requirement)	5,100	5,202	5,306	5,412	5,520	5,631	5,743	5,858	5,975	6,095
EQUIPMENT & EQUIPMENT REPLACEMENT	12,240	12,485	12,734	12,989	13,249	13,514	13,784	14,060	14,341	14,628
CONTRACT O.C.W.A.	668,100	681,462	695,091	708,993	723,173	737,636	752,389	767,437	782,786	798,441
CONTRACT WITH HYDRO	153,000	156,060	159,181	162,365	165,612	168,924	172,303	175,749	179,264	182,849
WATER - MAIN MAINTENANCE	51,000	52,020	53,060	54,122	55,204	56,308	57,434	58,583	59,755	60,950
HYDRANTS	15,300	15,606	15,918	16,236	16,561	16,892	17,230	17,575	17,926	18,285
WATER - METER READING	4,896	4,994	5,094	5,196	5,300	5,406	5,514	5,624	5,736	5,851
WATER - METER REPAIRS	10,200	10,404	10,612	10,824	11,041	11,262	11,487	11,717	11,951	12,190
Additional Expenses due to Plant Expansion										121,899
Sub Total Operating	1,498,157	1,528,120	1,558,682	1,589,856	1,621,653	1,654,086	1,687,168	1,720,911	1,755,329	1,912,335

Table C-7
Town of Amherstburg
Water Services
Operating Budget Forecast
Inflated $

Description	Budget 2005	Forecast 2006	2007	2008	2009	2010	2011	2012	2013	2014
Capital-Related										
Existing Debt	252,751	252,743	252,983	252,399	252,979	78,588	0	0	0	0
New Debt Non-Growth	0	0	0	0	0	0	0	0	0	0
New Debt Growth	0	3,165	40,798	114,863	190,409	267,466	346,064	426,234	508,008	591,417
Capital From Current	0	0	0	0	0	0	0	0	0	0
Transfer to Rate Stabilization Reserve										
Transfer to Reserves and Reserve Funds	600,000	450,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Sub Total Capital Related	852,751	705,908	493,781	567,262	643,388	546,054	546,064	626,234	708,008	791,417
Total Expenditures	2,350,907	2,234,028	2,052,463	2,157,118	2,265,041	2,200,140	2,233,232	2,347,145	2,463,337	2,703,752
Revenues										
Base Charge	1,143,708	1,175,982	1,209,090	1,243,052	1,277,889	1,313,622	1,350,273	1,387,865	1,426,420	1,465,963
Transfer from DC Reserve Fund	0	3,165	253,824	258,901	264,079	269,360	274,748	280,243	285,848	291,564
Contributions from Reserves / Reserve Funds	0	0	0	0	0	0	0	0	0	0
Total Operating Revenue	1,143,708	1,179,147	1,462,915	1,501,953	1,541,968	1,582,983	1,625,021	1,668,108	1,712,268	1,757,527
Water Billing Recovery - Operating	1,207,199	1,054,881	589,548	655,165	723,073	617,157	608,211	679,038	751,069	946,225
Lifecycle Reserve Contribution ($)	313,600	721,000	1,228,600	1,736,500	1,994,500	2,252,800	2,560,000	2,560,000	2,580,000	2,580,000
Water Billing Recovery - Total	**1,520,799**	**1,775,881**	**1,818,148**	**2,391,665**	**2,717,573**	**2,869,957**	**3,168,211**	**3,239,038**	**3,331,069**	**3,526,225**

Table C-8
Town of Amherstburg
Water Services
Water Rate Forecast
Inflated $

Description	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Water Billing Recovery	1,520,799	1,775,881	1,818,148	2,391,665	2,717,573	2,869,957	3,168,211	3,239,038	3,331,069	3,526,225
Total Consumption (m^3)	2,702,027	2,718,198	2,734,369	2,750,540	2,766,711	2,782,881	2,799,052	2,815,223	2,831,394	2,847,565
Constant Rate	**0.56**	**0.65**	**0.66**	**0.87**	**0.98**	**1.03**	**1.13**	**1.15**	**1.18**	**1.24**