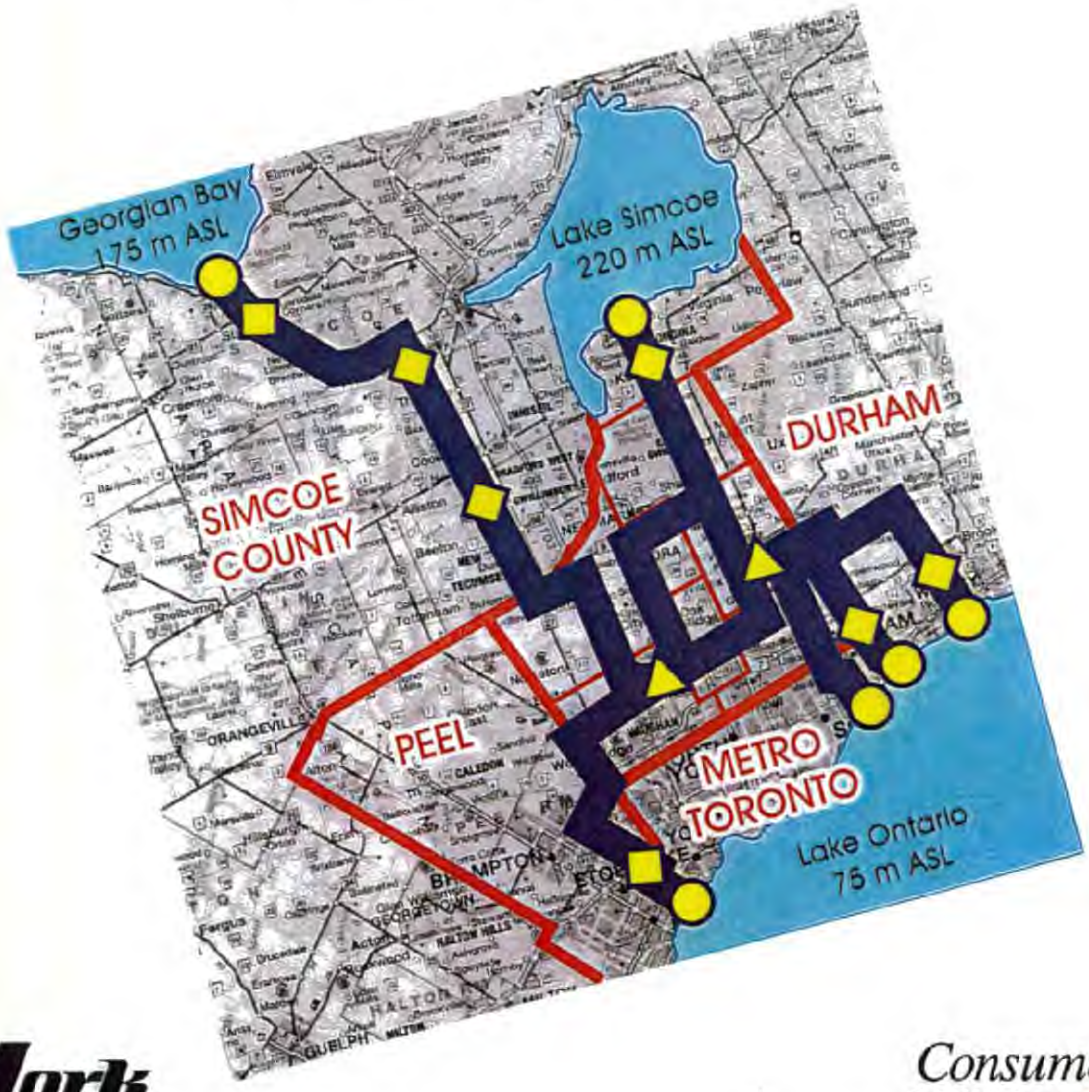
YORK REGION
LONG TERM WATER PROJECT
OCTOBER 1996

SUMMARY REPORT ON ALTERNATIVES



York Region

Consumers Utilities

YORK REGION LONG TERM WATER PROJECT

SUMMARY REPORT
OCTOBER 21, 1996

FOREWORD

The content of this report is intended to provide a preliminary evaluation of all the alternative solutions for York Region's long-term water needs. It presents the various technical alternatives and the forecasted rate and development charge impacts. It catalogues the technical reports completed and summarizes their findings.

This report is not intended to steer the reader to a preferred solution at the present time.

Its purpose is to facilitate understanding of the work undertaken to develop all the alternatives to this point and to initiate discussion of their relative merits. It will be available to the public and will be incorporated in the Environmental Assessment documentation of the project to confirm that all participants in the forthcoming public participation activities had access to its contents.

The preferred solution and implementation strategy will be presented to York Region Council on December 19th, 1996 with consideration to the feedback and input received.

BACKGROUND

Since 1986, the population of Ontario has grown by 10.8 percent. The Greater Toronto Area exceeded the growth of the Province by 3.5 percent and York Region experienced the highest growth in the GTA at 44 percent in this period. York Region is expected to reach a population of 934,000 by 2011, 1.1 million by 2021, and 1.2 million by 2031.

To accommodate the growth in the Region and meet water supply projections, York Region took steps to form a public/private partnership to develop and implement a long-term water supply strategy. In September 1995, the Region's Long Term Water Supply Task Force invited three consortia to respond to a Request for Proposal to form this public/private partnership; and in March 1996, Consumers Utilities was selected as the Region's private sector partners.

A work plan was formulated by the Partnership and accepted by York Regional Council to derive the optimal solution to the long-term water needs. Since May 1996, the Partnership has been developing and reviewing alternative solutions to the long-term water supply requirements of the Region.

This process has generated an extensive amount of information which cannot easily be displayed, however staff of York Region and Consumers Utilities will only be too pleased to guide Members of Council and the public through the information and answer any questions.

YORK REGION LONG TERM WATER PROJECT

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YORK REGION LONG TERM WATER PROJECT

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INTRODUCTION

In order to identify viable and justifiable alternatives for the long-term water supplies to York Region, one of the first activities undertaken was to develop a Project Structure. The Project Structure, shown on the following page and which was approved by York Region Council, targeted activity in clear focus to a number of work groups enabling a coordinated approach across the very wide range of issues to be addressed.

This Summary utilizes the Project Structure to highlight and explain the detailed activities carried out and also provides the direction to enable the reader to refer where necessary to the various consultant and other reports.

In all some 234 separate but interrelated task areas were identified across the principal work areas. To ensure the correct timing, execution and completion of all of these tasks use was made of the project management software application, Microsoft Project©.

This application facilitated the construction of a programmed schedule of activities covering all of the tasks in their correct sequence to obtain timely completion. The schedule, known as the GANTT CHART, also provided identification of the critical path of activities and was used by all involved in the project to monitor and control direction.

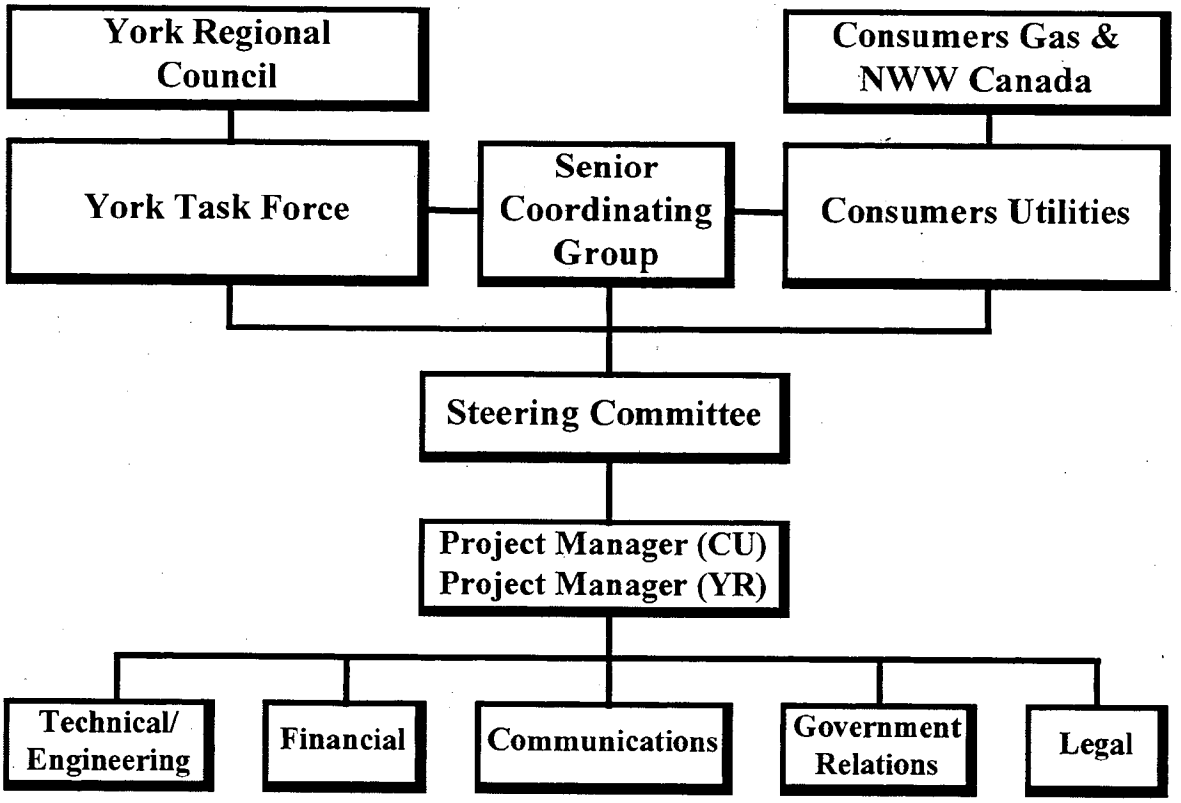
The chart covers every activity area in some detail. As such, it is not believed appropriate to include all of the information in this Summary. The following overview chart provides an indication of the elements covered.

The Summary will therefore draw together and provide a précis of all of the key activities carried out in the five principal work areas:

- **TECHNICAL/ENGINEERING**
- **FINANCIAL**
- **COMMUNICATIONS**
- **GOVERNMENT RELATIONS**
- **LEGAL**

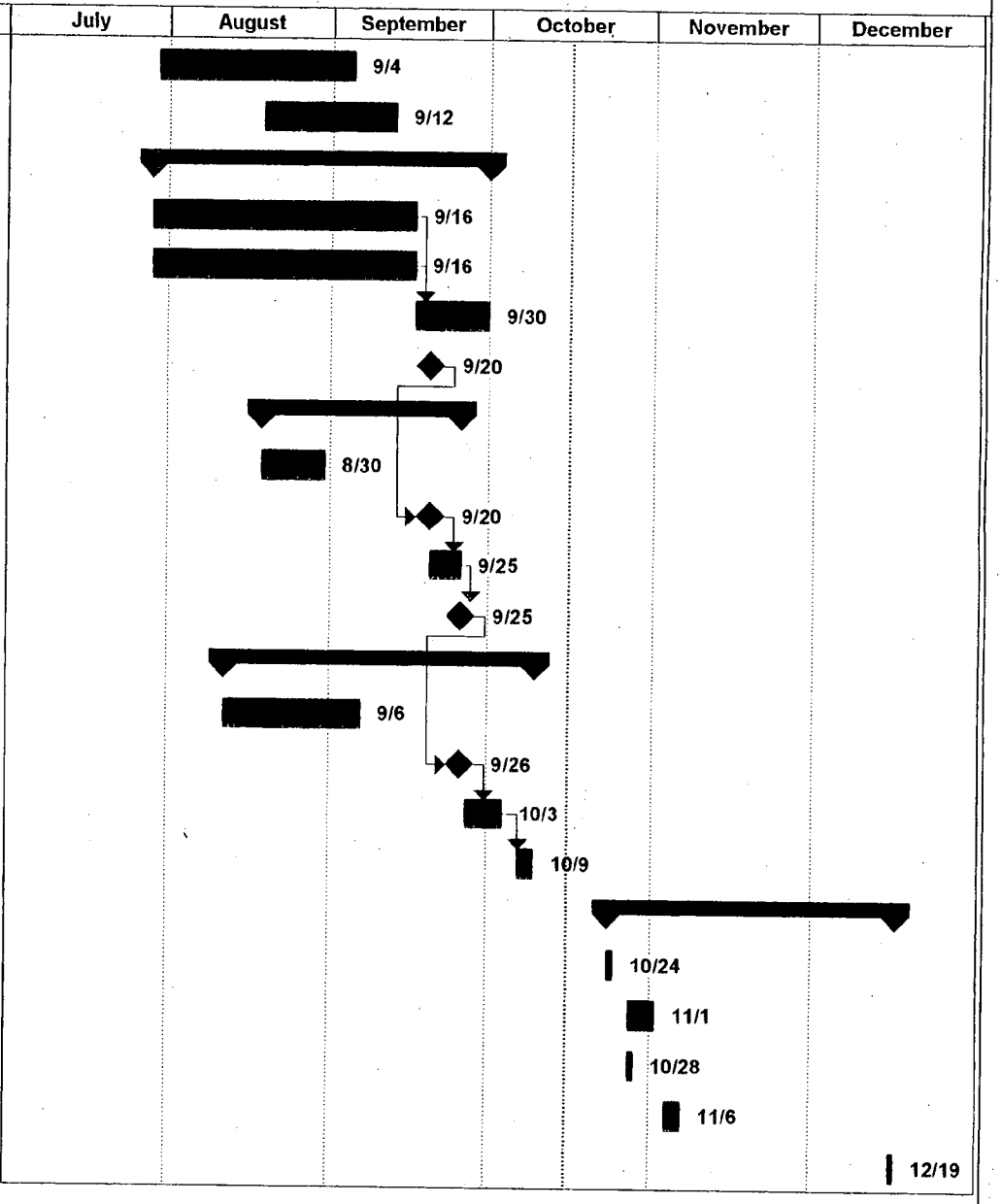
The key activities carried out under each of the principal work areas shown above are listed on the Contents Page at the front of this summary.

York Region Long Term Water Project
Phase 1 Project Structure



Progress Report to York Region Long Term Water Task Force
19 September 1996

ID	Task Name
1	**Produce Demographic Input/Population Forecast**
2	**LTWS Demand Forecast**
3	**Evaluate Alternatives**
4	L.Simcoe/Groundwater/Demand Mgmt/Optimization
5	Peel/Metro/Durham/Georgian Bay Options
6	Prepare Draft Reports
7	Send Costing Report to Genetic Algorithm
8	**Genetic Algorithm**
9	Preparation of Base GA Model
10	Receive Costing Report
11	Undertaking GA optimization
12	Send Cost & Operating Information to Finance Group
13	**Prepare & Update Operation & Financial Model**
14	Develop Operation & Financial Models
15	Receive Cost Information from Technical Group
16	Sensitivity Analysis on Technical/Structural Options
17	Host Session with YR/CU to Review Model Outputs
18	**Communications**
19	Report on Alternatives to Council
20	Presentations to Area Municipalities
21	Agency Notification
22	Public Open Houses
23	Council Asked to Approve Preferred Solution



TECHNICAL/ENGINEERING

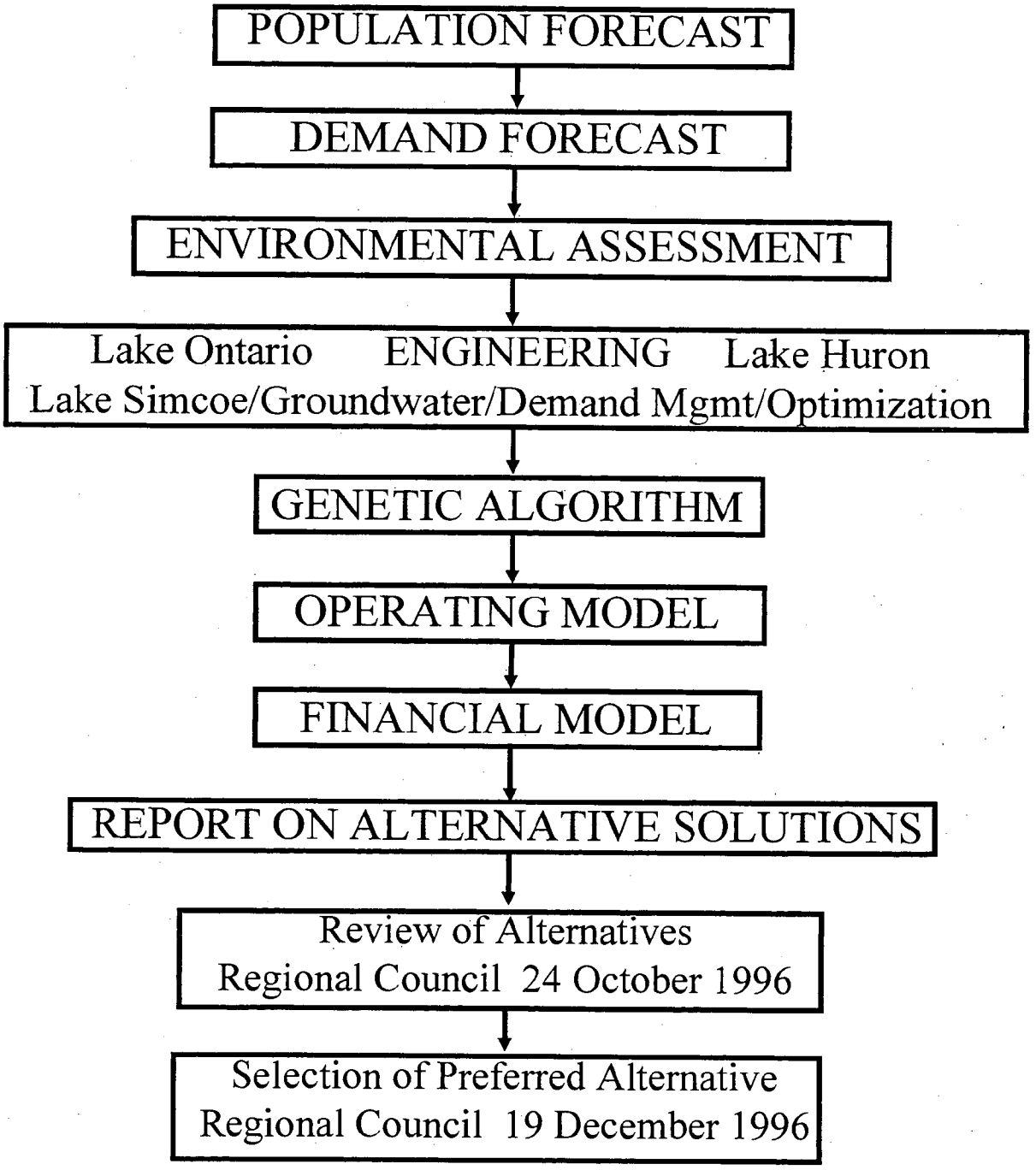
Introduction

Identifying and evaluating alternatives for the long-term supply of water to York Region entailed several inter-dependent elements of study beginning with prediction of populations, creation of water demand requirements and fulfilling these demand requirements with the engineering and costing of supplies from various available sources.

Additional opportunities to optimize existing operations and sources were also taken into consideration and where appropriate cost savings were included in the pricing of alternatives.

A simplified diagram of the sequence of activities is shown on the following page for clarity and the subsequent pages give an overview of the various elements of activity carried out in the **TECHNICAL/ENGINEERING** work area.

PHASE II CLASS ENVIRONMENTAL ASSESSMENT



Population Forecasts (Demography)

The global recession of the early 1990's has had demographic impacts throughout Canada affecting population, employment and residential housing development. Stamm Economic Research of Toronto was retained to examine and comment on the Region's current projections. Their review addresses three issues:

1. the Census of Canada Undercount,
2. the 'persons per household' factor used in the Region's population forecast, and
3. a review of the short and long-term population and population related projections for the Region of York considering the economic impacts of the 1990's.

From their assessment of the Census of Canada undercount issue, Stamm Economic Research estimated that a range of 525,000 to 530,000 persons were physically present in the Region in 1991. The published 1991 Census of Canada population for the entire Region of York was 504,981.

Their review also concludes that the Region's 2021 population forecast of 1,100,000 will likely be achieved albeit through a higher 'persons per household' rate than forecast, implying fewer occupied households (335,000 - 350,000 vs. 389,000 forecasted).

The Region's long-term employment is forecast to range between 535,000 and 625,000.

Demand Forecasts

To assist with translating the population, housing, and employment forecasts into a water demand forecast, Planning & Management Consultants, Ltd. (PMCL), a company from Carbondale, Illinois which specializes in demand forecasting, was retained. Three tasks were identified for this assignment:

1. comment on the methodology and demand forecasts prepared for the Long Term Water Supply - Stage 1 report,
2. recommend a demand forecasting methodology considering available information, and
3. assist with producing the demand forecasts.

PMCL were of the opinion that the increasing rate of per capita water use, as used in the Long Term Water Supply - Stage 1 report, would tend to overestimate the water demand projections and was not justifiable considering new growth in York Region will be subject to the high efficiency standards in the 1996 Ontario Plumbing Code. In short, the Stage 1 demand forecasts would likely overestimate demand and a revised forecast would refine the work of the Stage 1 forecast. Having identified the wealth of information maintained by the Region's Planning Department, Statistics Canada, the Area municipalities and certain provincial and federal departments, PMCL utilized their own software the IWR-MAIN Water Demand Analysis©, a demand forecasting model they have refined and applied over the last 20 years.

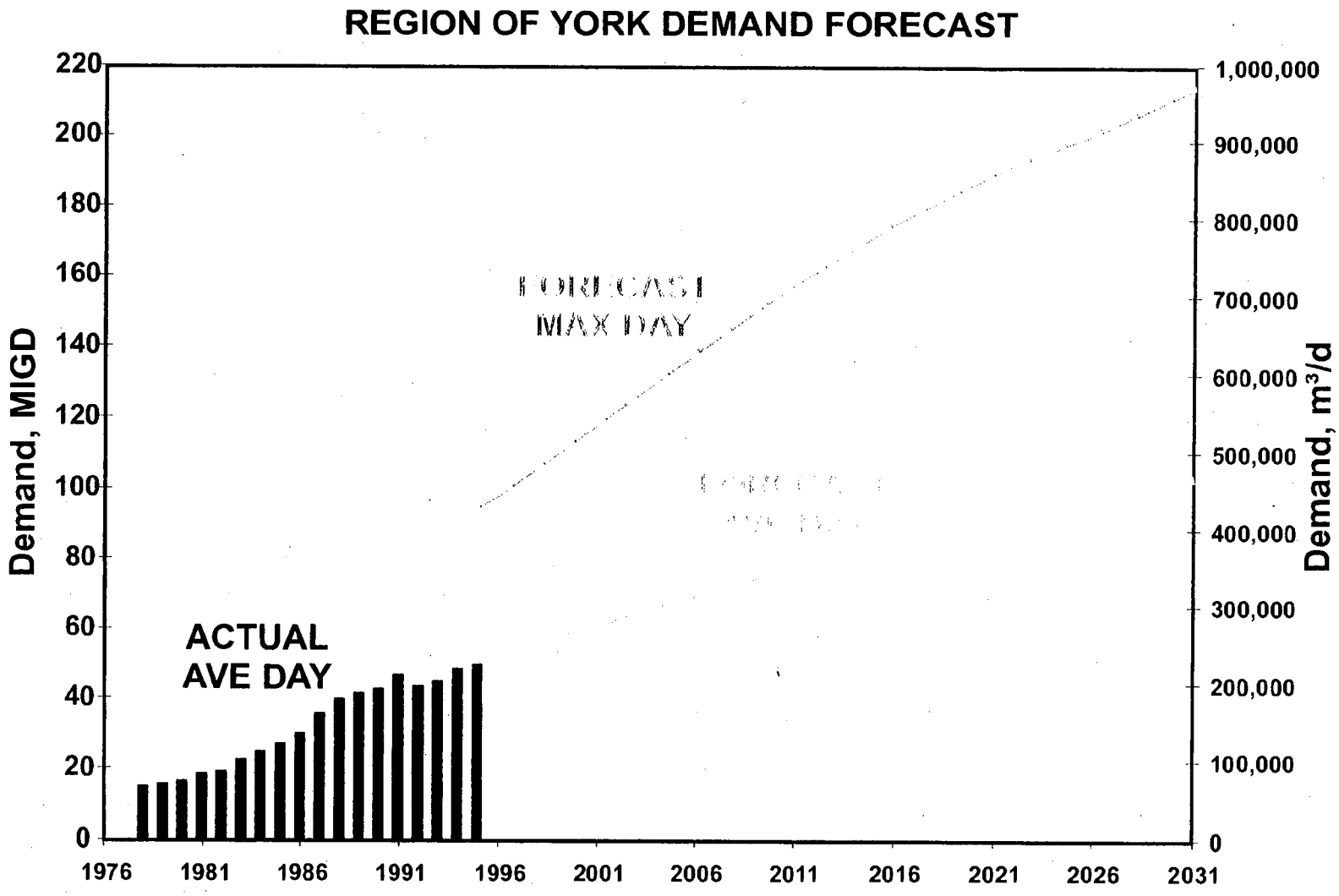
The demand forecasts generated by the IWR-MAIN model estimate average day demands for the major urban centres of York Region at approximately 91.1 MIGD in 2031. By comparison, in the Stage 1 Report, the 2031

average day demands for the major urban centres was 131.3 MIGD. The primary factors which have contributed to the reduction in the forecast are:

- disaggregation of the components of water supply to individually address each of the residential and non-residential sectors,
- use of a more detailed analysis of residential and non-residential water use which considers weather, income, housing types of densities, persons per household and employment variables,
- a shift in housing forms from low-density (high water using) to higher-density housing with lower water use characteristics, and
- the introduction of the 1996 Ontario Plumbing Code.

The following summary table indicates the water requirements of the Region by Area Municipality:

Area Municipality	1995		2011		2031	
	Avg Day	Max Day	Avg Day	Max Day	Avg Day	Max Day
Markham	14.1	25.3	20.2	38.3	25.1	48.7
Richmond Hill	9.2	16.9	16.4	33.1	21.0	44.1
Vaughan	15.0	27.5	24.7	48.2	33.5	68.0
Aurora	2.6	4.5	3.8	7.4	5.1	10.1
Newmarket	4.4	7.0	5.8	9.4	6.4	10.7
East Gwillimbury	1.0	2.5	1.6	4.5	2.7	7.7
Georgina	2.1	5.2	3.1	8.4	4.7	13.2
King	1.2	4.4	1.6	6.0	2.1	7.8
Whitchurch Stouffville	1.0	1.8	1.5	3.1	2.2	4.5
Total	**50.5**	**95.1**	**78.7**	**158.4**	**102.8**	**214.7**



York Region

LONG TERM WATER PROJECT

Consumers Utilities

Environmental: Social, Economic, and Natural Environments

An integral part of the EA process involves the creation of inventories of the natural, social and economic environments to identify the impact of the alternative solutions on the environmental and mitigating measures. Having carried out these assessments and evaluated alternative solutions it then becomes possible to identify and recommend solutions. Liaison with the engineering consultants is vital to ensure that solutions are also efficient.

To support this area of study, the services of Geomatics International Inc. from Burlington, were retained to meet the following objectives:

- define study areas and identify routing criteria,
- collect engineering and environmental data to describe and categorize the baseline environment within the study areas,
- identify alternative route locations within the study areas,
- evaluate and compare alternative route and facility locations,
- recommend preferred route and facility locations,
- identify and elaborate on measures to mitigate and manage effects, and
- prepare the Environmental Report for MOEE and public review.

All of the above objectives were met and detailed reports have been prepared by Geomatics International Inc.

The process necessitates acquiring information on the social, economic, and natural environments pertinent to each study area. This information is then layered on a base map to produce a complete constraint map for the study area. An example of the data used in constraint mapping is indicated in the map of the Lake Simcoe study area entitled: ANSI's, Wetlands, ESA's and Other Designated Areas on the next page.

Figure 7: ANSIs, Wetlands, ESAs and Other Designated Areas

Northern Portion

2km 0km 2km 4km 6km 8km

Scale 1:100000

N

ANSIs

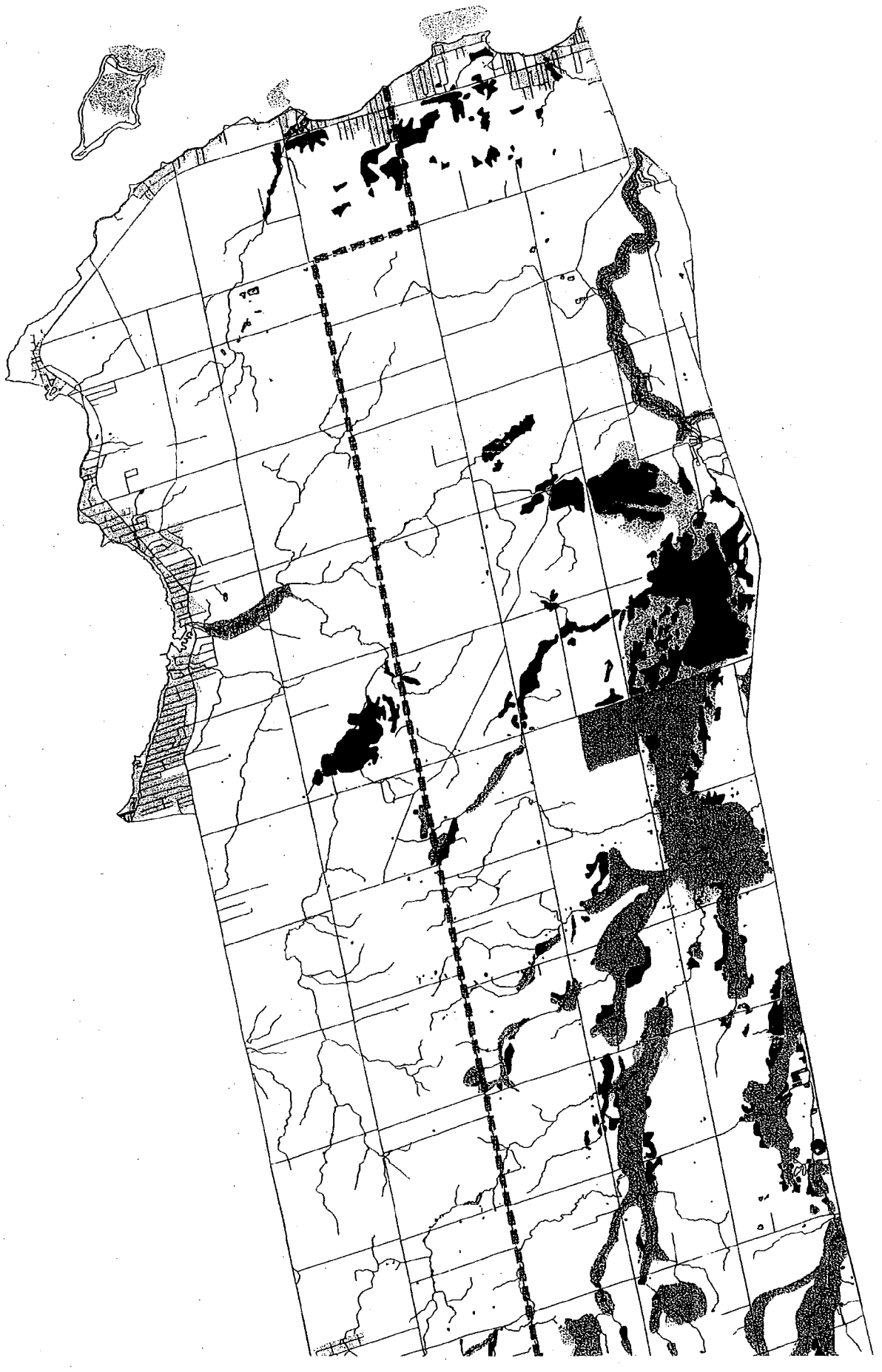
- Provincial Life Science
- or Regional Life Science
- Local Life Science
- Provincial Earth Science
- or Regional Earth Science
- Local Earth Science
- Proposed Pipeline Corridor

Designated Wetland Areas

- Provincially Significant
- Regionally/Locally Significant

ESAs and Other Designated Areas

- Environmentally Sensitive Areas (ESAs)
- Municipal Designated Environmental Protection or Hazard Lands
- Conservation Authority Lands



York Region

Consumers Utilities

Geomatics International Inc.
Canada • United States • Germany

Engineering Design and Costing

Using the compiled data on populations and water demands with the preferred routes identified for pipelines from the environmental studies it is possible to execute the engineering design and costings for the range of alternative solutions.

To carry out this major element of work, a joint venture partnership of MacViro Consultants Inc. of Markham and Acres & Associated Environmental Limited of Etobicoke was engaged to:

- undertake hydraulic assessments of each pipeline route,
- identify intake/treatment/pumping/storage facilities required,
- provide details of each required facility,
- identify and detail any need for expansion of existing works, and
- prepare cost estimates for all works in accordance with the requirements to satisfy Phase 2 of the EA process.

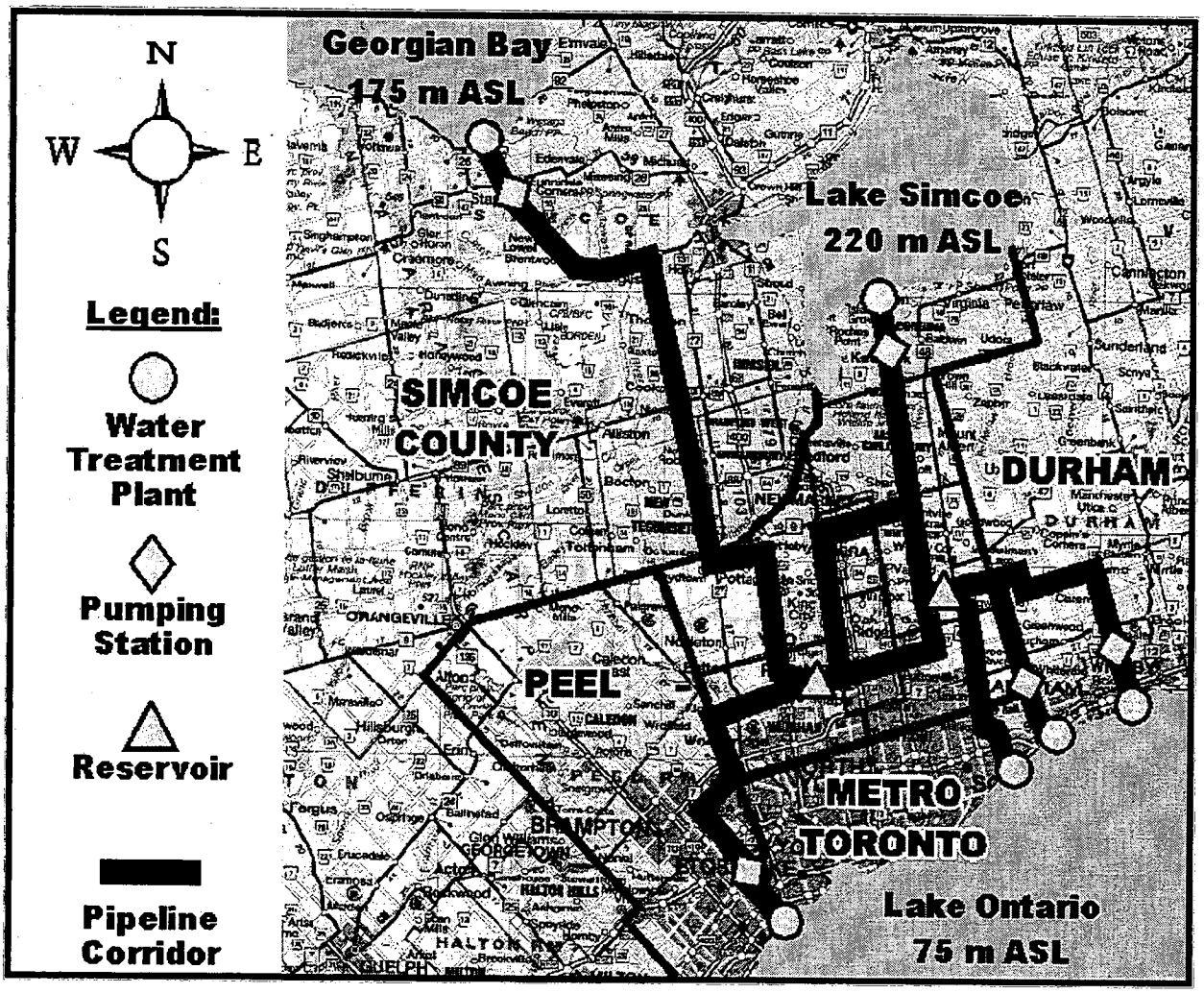
The range of possible sources included water intakes from Lake Huron (Georgian Bay), Lake Simcoe, and Lake Ontario from locations in Durham, Peel and Metropolitan Toronto.

The diagram on the following page shows the alternative pipeline routings and solutions which have been evaluated in terms of costs and effect on the environment.

An important feature of any long-term water supply plan is the need to ensure minimization of the risk of loss of supply through serious contamination of source water or catastrophic failure of a major facility or pipeline. The detailed engineering and design of the preferred solution will include for the provision of sufficient process and equipment redundancy at major facilities, however at this stage the following costing assumptions have been made: first, where a single source is providing in excess of 50% of the Region's total requirement, then pipelines from this source have been twinned (a second pipe has been added); second, it has been assumed that even though Newmarket and Aurora will be taken off groundwater, wells will not be decommissioned in order to provide an emergency supply (the water quality section of this Summary Report deals with the issue of blending groundwater with treated lake water).

It has been assumed that capacity will be added incrementally to ensure that capital exposure is minimized in the event that growth projections fail to materialize. In addition, this reduces the peaks of capital expenditure. These increments of system capacity have been assumed to be 10 MIGD maximum day, (equivalent to approximately 5 MIGD average day). Increments will be optimized further during the detailed design of the preferred solution.

Map of Alternative Solutions and Pipeline Routings



Alternative Solutions Evaluated

In order to allow a structured approach to the derivation of alternative solutions, the Region has been separated into urban centred communities and rural communities. The urban centres are Markham, Vaughan and Richmond Hill together with Newmarket and Aurora. The latter two centres are assumed to be eventually removed from groundwater usage, in accordance with the Region's Official Plan. The urban centres will see 85% of the Region's growth by the year 2031 and therefore require the major portion of the new water supplies. The rural communities of King, Whitchurch-Stouffville, East Gwillimbury and Georgina will receive the remaining 15% of growth and will continue to be supported by groundwater and Lake Simcoe. (Expansion of the Lake Simcoe supply could also allow it to supplement other lake based supplies in the urban centred communities.)

Water efficiency programs are particularly important and are seen as a key component of any solution. Demand management and leakage control programs within the area municipalities have been evaluated to determine capital costs and potential water savings, and have been included in all solutions.

A series of alternative solutions have been costed as shown on the following table. The solutions have been separated into four groups based on total capital costs.

The first group of solutions in the table provide total independence in respect of water supply for the Region of York. These solutions include for complete separation of the present integrated supply from Metro Toronto giving total reliance on single sources. The remaining groups of solutions assume continuing supply is received from Metro from the existing system together with supplementary supplies from the other sources indicated.

SOURCE	Components of Supply (2031)	Capital Cost Range ($M)
Georgian Bay Independent	177 MIGD Georgian Bay 33 MIGD Groundwater	900 - 1300
Peel Independent	177 MIGD L Ont via Peel 33 MIGD Groundwater	
Durham Independent	177 MIGD L Ont via Durham 33 MIGD Groundwater.	
Georgian Bay with Expanded Metro Supply	80 MIGD Georgian Bay 97 MIGD expanded Metro 33 MIGD Groundwater	700 - 900
Peel with Expanded Metro Supply	80 MIGD L Ont via Peel 97 MIGD expanded Metro 33 MIGD Groundwater	
Durham East with Expanded Metro Supply	80 MIGD L Ont via Durham East 97 MIGD expanded Metro 33 MIGD Groundwater	550 - 700
Metro (pipeline to York) with Expanded Metro Supply	80 MIGD L Ont via Metro 97 MIGD expanded Metro 33 MIGD Groundwater	
Durham West with Expanded Metro Supply (Cooperative, savings not included)	80 MIGD L Ont via Durham 97 MIGD expanded Metro 33 MIGD Groundwater	400 - 550
Peel Cooperative with Expanded Metro Supply	70 MIGD L Ont via Peel, 97 MIGD expanded Metro, 10 MIGD Lake Simcoe, 33 MIGD Groundwater	

Notes:

1. Independent solutions do not include any allowances for the possible partnering with other municipalities or for the sale of water en route.
2. Durham solutions do not include any allowance for the possible savings which may arise from a cooperative solution with Durham Region.
3. Costs which relate to the cooperative solution were based on discussions with staff of the applicable Region.
4. All solutions include Demand Management/UFW savings of 4 MIGD.

Ancillary Support Studies

In order to support the engineering evaluation and costings, a number of ancillary support studies were carried out. The following sections briefly describe these studies.

Water Quality, Treatment Processes and Blending

A study of the water quality features of the various sources was undertaken in order to select and design appropriate treatment plants, pumping stations, treatment processes and storage facilities.

The study work was undertaken by Acres & Associated Environmental Limited who were engaged in co-partnership with MacViro Consultants Inc. to carry out the engineering design and cost estimating for the project.

The study undertook to determine acceptable water quality parameters for the Region and these goals were based upon a complete review of the provincial, national, and international water quality standards in place at the current time.

The three different source waters recognized as potential supplies to the Region of York are Lake Ontario, Georgian Bay and Lake Simcoe. Each displays differing physical, chemical and biological characteristics and all of these factors were considered in determining appropriate treatment requirements.

The study recommended proposals for water treatment unit processes based upon state of the art technology together with a thorough review of the performance of current water treatment technologies employed for each of the potential water sources.

It is recommended that that the plants be based on the conventional treatment process consisting of the following processes: pre-chlorination, coagulation, flocculation, sedimentation, filtration, and disinfection.

Dissolved air flotation was considered as an appropriate alternative to sedimentation. It was recommended that membrane filtration processes be investigated during the preliminary design stage.

In order to avoid taste and odour problems associated with the mixing of chlorine and chloramines (Metro supply), it is recommended that disinfection be achieved through monochloramination. Backwash and sedimentation tank sludges should be treated in the following process train: coagulation, sedimentation/thickening, dewatering to form a sludge cake.

Dewatered cake would be hauled to landfill, for which approvals will be necessary, while filtrate would be dechlorinated and discharged to the receiving water. To access the good quality raw water, it is recommended that the intake be located at least 1,000 metres off shore and at least 20 metres deep. The location should be outside of the plumes of any rivers or streams entering the lake. The intake should be provided with a zebra mussel control system consisting of a chlorine injection diffuser ring at the extreme end of the intake and appropriate chemical feed system.

In addition to the water quality and treatment processes review, Acres & Associated were also tasked with a study to verify the impacts of mixing and blending of treated waters from Lake Ontario, Lake Simcoe and groundwater (both treated and untreated). These studies are running concurrently with a hydrogeological evaluation of the capacity of the existing well systems in York Region.

Water samples from each of the sources were taken on the same day, October 1st 1996, and combined in a total of 17 blends in various proportions. The blends were analyzed for parameters required to calibrate a water chemistry computer model (the AWWA RTW model), which predicts potential changes in pH and the potential for the water to become aggressive (corrosive) or to cause calcium carbonate scaling in the distribution system.

The blends were also subjected to tests to simulate conditions in the distribution system for 48 hours, the purpose being to confirm the computer model results through experimental testing.

Preliminary findings of the model indicate that no significant changes to the physical-chemical make-up results from blending. All blends resulted in neutral pH's and calcium carbonate precipitations within desirable ranges. The re-analysis after 48 hours confirmed the model predictions.

The tests also indicated that blending of groundwater and surface waters does not raise precipitation of iron above the limits deemed acceptable in prevailing water quality standards, and the current practice of sequestering iron with sodium silicate should remain successful.

Land Valuations

To ensure that accurate costings were placed against new or proposed intakes, treatment facilities, pumping stations, and pipelines a land valuation consultant, Wagner, Andrews and Kovacs Ltd. of North York was employed to provide rates for all of the land requirements. A separate report is provided detailing all of this information which was used in compiling the engineering costs.

Demand Management / Unaccounted for Water

Water efficiency is now recognized as an integral component in any long-term water strategic planning process. The application of demand management techniques and control of unaccounted for water enables operation of the water supply system to become more effective and efficient. In order to asses these matters, the services of Heath Consultants Ltd. of Mississauga and REIC of Aurora, were engaged to highlight and cost measures which can be implemented for both demand management and

unaccounted for water control. Affordable solutions were identified which can produce savings of some 4 MIGD and these were applied within the engineering evaluations and costings. Separate summary and detailed reports covering this study work are available outside of this Summary Report, however the following table provides an overview of the recommended conservation and other measures with their costs and respective water savings.

YORK REGION WATER REDUCTION POTENTIAL - September 30, 1996

UFW and DSM Volume/$ Savings and Payback (Water Closet Replacement Option)

Type	Measure	Yearly Volume Reduction	Yearly $ savings	Capital Cost	Benefit/Cost	Payback (yrs)
UFW	Leakage	**1,919,900**	$832,085	$354,463	2.35	0.43
	Pressure Control	**321,200**	$139,208	$1,110,000	0.13	7.97
Residential	Water Closets - Replace**	**5,173,058**	$2,242,003	$39,766,440	0.06	17.74
	Shower	**1,642,500**	$711,860	$2,226,924	0.32	3.13
	50% Summer Surcharge	**445,000**	$192,863	$35,000	5.51	0.18
	Public Education	***see note**	*see note	$291,733	*see note	*see note
Non-Residential	Water Audits & Training	**348,540**	$151,057	$1,394,000	0.11	9.23
	Water Closets, Flush Valve	**661,395**	$286,649	$4,723,600	0.06	16.48
Total		**10,511,593**	**$4,555,724**	**$49,902,160**	**0.09**	**10.95**
Total Demand		**81,864,390**				
% Reduction		**12.8**				

UFW and DSM Volume/$ Savings and Payback (Water Closet Retrofit Option)

Type	Measure	Yearly Volume Reduction	Yearly $ savings	Capital Cost	Benefit/Cost	Payback (yrs)
UFW	Leakage	**1,919,900**	$832,085	$354,463	2.35	0.43
	Pressure Control	**321,200**	$139,208	$1,110,000	0.13	7.97
Residential	Water Closets - Retrofit**	**2,299,136**	$996,446	$4,771,980	0.21	4.79
	Shower	**1,642,500**	$711,860	$2,226,924	0.32	3.13
	50% Summer Surcharge	**445,000**	$192,863	$35,000	5.51	0.18
	Public Education	***see note**	*see note	$291,733	*see note	*see note
Non-Residential	Water Audits & Training	**348,540**	$151,057	$1,394,000	0.11	9.23
	Water Closets, Flush Valve	**661,395**	$286,649	$4,723,600	0.06	16.48
Total		**7,637,671**	**$3,310,167**	**$14,907,700**	**0.22**	**4.50**
Total Demand		**81,864,390**				
% Reduction		**9.3**				

*note: public education programs are considered to be an integral component of any UFW & DSM program, therefore, the water volume reduction and capital savings are integrated with the other measures.

**note: the values for water closet water reduction and saving is based upon a 50% participation ratio.

York Region

LONG TERM WATER PROJECT

Consumers Utilities

Further Utilization of Lake Simcoe

So that a possible potential for use of Lake Simcoe water to provide at least some of York Region's long-term needs could be assessed, Acres International from Niagara were employed to study and report on the impact of three supply scenarios. (Acres had significant previous hydrological modeling experience of the Lake Simcoe catchment area.)

Year-round supply ~ taking water at a consistent rate
Seasonal supply ~ drawing water at a consistent rate
Freshet supply ~ drawing a high rate in April & placing into groundwater storage for subsequent use.

Different supply rates were then applied to the scenarios to measure impact on other uses of the water resource.

In summary, the findings indicated minimal, or negligible, impacts at an extraction rate of 5 MIGD. Minor impacts, in the order of ± 2 cm on lake levels, become detectable at 10 MIGD and 20 MIGD rates of withdrawal. A separate report is available on these findings.

One significant issue to be addressed in acquiring a supply from Lake Simcoe is the potential impact of The Great Lakes Charter, as any withdrawal in excess of approximately 5 MIGD would attract the consultative and approval requirements of The Charter.

Consequently, the engineering design and costings for potential Lake Simcoe supplies concentrated on three withdrawal scenarios, 5, 10 and 20 MIGD.

Abstracting a 5 MIGD rate of withdrawal would serve to supplement supply to Newmarket & Aurora, and this would not invoke the higher levels of consultation within the Great Lakes Charter requirements.

Taking 10 MIGD or 20 MIGD would, through the Great Lakes Charter, invoke notification to all member states and the province of Quebec. However, at these increased rates of withdrawal, it becomes economical not only to supply Newmarket/Aurora but also to supply the south of York Region by means of extended transmission pipelines feeding storage facilities in North Markham. These particular solutions therefore provide potential to supplement the south of York Region with lower-cost water from a source with is completely within the boundaries of the Region.

Two other associated possibilities arise with the taking of water form Lake Simcoe. The first of these relates to the ongoing project to provide Georgina with a new supply of water from Lake Simcoe. Clearly advantages of scale could be introduced if the requirements of Georgina together with those identified in the long-term strategy were to be joined. Secondly, a requirement to supply water for potential growth in the Queensville area of East Gwillimbury could be satisfied by an interconnection to pipelines for service to the Newmarket/Aurora areas in a Lake Simcoe supply scenario. At this stage of costing assessment, no consideration of the latter two possibilities has taken place, but the potential for advantage is noted for future reference.

Hydrogeological Study

In order to assess and review the groundwater resources available to the Regional Municipality of York, the services of Gartner Lee Ltd. of Markham were retained to carry out a detailed study.

The study comprised three main components,

1. a review of the regional resource evaluation based on existing information (G&S/Golders, 1993)
2. a critical review of previous groundwater modeling for the Yonge Street Aquifer (IWS 1991), and

3. a preliminary assessment of the feasibility of aquifer storage and recovery (ASR) techniques of enhancing groundwater supply in York Region.

The summary findings indicated that the Golders assessment was somewhat conservative in that it focused mainly on the existing wells and did not fully consider the potential for new groundwater supplies from adjacent areas.

Also the findings displayed general agreement with estimates of ground water availability presented for the small communities that are removed from the Yonge Street Aquifer. It became apparent that a substantial surplus may be available to some communities, although further investigation including test drilling and aquifer testing would be needed to confirm this. Detailed hydrogeological investigations will be needed to resolve specific issues such as lateral and vertical extent of local aquifers, and the development of deeper aquifers is encouraged.

Finally, the preliminary assessment concludes that aquifer storage and recovery (ASR) has potential for increasing the available water in the study area. The feasibility of using ASR to recharge the Yonge Street Aquifer is dependent, however, upon resolving a number of critical issues and the completion of pilot testing at a selected location. Some of the major issues to be resolved include,

- identification of the source water volume available and chemical characteristics,
- location of injection wells in suitable permeable zones,
- chemical compatibility of injected water and native water,
- potential for geochemical reactions, and
- economic consideration.

In summary, there appears to be significant potential for additional ground water supplies within York Region to meet the needs of a number of communities that are currently being served by ground water. Additional hydrogeological investigations will be required to confirm the actual quantities and quality of the available supplies and to assess what limitations, if any, exist for approval of additional municipal water takings. The availability of ground water to the Yonge Street Aquifer needs to be further examined using a refined ground water flow model to provide a more realistic estimate of resources available for municipal use. ASR appears to have potential for use in the deep confined Yonge Street Aquifer although critical issues will need to be addressed in more detail to confirm its technical and economic feasibility.

A full report prepared by Gartner Lee is available outside of this Summary Report.

System Optimization

The Engineering Design & Costing activity was driven by a goal of establishing efficient low-cost solutions to satisfy the long-term water supply needs of the Region.

However, at the same time, it was recognized that opportunities may exist for developing efficiencies within the Region's existing supply infrastructure and also by reviewing the Region's current Capital Programmes.

Four separate studies were therefore undertaken to highlight potential for optimization in the following areas:

1. Optimization of York Region's capital program to ensure that best advantage is taken of any new facilities within the long-term solution, thereby avoiding duplication or stranding of assets.

2. Optimization of storage and the potential to make greater use of treated water storage within the Region through peak shaving.

3. Optimization of treatment processes and operation of the Region's two water treatment facilities at Keswick and Sutton.

4. Optimization of the Region's SCADA system including management of the hydraulic network.

The studies have been carried out by North West Water specialists, Region of York engineering and operations staff and Canadian consulting engineers. The studies do not at this stage present thorough reviews but rather provide a strong indication of where further work might be undertaken.

Further information in outline on each of the study areas is provided below and the detailed report documents are available outside of this summary document.

Capital Program Optimization

The Region of York's 1996 five year Capital Program which totals approximately $243 million was reviewed with the Region's staff to determine which projects would be required to support the various LTWS options; to determine which projects may be duplicated within the LTWS options; and to ensure there is no stranding of Regional assets.

In summary there is a dependency on the preferred solution chosen as to how much duplication occurs. It must also be noted that the largest of the capital works in the program totaling approximately $103 million to pay for the enhanced supply up to 57 MIGD from Metro Toronto, has been included where necessary in the engineering costings for the alternative solutions. The costs for the enhanced Metro supply are therefore not duplicated.

Water Storage Optimization

Traditionally, the approach to sizing a water supply system has been to design the system to supply the 'maximum day' demand, an approach which requires significant capital investment to provide year-round capacity for just one day of the year. In an effort to reduce the peak supply requirements, capital cost, and to maximise the usage of existing system facilities, a non-traditional supply philosophy has been evaluated, the 'maximum week' demand.

The maximum week demand is an innovative supply management concept that involves peak shaving of water demand over a seven-day period. By using surplus storage in a distribution system to satisfy maximum day demands, the design of the water supply system can be effectively decreased by 10% or more or conversely greater use can be made of existing storage.

Statistics from a study carried out in one sample Ontario municipality indicate that the analysis of water production figures between 1992 and 1995 reveal the potential of application of the 'maximum week' concept. From the table below, the average 'maximum week' factor over the period was 12% less than the observed average day factor (1.35 vs. 1.54).

Water Production Statistics for 1992 - 1995 for a Municipality in Southern Ontario

Water Use Data - Historical	1992	1993	1994	1995	Average
Average Day, m^3/d	8774	9172	9740	10469	---
Maximum Day Factor	1.55	1.51	1.61	1.48	1.54
Maximum Week Factor	1.32	1.21	1.42	1.44	1.35
Reduction (%)	15	20	12	3	12

Water Treatment Plant Optimization

Although the findings were not included in the engineering evaluations and costings at this stage, a study was undertaken of existing water treatment facilities to identify potential for efficiencies and savings. The study, undertaken by an expert in water treatment plant operation from North West Water limited in the UK, identified areas for efficiency gains through process optimization techniques and a copy of the report is available outside of this Summary Report.

Telemetry

A North West Water Limited UK specialist in the field of Instrumentation, Control and Automation, undertook a study of the York Region SCADA system to review its effectiveness. The study reviewed the viability of proposed improvements which are due to take place with particular attention on the need to meet likely future management and operational requirements. The study identified further system development options to improve resilience and made suggestions to introduce a water supply hydraulic model optimization packages to improve managerial control. The findings of this study were not utilized in the engineering evaluations and costings, but a full report is available outside of the Summary Report.

Genetic Algorithm

In order to arrive at a lowest-cost solution satisfying all of the long-term needs of the Region, use was made of a computerized optimization model, known as a Genetic Algorithm (GA). The computers and processors capable of running the GA optimization are situated at the University of Exeter in England.

The decision to use this technique was taken because of the huge number of potential solutions which could be available. The model uses powerful processing capabilities enabling it to handle combinations of multiple variables such as demand requirements across timespans together with engineering elements and their associated capital and operating costs to meet supply needs on a just-in-time basis.

The GA optimization is able to generate an initial population of potential solutions, choosing components from the specified set of source options and facilities to satisfy demand needs across intervals of time. Based upon each solution's life-cycle capital and operating costs the GA can then sort the solutions fittest for survival as parents for the next generation of trial solutions. From one generation to the next, the trial solutions evolve as the GA optimization search process narrows in on the lowest cost alternative.

The GA search process will normally evaluate hundreds of thousands of trial solutions as it seeks out the best combination. Comparing this approach to the traditional "manual" trial and error process used by designers, the GA technique will consistently identify lower cost solutions.

The cost outputs from the algorithm are then inserted into the operating model, details of which follow.

Operating Model

The operating model combines the cost elements of capital works and fixed and variable operating costs with the revenue streams from development charges and water rates. The costs are spread over time.

The principal driver for this model is the population forecast. Population is translated into water demand to provide water rate income information. Development charge income from residential growth is also derived from population by dividing an occupancy rate per housing unit into total population. Commercial and industrial development charges are derived from employment numbers which are directly linked in the model to population growth.

Information on costs and revenues over time are then inserted into the financial model.

FINANCIAL

One of the leading Canadian investment banks, CIBC Wood Gundy, was chosen as financial advisor to the partnership and has advised on all of the financial and structural matters as well as on risk management issues. CIBC Wood Gundy has also been the operator of the financial model on behalf of the Partnership. The following is a summary of activities carried out so far and issues addressed.

Risk Analysis

York Region's/Consumers Utilities' risk management strategy encompasses the following components:

- risk identification - identification of key risks;
- risk evaluation - evaluation of consequences of risks and combinations of risks;
- risk mitigation - risk prevention and reduction of impact (insurance, structuring, etc.); and
- risk allocation - apportioning residual risks to the parties best able to manage them.

The general categories of risk for the Region's wholesale water system include the following:

- operation and maintenance
- design and construction
- environmental
- financial
- tax
- political

- market (demand)
- legal
- physical

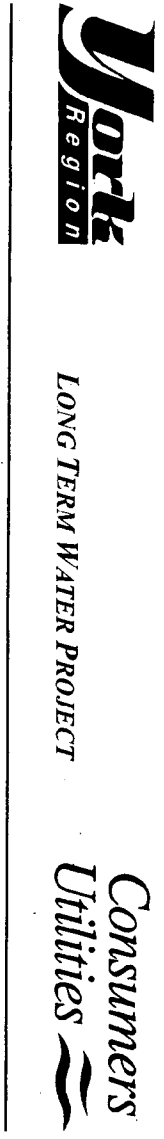
Each of the above risks has been explored in some detail in order to identify all of the key risk areas and to identify risk mitigation strategies. The biggest risk, given the magnitude of capital expenditure envisaged, is probably the water demand risk (i.e. the risk that infrastructure is put in place for an assumed growth which doesn't materialize). This risk can be mitigated to a certain extent by expanding on an incremental basis but if population growth and/or consumption forecasts are overstated, this could require one or more of the stakeholders to ultimately cover the shortfall arising from overbuilding.

As the process continues towards a preferred technical solution, further work on risk evaluation and risk mitigation is planned. The choice of commercial structure will heavily influence the risk allocation process since there is a tradeoff between risk transference, type of control by the Region and compensation for Consumers Utilities.

Partnership Structures

There is a wide range of structures which could be used by York Region and Consumers Utilities to implement the preferred technical solution. There are a number of legal and regulatory hurdles associated with each of the options which have been discussed with legal counsel.

The choice of commercial structure may evolve over time. Initially it may be desirable to enter into a relatively straightforward structure which, being quick to implement, maintains the momentum of the partnership while retaining the ability to adopt greater change as the partnership matures and as external constraints such as legislative and regulatory hurdles are dealt with. A spectrum of strategic water delivery options exists as shown in the diagram on the following page.



Region Ownership Options | **Hybrid Ownership Options** | **Public Ownership**

Status Quo | **Outsourcing (O&M; Build & Operate)** | **Regional Authority** | **Joint Venture** | **Build-Own-Operate-Transfer** | **Share Offering to public and/or Consumers Utilities**

Region Ownership/ Operation | **Public/Private Partnerships** | **No Region Ownership or Operation**

The four public/private partnership options illustrated on the spectrum have been examined. The legal aspects of each of these options are discussed in the **LEGAL** section of this summary. Each of the options has implications with respect to risk transference, legal/regulatory constraints, type of Regional control and financing sources.

The most straightforward structure is an *Outsourcing* arrangement whereby the Region contracts with Consumers Utilities to operate and maintain the wholesale water system (existing and new) and also enters into a management contract relating to system planning and expansion. The Region would continue to finance the wholesale water system as it currently does.

A second alternative is for the Region to establish a *Regional Authority* (municipal corporation) to operate on a stand-alone basis. The Region would own a minimum of 90% of the Regional Authority but would not guarantee the Regional Authority's debt. This alternative permits the wholesale water business to operate independently with its own corporate governance structure and arms-length accounting/financing systems. It would thus be acceptable to outside investors.

A third alternative is an incorporated or unincorporated *Joint Venture* whereby the Region and Consumers Utilities form an economic partnership and thus share in the success of the enterprise. Further work in respect of the tax implications of this structure will need to be evaluated should it be considered for adoption. A *Joint Venture* would permit the introduction of equity capital from Consumers Utilities which would result in better debt service coverage ratios for lenders, particularly during the earlier years of high capital expenditure.

A fourth alternative is either *a Build, Own, Operate and Transfer ("BOOT")* or a *Build, Transfer and Operate ("BTO")* structure. Under these types of arrangements, Consumers Utilities would develop new

infrastructure and sell water at a pre-agreed price to the Region under a long-term contract. Upon completion of the new infrastructure, ownership could be transferred to the Region and it could then be leased to Consumers Utilities.

Various combinations of structures could also be considered such as an operations and maintenance contract combined with a water purchase arrangement using a BTO structure.

Financial Model Overview

The financial model has been custom designed to model the York Region water system. The model replicates current Regional policies in respect of how water rates and development charges are used. From a financing perspective, the York Region wholesale water system effectively consists of two independent but interrelated components as illustrated below:

	Component A	Component B
Revenue Source	• Water Rates	• Development Charges
Use of Revenues	• Wholesale Water Purchases • Operations and Maintenance • Capital Replacement • Debt Service on Component A debt	• Capital Expansion (new growth) • Debt Service on Component B debt

Using revenue, operating cost and capital cost projections from the operating model, the financial model can be used to determine the water rate which is required to cover the costs in Component A as well as the development charge required to cover the costs in Component B.

This analysis is complex as there are several interdependent criteria which must be met simultaneously. Specifically:

- interest coverage ratios (i.e. the ratio of cash available to pay interest divided by the amount of interest due) must be at acceptable levels if external financing is to be considered
- the water system must be in a strong financial position at the end of the review period (2031) in terms of outstanding debt and profitability
- the timing difference between receipt of development charges and payment of capital expenditures must be financeable.

We have addressed each of these areas in estimating the required water rates and development charges as discussed below.

Financial Model Assumptions

Until a preferred solution, inclusive of preferred financing solutions has been chosen, it will be unclear whether financing will be arranged through the Region or privately. However, for modeling purposes to date we have assumed a York Region/Consumers Utilities Partnership utilizing a stand-alone, tax exempt entity (e.g. a *Regional Authority*). Modeling based on other commercial structures is underway. Based on preliminary results, it is expected that a taxable structure such as a *Joint Venture* or *BOOT/BOT* could be accommodated within the indicated water rate and development charge ranges.

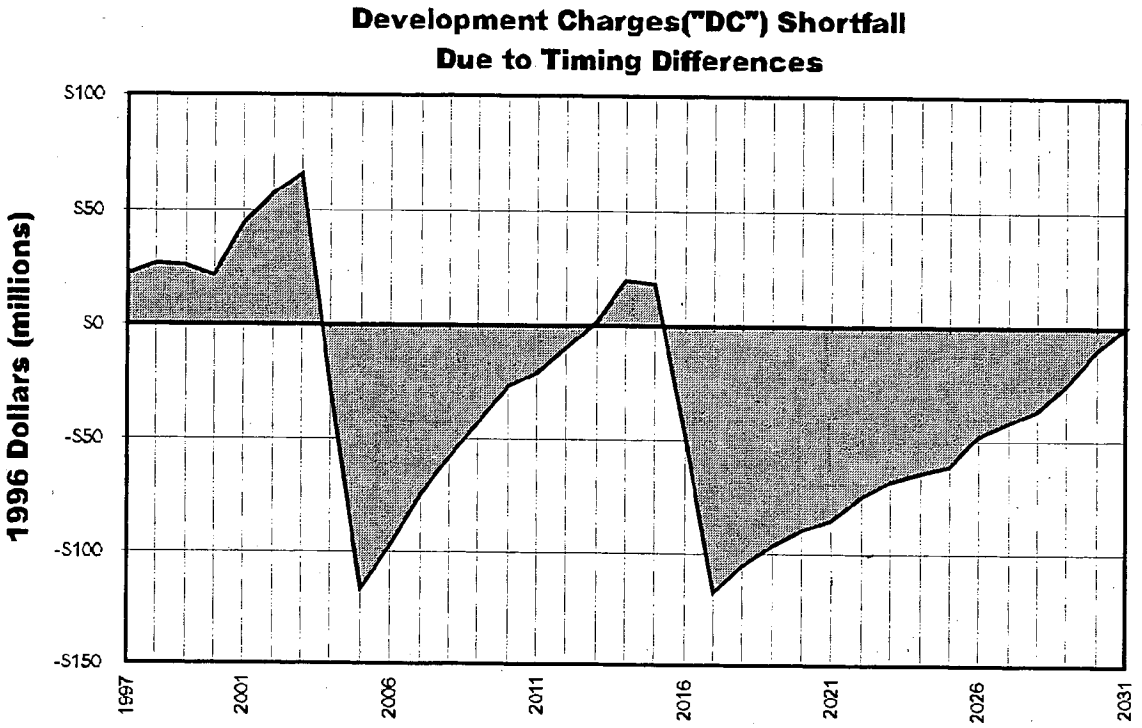
In order to obtain financing based solely on the merits of the water system, water rates were set at levels which ensured that the cash interest cover ratio was not below 1.0x for more than five consecutive years and averaged a minimum of 1.2x over any ten year period. CIBC Wood Gundy believes that these levels are reasonable for the current analysis given the sole source nature of the wholesale water business and the potential for either accreting debt (i.e. debt where in the early years, a portion of the interest is paid in cash and the remainder is capitalized) or subordinated debt (i.e. debt that ranks behind the senior debt).

In order to leave the water system in a strong financial position in 2031 the following constraints were imposed:

- all debt (including the existing debt of $68 million) will be fully repaid by 2031
- the cash balance in the capital reserve fund will be maintained at least at the current level of $10.5 million (1996$) in 2031
- operating cash flow will exceed $2 million (1996$) in 2031.

In the analysis, it was assumed that the cost of capital expansion would be recovered from all new users within the Region during the review period (1997-2031). The financial model was therefore used to determine the level of development charge necessary to ensure that by the year 2031 the total development charges collected equaled the cumulative capital expansion costs to be recovered from growth (interest was charged on any shortfalls and credited on any surpluses). This balance is illustrated in the diagram below for the *Georgian Bay with expanded Metro supply* solution; note that the net difference between development charge revenues and capital expansion costs is zero in 2031.

As illustrated at the top of the next page, for certain technical solutions, there can be significant timing differences between revenues collected and costs incurred. Because development charge revenues are much more volatile than revenues from the sale of water, Component B is much more difficult to finance unless, in the extreme, any shortfall in development charge revenues can ultimately be recovered from water sales. For the purposes of our analysis, we have assumed that, if necessary, lenders have recourse to all revenues within the wholesale water system. The alternative would have been to make much more significant increases in development charges during the earlier years to reduce the timing shortfall.



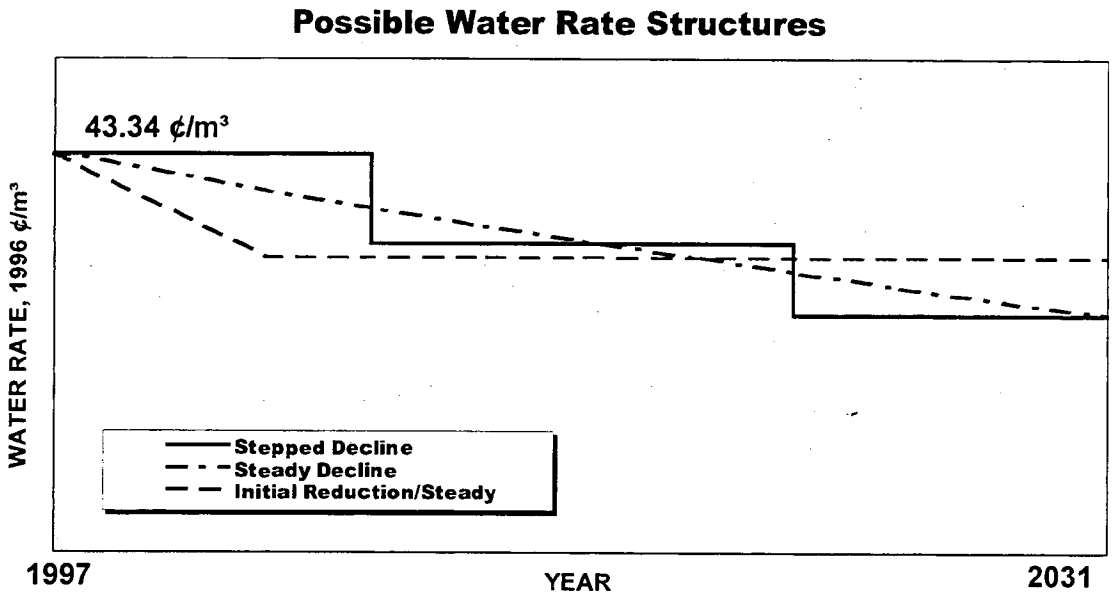
Note:

1. The above graph shows the net difference between development charge revenues and capital expansion costs for the *Georgian Bay with expanded Metro Supply* option.

A further assumption was made with respect to how cost savings would impact the water rate. There is a range of possible water rate structures that could be considered. For example:

- the water rate could start at the current level and decline steadily over time, or
- the water rate could initially be reduced and remain constant in real terms thereafter, or
- the water rate could be reduced in a step function to match the timing when cheaper water solutions are introduced, or
- a combination of the above.

Graphically, these options would be as follows:



The analysis described in this summary is based on the following assumptions with respect to water rates:

- growth is based on the Region's most recent population forecast
- all water rates are expressed in 1996 dollars; actual water rates in any given year have been adjusted to account for accumulated inflation
- water rates have been assumed to remain at 43.34¢/m^3 in 1997 and decline thereafter by a constant percentage each year
- the cost of water from Metro Toronto continues at the 1996 level (in real terms); any reduction which is negotiated would have a favourable impact on the results

This approach smoothes the impact of change and also reflects a blending of the existing costs with the costs associated with new infrastructure.

The following assumptions have been made with respect to development charges:

- growth is based on the Region's most recent population forecast
- all the increases or decreases are expressed as percentages of the water component of 1996 development charges (not total development charges)
- all increases or decreases are assumed to be implemented in 1997; actual levels have been adjusted on an annual basis to account for inflation
- the analysis utilizes the Region's policy of recovering 85% of all expansion costs from development charges with the balance being recovered from water rates except as noted below
- in the fully independent solutions (i.e. no continuing water supply from Metro Toronto), the capital cost has been allocated 50% to growth (recovered from development charges) and 50% to non-growth (recovered from water rates) to reflect the fact that the existing ratepayers will utilize approximately 50% of total new capacity.

Financial Model Results

As previously indicated, the technical solutions were separated into four categories depending on the capital cost range. Technical solutions from each of the ranges were modeled to determine the impact of the technical solution on the water rate and the development charge. The results for each technical solution are summarized on maps on the following pages. Following the maps are summary graphs which illustrate the effect on the water rate for each of the four categories of technical solution.

As indicated, all but the independent solutions allow water rates to decrease from the Region's uniform 1996 wholesale rate of 43.34¢/m^3. It is estimated that by 2031 the water rate in terms of today's dollars could be reduced to a range from 26-37¢/m^3 depending on the technical solution chosen and assuming a steady decline from the current rate.

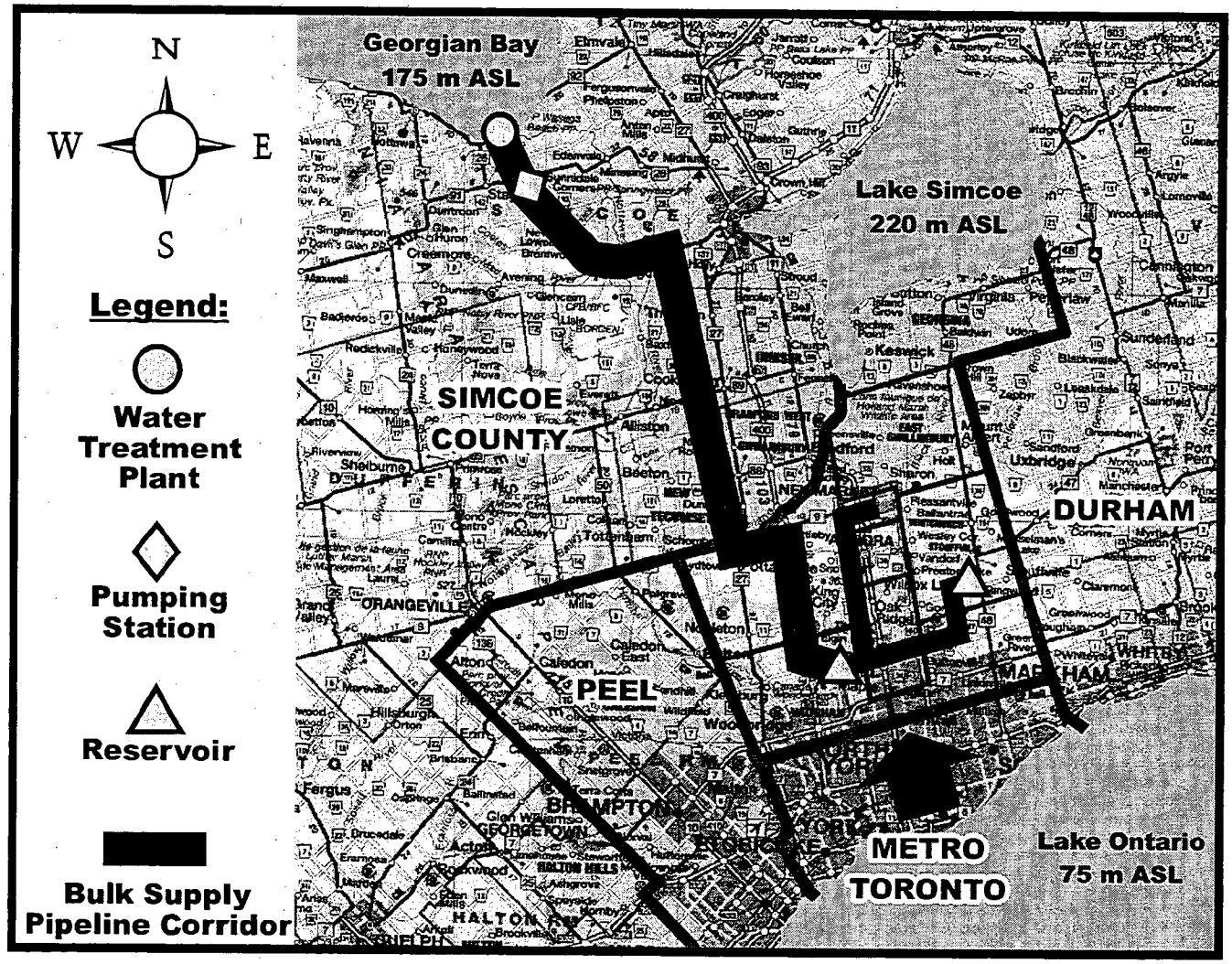
Several of the technical solutions result in either essentially flat or modest increases in development charges. We note however that some solutions involve more significant increases which could impact on growth projections and this has not been allowed for in the modeling.

Sensitivity Analysis

Independent investors will assess the wholesale water system's ability to meet its obligations under a range of possible scenarios. The most sensitive variable is the level and timing of future growth. If the level and timing of future growth is less favourable than the Region's most recent forecast, this will have a negative impact on the required water rates and development charges.

Further detailed financial analysis of the various technical and commercial options will continue in order to review the many possible variations and to analyze a wide range of sensitivities.

GEORGIAN BAY (INDEPENDENT)

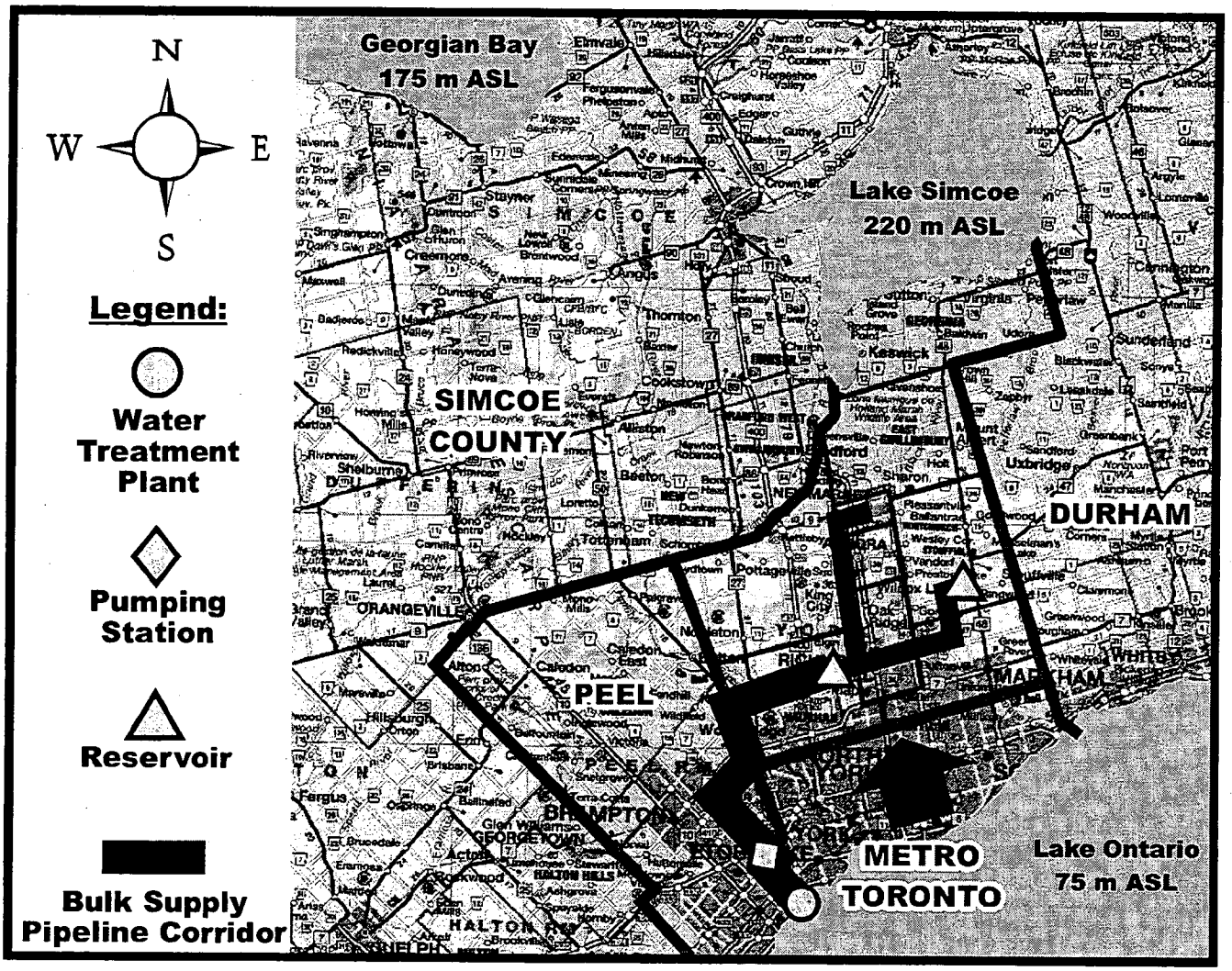


System:	2031 Max Day
Metro-York Water System	0 migd
Georgian Bay	177 migd
Groundwater/ Lake Simcoe	33 migd
Total Requirement: (with water use efficiency program)	210 migd

Financial Effects:

Capital Cost *(includes $103 M to Metro)*	$900 - $1,300 M
Rate Effect in 2031 (current $)	53 - 67 ¢/m³
Immediate Effect on Development Charge (Water Portion only)	+12% ~ +18%

PEEL (INDEPENDENT)

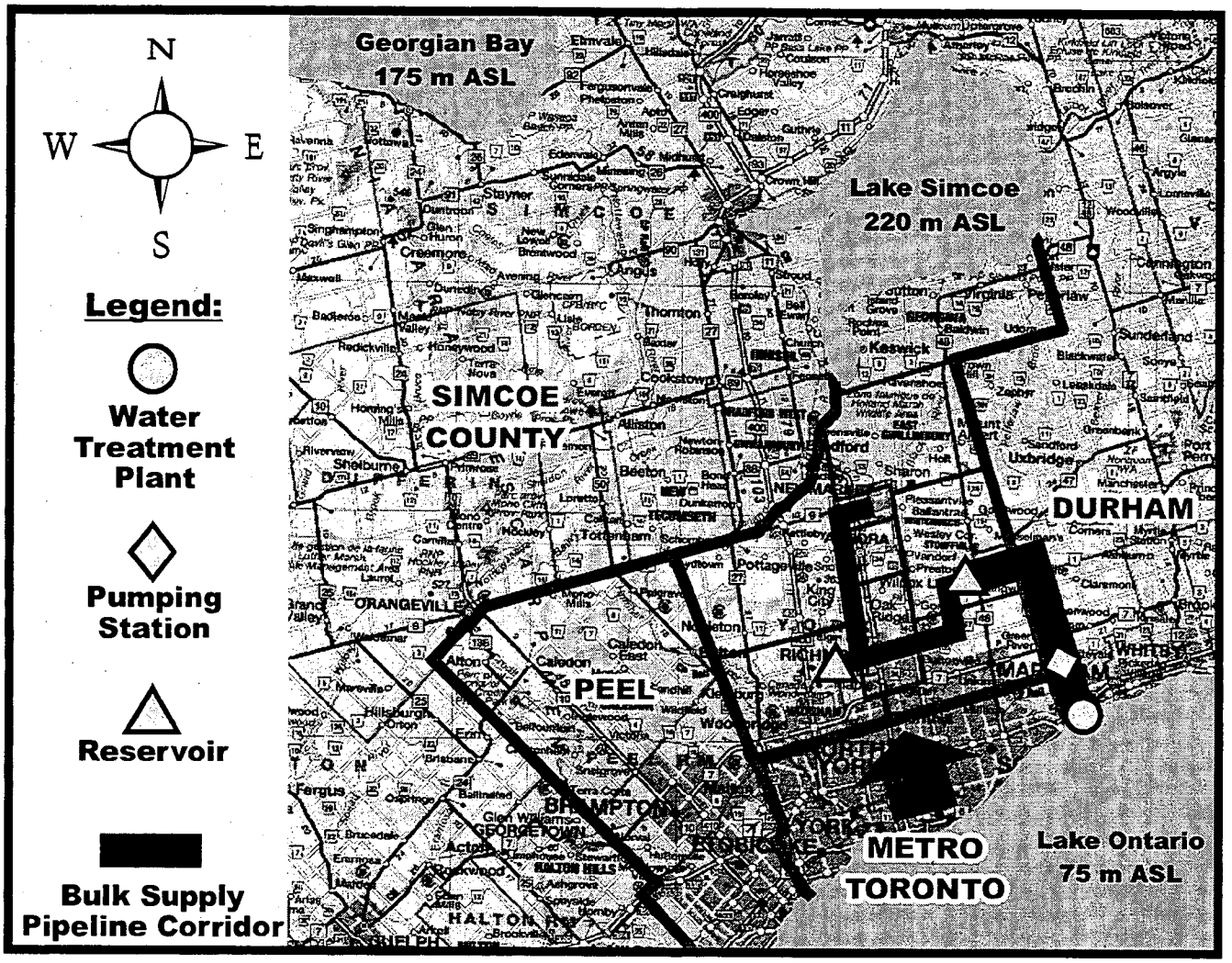


System:	2031 Max Day
Metro-York Water System	0 migd
Peel (Independent)	177 migd
Groundwater/ Lake Simcoe	33 migd
Total Requirement: (with water use efficiency program)	**210 migd**

Financial Effects:

Capital Cost *(includes $103 M to Metro)*	**$900 - $1,300 M**
Rate Effect in 2031 (current $)	**53 - 67 ¢/m³**
Immediate Effect on Development Charge (Water Portion only)	**+12% ~ +18%**

DURHAM (INDEPENDENT)

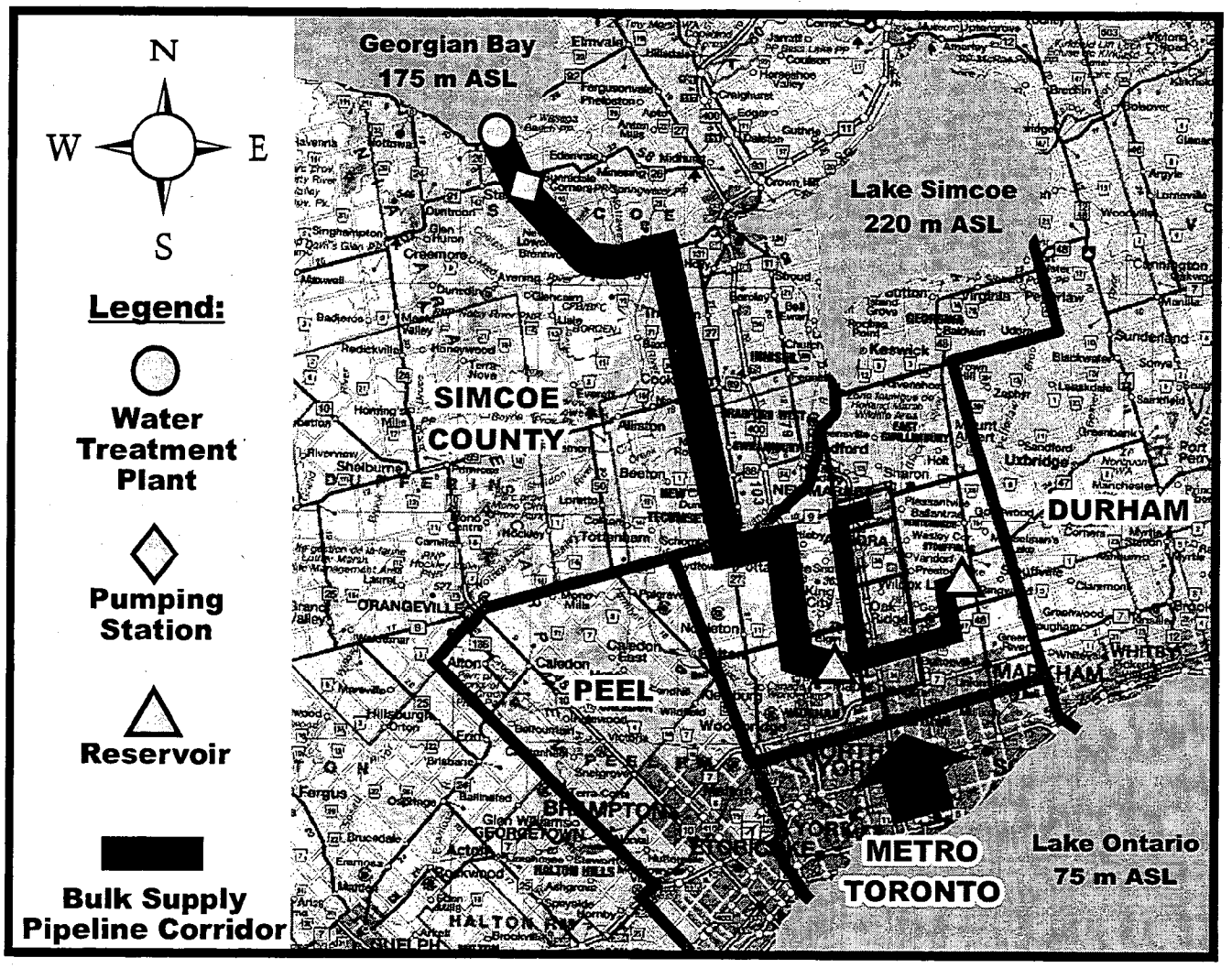


System:	2031 Max Day
Metro-York Water System	0 migd
Durham	177 migd
Groundwater/ Lake Simcoe	33 migd
Total Requirement: (with water use efficiency program)	210 migd

Financial Effects:

Capital Cost	**$900 - $1,300 M** *(includes $103 M to Metro)*
Rate Effect in 2031 (current $)	**53 - 67 ¢/m³**
Immediate Effect on Development Charge (Water Portion only)	**+12% ~ +18%**

GEORGIAN BAY/METRO-YORK WATER SYSTEM

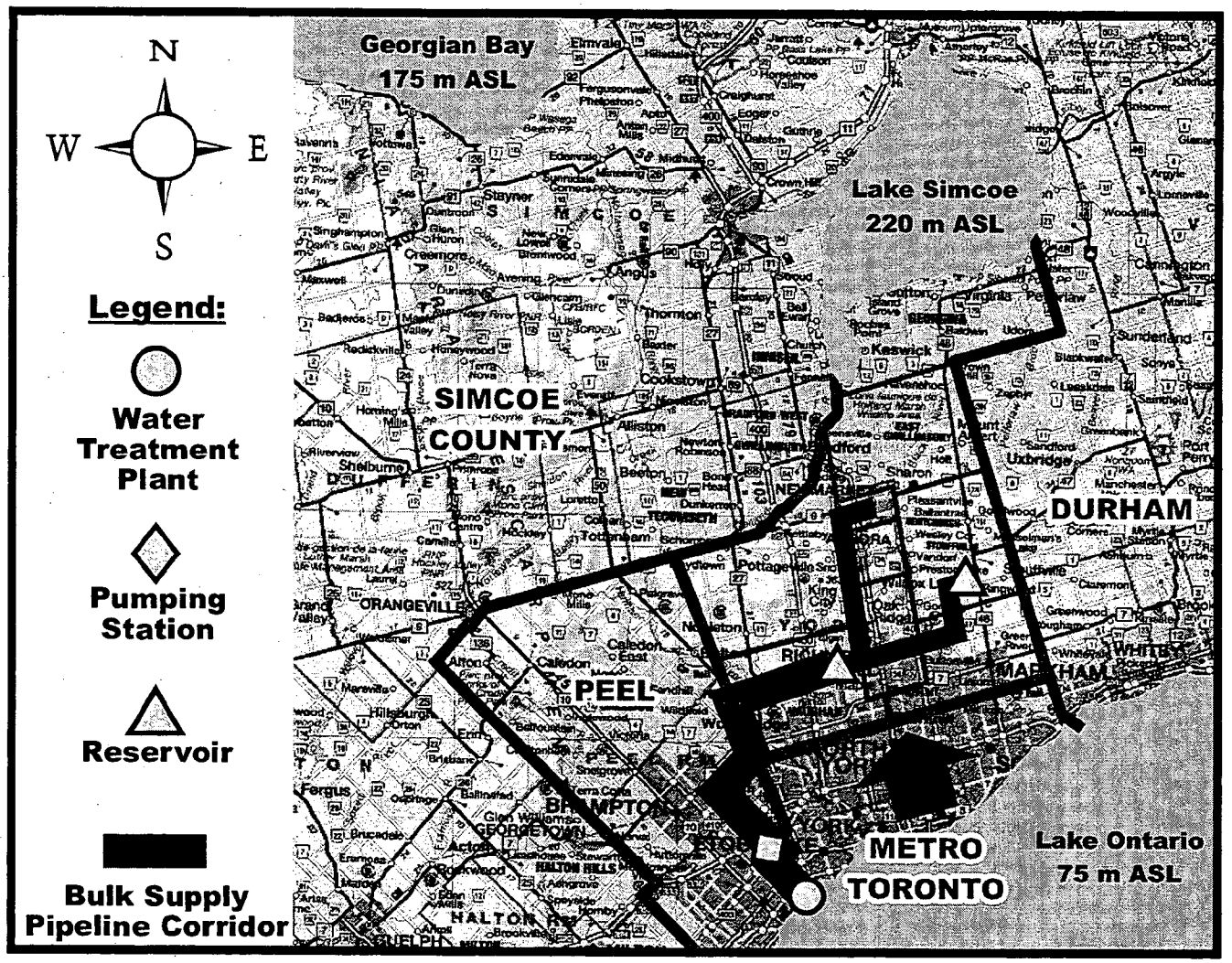


System:	2031 Max Day
Metro-York Water System	97 migd
Georgian Bay	80 migd
Groundwater/ Lake Simcoe	33 migd
Total Requirement: (with water use efficiency program)	**210 migd**

Financial Effects:

Capital Cost *(includes $103 M to Metro)*	**$700 - $900 M**
Rate Effect in 2031 (current $)	**30 - 37 ¢/m³**
Immediate Effect on Development Charge (Water Portion only)	**+20% ~ +52%**

PEEL/METRO-YORK WATER SYSTEM

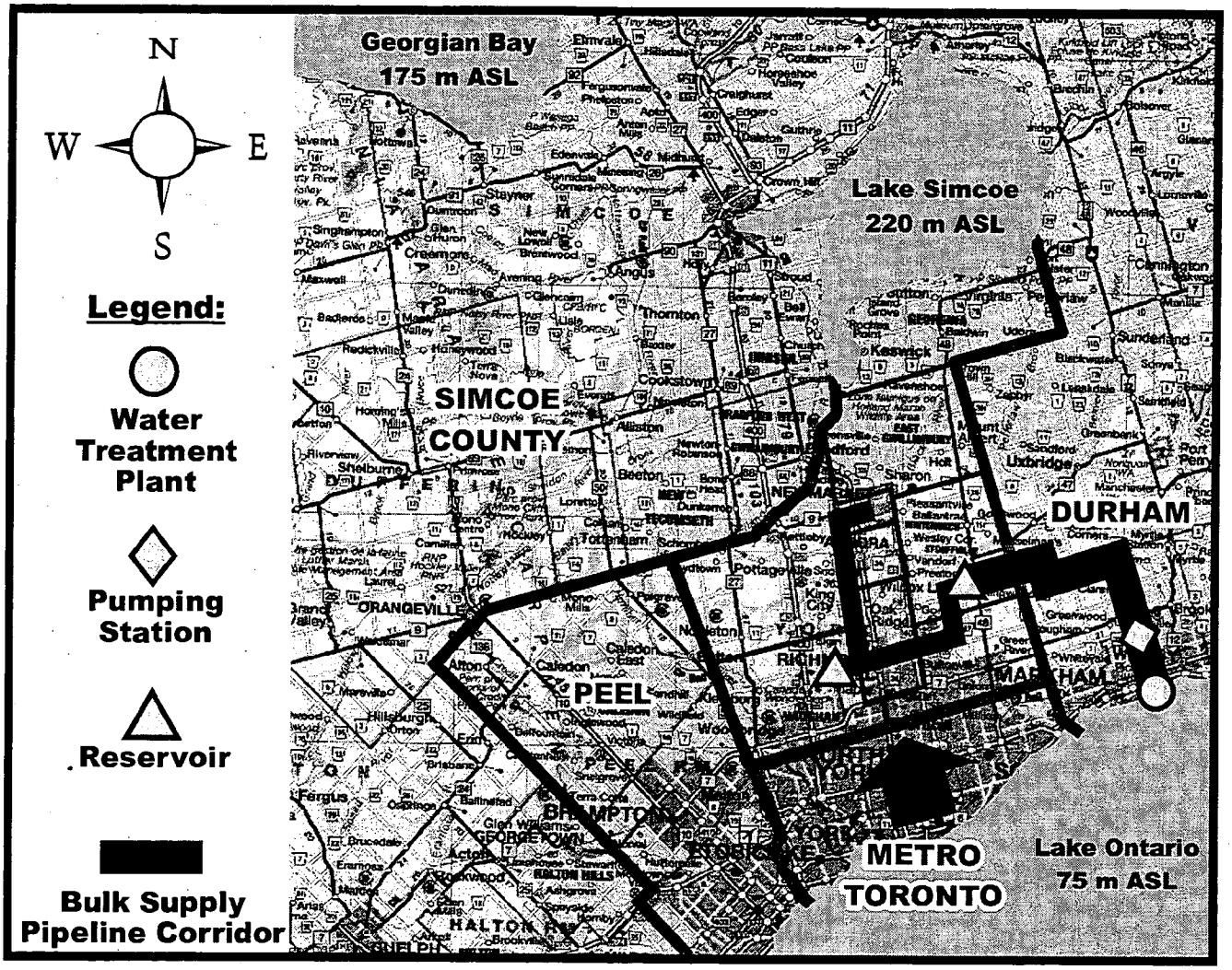


System:	2031 Max Day
Metro-York Water System	97 migd
Peel	80 migd
Groundwater/ Lake Simcoe	33 migd
Total Requirement: (with water use efficiency program)	210 migd

Financial Effects:

Capital Cost *(includes $103 M to Metro)*	**$700 - $900 M**
Rate Effect in 2031 (current $)	**30 - 37 ¢/m³**
Immediate Effect on Development Charge (Water Portion only)	**+20% ~ +52%**

DURHAM (EAST)/METRO-YORK WATER SYSTEM

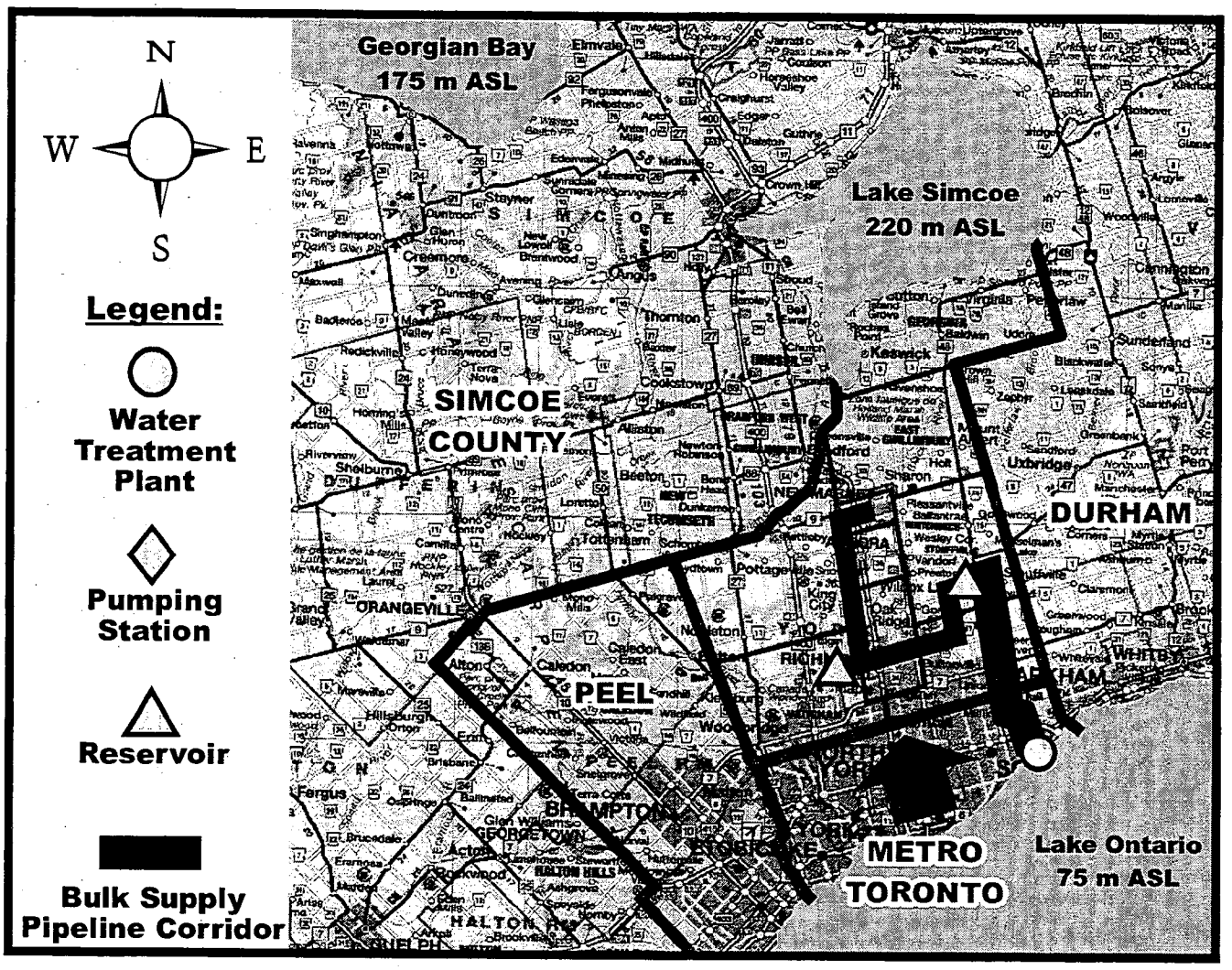


System:	2031 Max Day
Metro-York Water System	97 migd
Durham (East)	80 migd
Groundwater/ Lake Simcoe	33 migd
Total Requirement: (with water use efficiency program)	**210 migd**

Financial Effects:

Capital Cost *(includes $103 M to Metro)*	**$550 - $700 M**
Rate Effect in 2031 (current $)	**29 - 35 ¢/m³**
Immediate Effect on Development Charge (Water Portion only)	**-6% ~ +19%**

METRO (DIRECT)/METRO-YORK WATER SYSTEM

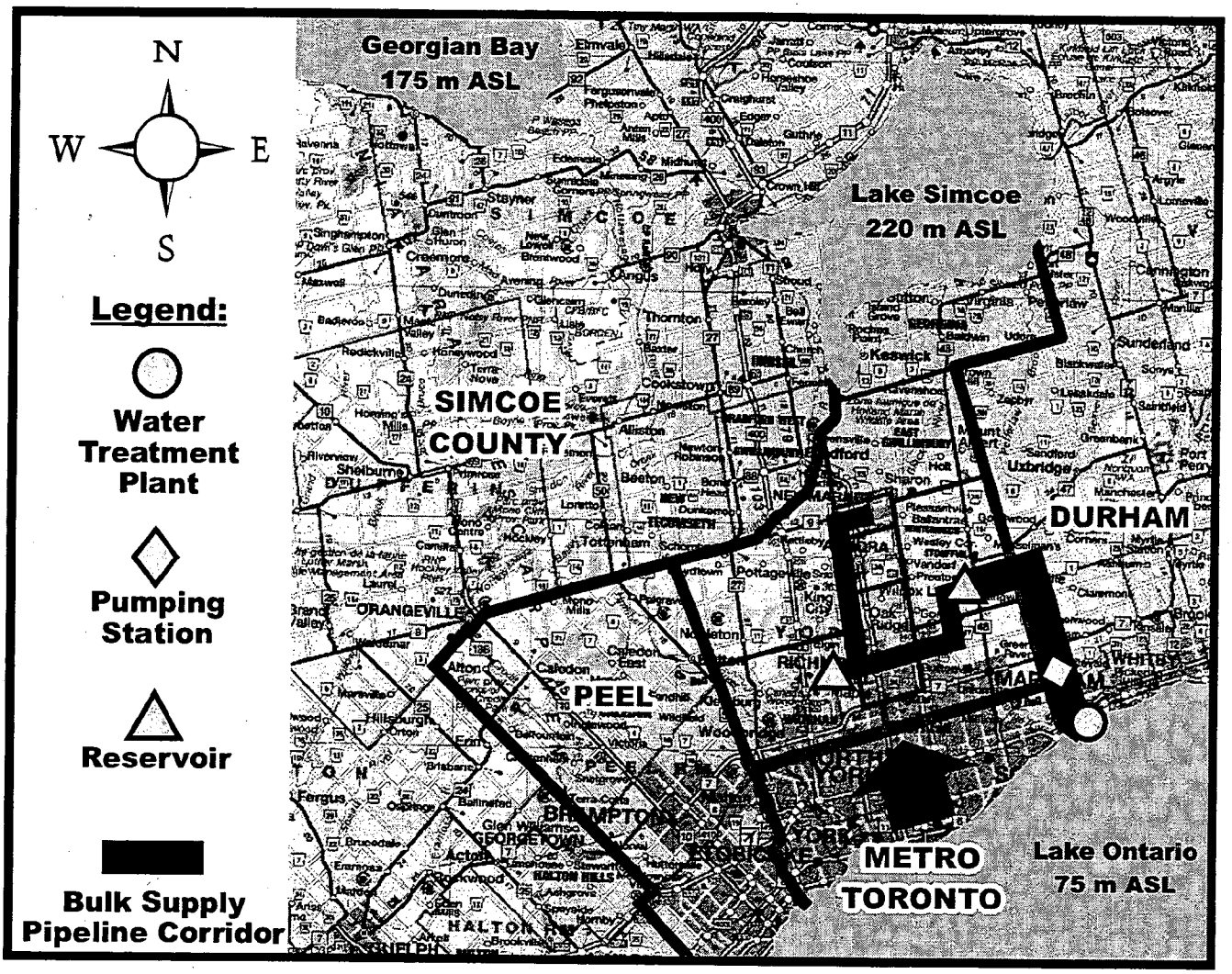


System:	2031 Max Day
Metro-York Water System	97 migd
Metro (Direct)	80 migd
Groundwater/ Lake Simcoe	33 migd
Total Requirement: (with water use efficiency program)	**210 migd**

Financial Effects:

Capital Cost *(includes $103 M to Metro)*	**$550 - $700 M**
Rate Effect in 2031 (current $)	**29 - 35 ¢/m³**
Immediate Effect on Development Charge (Water Portion only)	**-6% ~ +19%**

DURHAM (WEST)/METRO-YORK WATER SYSTEM

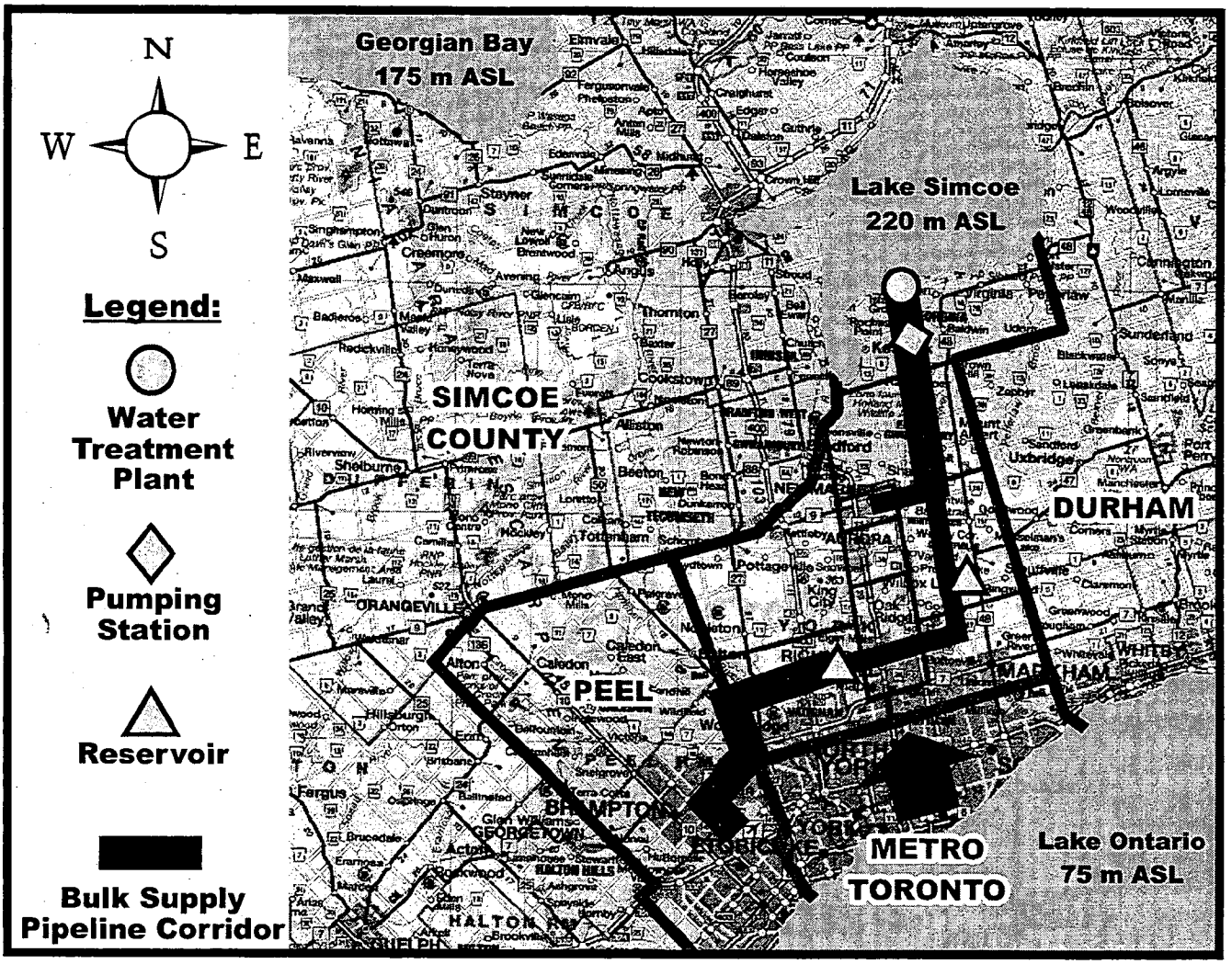


System:	2031 Max Day
Metro-York Water System	97 migd
Durham (West)	80 migd
Groundwater/ Lake Simcoe	33 migd
Total Requirement: (with water use efficiency program)	210 migd

Financial Effects:

Capital Cost *(includes $103 M to Metro)*	$400 - $550 M
Rate Effect in 2031 (current $)	26 - 32 ¢/m³
Immediate Effect on Development Charge (Water Portion only)	0% ~ +5%

PEEL (COOP)/LAKE SIMCOE/METRO-YORK WATER SYSTEM

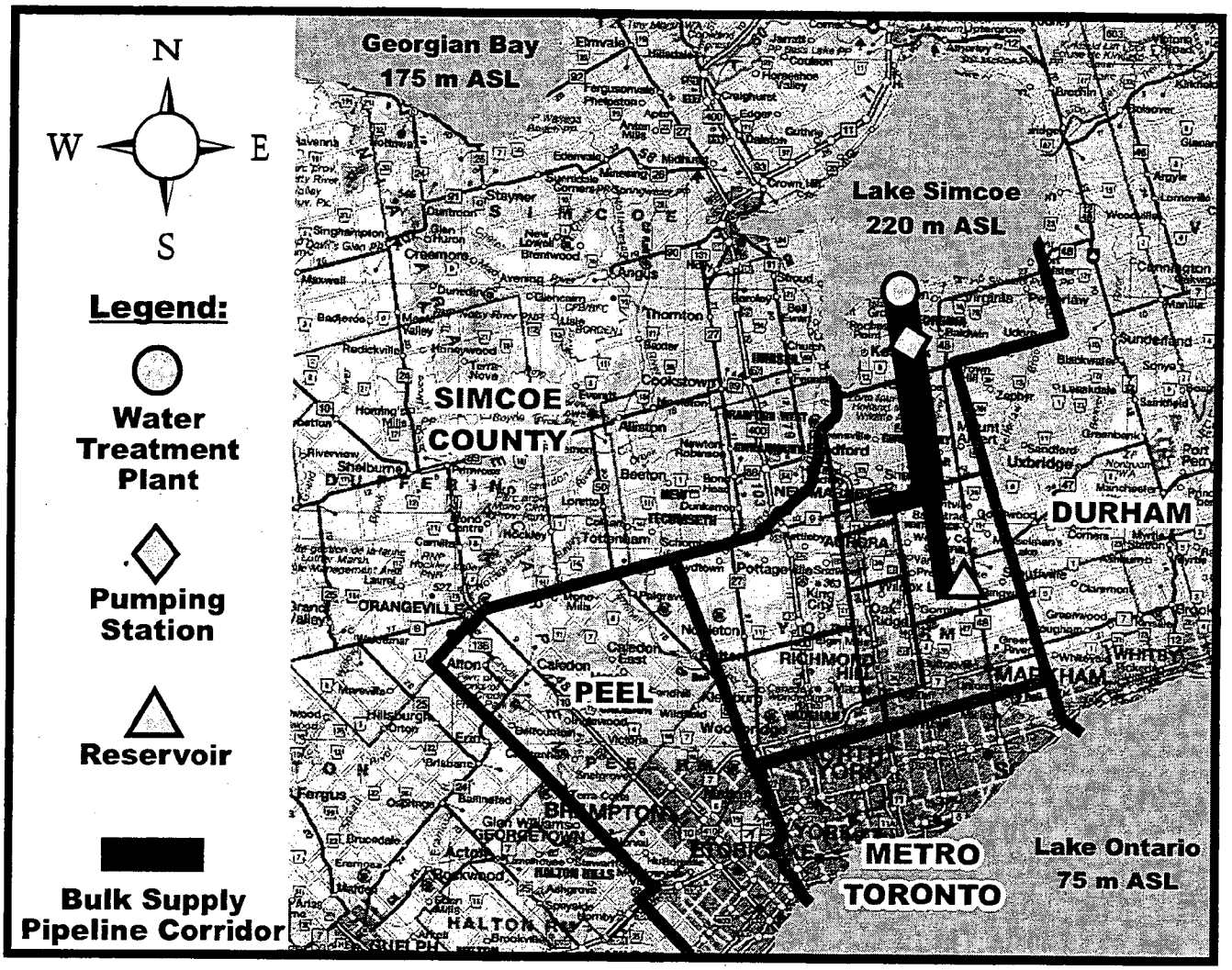


System:	2031 Max Day
Metro-York Water System	97 migd
Peel (Cooperative)	70 migd
Groundwater/ Lake Simcoe	43 migd
Total Requirement: (with water use efficiency program)	210 migd

Financial Effects:

Capital Cost *(includes $103 M to Metro)*	**$400 - $550 M**
Rate Effect in 2031 (current $)	**26 - 32 ¢/m³**
Immediate Effect on Development Charge (Water Portion only)	**0% ~ +5%**

LAKE SIMCOE SUPPLY



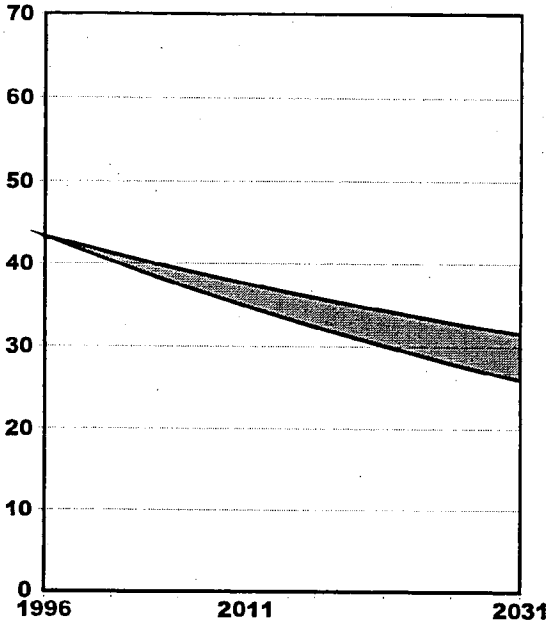
System:	2031 Max Day
Lake Simcoe	5 - 20 migd

Financial Effects:

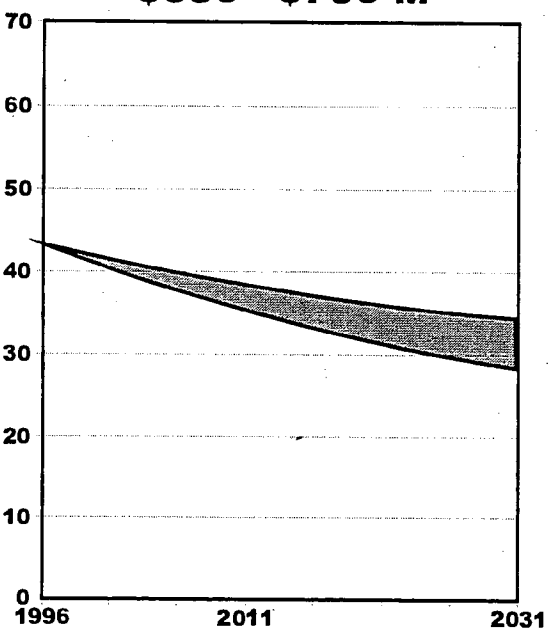
Capital Cost	$50 - $150 M
Rate Effect in 2031 (current $)	neutral
Immediate Effect on Development Charge (Water Portion only)	neutral

WATER RATE IN 2031
(1996 $)

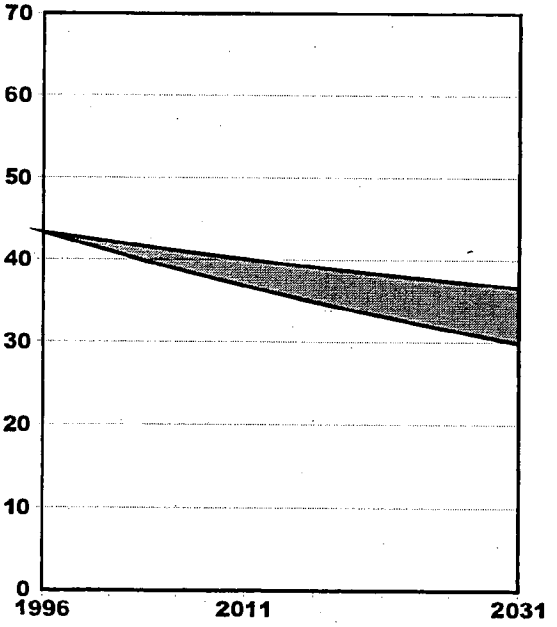
$400 - $550 M



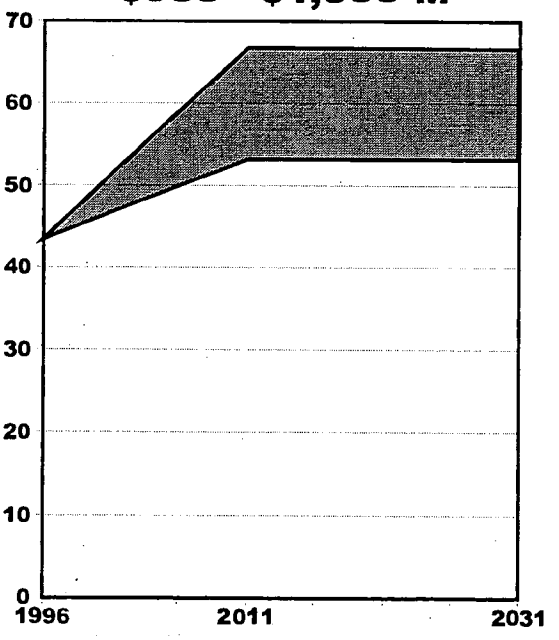
$550 - $700 M



$700 - $900 M



$900 - $1,300 M



COMMUNICATIONS

Public Communications

Clearly a project such as the Long Term Water Strategy for York Region has such a broad impact on the entire community served that it is only right and fitting that public communication, consultation and involvement of all must feature highly to ensure the success of the whole venture.

There has been steady interest in the Project by the media. At the end of August, 24 articles had appeared in newspapers, primarily local, and 12 more in industry association newsletters. A number of additional articles also appeared in September following Report No. 5 of the Water Supply Task Force.

The Class Environmental Assessment process generates mandatory levels of public consultation, however the York Region/Consumers Utilities Partnership have embarked upon communication and consultation in addition to the minimum mandated requirements.

At an early stage in the project a series of Public Open Houses was arranged at strategic locations across the Region to provide information on the intentions and goals in coming to establish a preferred solution.

As is required by the EA process, notification of relevant agencies is a mandatory feature. A list of those agencies notified follows but it is anticipated that this list will be expanded to include organizations such as the Urban Development Institute.

REVIEW AGENCIES LIST
BRADFORD & DISTRICT VEGETABLE GROWER ASSOCIATION
ENERGY, MINES AND RESOURCES CANADA, GEOLOGICAL SURVEY OF TERRAIN SCIENCES
FEDERATION OF ONTARIO COTTAGERS
INTERNATIONAL JOINT COMMISSION
MINISTRY OF AGRICULTURE, FOOD AND RURAL AFFAIRS LAND USE PLANNING BRANCH
MINISTRY OF COMMUNITY AND SOCIAL SERVICES, DEVELOPMENT SERVICES BRANCH
MINISTRY OF CULTURE, TOURISM AND RECREATION, CULTURAL PROGRAM BRANCH
MINISTRY OF DEVELOPMENT, TRADE AND TOURISM, RECREATION POLICY BRANCH
MINISTRY OF ENVIRONMENT AND ENERGY, ENVIRONMENTAL ASSESSMENT BRANCH
ENVIRONMENT CANADA
TRENT SEVERN WATERWAY
LAKE SIMCOE REGION CONSERVATION AUTHORITY, PLAN REVIEW OFFICE
MINISTRY OF ENVIRONMENT AND ENERGY, CENTRAL REGIONAL OFFICE
MINISTRY OF MUNICIPAL AFFAIRS, MUNICIPAL PLANNING POLICY BRANCH
MINISTRY OF NATURAL RESOURCES, NATURAL RESOURCES INFORMATION
MINISTRY OF NATURAL RESOURCES RESOURCE, STEWARDSHIP AND DEVELOPMENT BRANCH
MINISTRY OF NATURAL RESOURCES, MAPLE DISTRICT
MINISTRY OF NATURAL RESOURCES STREAM FLOW FORECAST CENTRE, CONSERVATION AUTHORITIES BRANCH
MINISTRY OF NATURAL RESOURCES, REGIONAL ENGINEER
MINISTRY OF NATURAL RESOURCES, AQUATIC ECOSYSTEMS BRANCH
MINISTRY OF NATURAL RESOURCES, SOUTH CENTRAL REGIONAL DIRECTOR
MINISTRY OF NORTHERN DEVELOPMENT AND MINES SEDIMENTARY GEOSCIENCE AND GEOCHEMISTRY SECTION
MINISTRY OF TRANSPORTATION, CENTRAL REGION
ONTARIO HYDRO, OPERATING SUPERINTENDENT, CENTRAL REGION
ONTARIO HYDRO, CORPORATE SERVICES DEPT, CORPORATE REAL ESTATE DIVISION
MUNICIPALITY OF METROPOLITAN TORONTO, METRO HALL
MUNICIPALITY OF METROPOLITAN TORONTO, COMMISSIONER OF PLANNING
REGIONAL MUNICIPALITY OF DURHAM
REGIONAL MUNICIPALITY OF PEEL
SIMCOE COUNTY
METROPOLITAN TORONTO & REGION CONSERVATION AUTHORITY, PLAN REVIEW SECTION

In addition to this, a public polling study was commissioned to enhance and support the early findings from the Open Houses.

The statistically valid results of the Public Polling study will be taken a stage further in the process of assessment, through a technique known as Multi-Criteria Ranking.

Alongside these activities a number of other pro-active communications measures have been initiated, namely Outreach program, Internet Site and Mailers.

The following paragraphs give a further insight into the activities mentioned above; Public Open Houses, Public Polling and Multi-Criteria Ranking, and Other Pro-Active Communication Measures.

Public Open Houses

The Partnership of Region of York and Consumers utilities held three discretionary public open houses in July 1996, to introduce the Long Term Water Supply Project to the people of York Region and to solicit input.

The meetings took place in Maple (attended by 24 people), Richmond Hill (attended by 37 people) and Newmarket (attended by 89 people), and at each a series of displays was made available in explanation of the project. Attendees were invited to complete a questionnaire, the results of which were compiled together in a report which is available elsewhere.

In summary the questionnaire respondents expressed the following opinions:

- Respondents were equivocal in their expression of confidence in the Partnership.
- In addition to the four alternatives being studied. York Region/ Consumers Utilities should also consider the following alternatives:
    1. limit population growth to match resource bearing capacity,
    2. increase conservation measures/demand management,
    3. allow development only were water resources permit, and
    4. focus on lake Simcoe water supply.
- Although all enunciated guiding principles are deemed important, pre-eminent among them are to provide a secure water supply for the Region's future growth, and ensure protection of the environment.

Public Polling

The information provided by the Public Open Houses was very useful and gave indications of the views of the public on various matters, but in order to acquire statistically valid quantitative information the services of Research Strategy Group Incorporated of Toronto were retained.

The primary objective of the study was to assign weightings to each of the evaluation criteria to accurately reflect the opinion of the residents of York Region.

York Region residents were interviewed at their homes during August 1996. The various communities were sampled, as follows:

Distribution of Interviews Within York Region

Community within York Region	# Inter-views	Sub-Region	# Inter-views	'Urban'/ Rural	Current Water Supply
Markham	85	S - E		U	L Ont
Vaughan	66	S - W	195	U	L Ont
Richmond Hill	44	S - C		U	L Ont
Newmarket	30	Mid - C	50	U	Ground
Aurora	20	Mid - C		U	Ground
King City (King City)	15	Mid - W	30	R	Ground
Whitchurch/Stouffville (Stouffville)	15	Mid - E		R	Ground
Georgina (Keswick)	19	N	30	R	L Simcoe
East Gwillimbury (Holland Landing)	11	N		R	Ground
Total	305			U=245	LOnt=195
				R=60	Ground=90
					LSimcoe=20

This sampling plan involved a slight re-distribution of interviews away from the major urban centres, and towards the less populated areas. This was done to permit some greater precision in the statistical sampling of these regions.

A full and detailed report on the findings of the survey work was submitted by Research Strategy Group Inc. and this is available elsewhere.

The findings and conclusions are extensive but the following gives an overview of the principle determinations made:

- The seriousness of the water supply problem in York Region is acknowledged by a majority to be very or extremely serious. Concern is greatest for those currently receiving water from underground sources.
- In deciding upon a water supply solution, source water is the most important factor. Georgian Bay is the most preferred source, and this preference is strongest for those currently receiving their water from underground sources.
- The next most important factor is cost. An increase of $40 per year is regarded as significant and undesirably higher than current costing.
- A source of supply having a secondary source is much preferred over a single source supply.
- A shared supply system is marginally preferred over an independent supply system.
- There is a small plurality for the option of laying pipelines more in rural settings, over the option of laying pipelines in urban areas.
- There is a good level of knowledge of the current situation, for one's current source of water, and for recent changes in population growth. Attitudes to population growth are generally neutral to positive.
- About a quarter claim some awareness of the York Region Long Term Water Supply Project with 9% having heard of the Open Houses conducted the week of July 22. Awareness is considerably higher in the middle and northern areas within York Region.

Multi Criteria Ranking (Compromise Programming)

The conflict between environmental, economic, social and other objectives is a problem that constantly confronts public officials in planning, as experienced in many countries. Selection of a water supply scheme is an example of such a problem in which a decision-support tool is required to provide a scientific basis for ranking different alternatives and choosing the best overall water supply scheme (considering all relevant objectives). The evaluation process is difficult due to the number of objectives which are non-commensurable (expressed in different units) and often in conflict with each other. Information from the public polling exercise will be utilized to support mathematical modeling to assist in the derivation of the preferred solution.

The evaluation process uses a distance-based multi-criterion decision-making technique known as Compromise Programming (CP).

Compromise among the conflicting objectives often leads to significant cost savings as well as qualitative benefits like improved system reliability, reduced environmental impact, fewer problems related to supply, and shorter project installation times. The CP technique has been successfully used in many water resources applications.

Other Pro-Active Communication Measures

Outreach Program

Work is progressing on an outreach program to identify possible venues and opportunities for written papers and speaking engagements by key spokespersons on the nature and development of the project.

With broader public recognition, involvement and support, the Partnership's credibility will continue to be enhanced as both workable and effective with York Region residents.

Internet Site

The Communications Work Group is preparing for an effective presence in the World Wide Web. A number of pages are being designed that will communicate information on the project and to provide an opportunity for public input. The Web Site is expected to be on the Internet in late October.

Mailer

An information flyer on the project is being developed for distribution to 175,000 households in York Region in early November. This will provide an overview of the project, the alternatives under consideration and encourage residents to provide their views to the Partnership.

Other Regional Municipalities

Because each of the possible alternative Great Lakes sources of supply will in some way impact other municipalities, a series of meetings was arranged with senior staff in the Regions of Durham, Peel, and Metropolitan Toronto, as well as Simcoe County, and Collingwood PUC.

The meetings served not only to inform other municipalities of the possible implication of the project alternatives but also in appropriate circumstances to open discussion on potential cooperative measures which may bring benefits to the adjoining municipalities through win-win solutions.

Region of Durham

Three separate meetings have taken place between representatives of the Partnership and staff of the Region of Durham Works Department.

Apart from the technical matters discussed, some clear advantages became apparent of potential benefits for both Durham and York if a cooperative venture were to take place. This was particularly so in respect of supplies being sourced from locations to the west of the existing Ajax Treatment Plant. Such a source could provide York's needs and also those of Durham at its western boundaries where a possible need to supplement supplies in this area in the future could be addressed as well as servicing of the future Seaton area.

The meetings identified the technical issues and possible solutions and concluded with the Region of Durham confirming their interest in continued cooperation in assessing servicing options which could address long-term requirements for both York and Durham.

Region of Peel

The discussions with the Regional Municipality of Peel took a slightly different form to those which took place in Durham. This difference is mainly due to the fact that Peel Region are also involved in the development of long-term strategies for servicing requirements. Peel Region have also documented a form of proposed cooperation with the neighbouring Regional Municipality of Halton. A similar agreement to jointly cooperate with York Region has also been documented.

A potential cooperative scenario was prepared at Consumers Utilities expense by Peel's consultants, KMK Consultants Ltd., with the agreement of Peel Region. The costs associated with this solution were included in the pricing of engineering solutions.

Metro Toronto

York Region has been discussing a proposal from Metro Toronto to enhance the Region's supply from Metro to 57 MIGD. Currently the Region is taking an average day supply of approximately 38 MIGD. Capital payments totalling $103 million will be required by Metro from York to provide this additional supply of which some $16 million has already been committed.

In addition, York Region is currently involved in negotiation with Metro Toronto to set a new water rate for 1997.

Given this background, one meeting has been held at senior staff level between Metro Toronto and the Partnership to discuss long-term requirements. (The 57 MIGD does not provide sufficient volumes for York Region's long-term needs.)

The view of Metro staff was that growth in Metro was nearing maturity and that they had no further long-term plans beyond supporting that maturing

position. It was also pointed out by Metro staff that they would be undertaking a demand management program which could reduce their need for capital expenditure to supply their ultimate needs.

Simcoe County

A presentation was given to the Simcoe County Council on 24 September at which York Region representatives, including Mayor Cole, outlined the long-term water supply plans and the process to derive a preferred solution.

The meeting provided the opportunity to brief the municipal representatives on the alternatives under development. Clearly the focus of interest for Simcoe County would be the possibility of servicing communities from a Georgian Bay source.

The opportunity to express interest has been given to the relevant Lake Simcoe municipalities. To date no responses have been registered.

Collingwood P.U.C.

One meeting was held with Collingwood P.U.C. and their engineering consultants, Ainley & Associates, to outline the long-term strategy for York Region.

It was determined at this meeting that Collingwood P.U.C. were in the feasibility study stage of a possible water pipeline to serve the Beeton area and communities along the way. The route of this pipeline was determined to be a duplicate of the York Region strategy for pipeline routes for transferring bulk supplies from the Georgian Bay alternatives to York Region.

Additionally, Collingwood is also in the early stages of developing plans to reconstruct their water treatment plants following recent cryptosporidium problems. Synergies with the York Region strategy were recognized.

GOVERNMENT RELATIONS

From early on in the project, effective communications and relations with various Provincial and Federal ministries and bodies were recognized as essential to promote better understanding of the undertaking.

The ministry bodies approached were identified based upon their regulatory authority and include the Ministry of Natural Resources (MNR); the Ministry of Environment and Energy (MOEE); the Ministry of Municipal Affairs (MMA) and the Office of the Greater Toronto Area (OGTA); Ontario Hydro; and the Trent-Severn Waterway, a division of the Environment Canada, Parks Service. In respect of generating capacity losses, a meeting with Orillia Water, Light, and Power was also held.

A series of meetings was held over the course of the project. The following presents a review of the position established by the various bodies in regard to the undertaking.

Ministry of Natural Resources (MNR)

The MNR is responsible for the management and use of Ontario's natural resources. MNR staff met with the Partnership Technical Work Group to explain the MNR's role and to identify existing legislation and agreements which would constrain further consideration of any of the various water supply options for York Region.

The primary piece of legislation/agreements covering water use in the Great Lakes Basin is the Great Lakes Charter. This Charter signed by Ontario, Quebec and the eight states bounding the Great Lakes *"commits jurisdictions to inform and consult on all proposed diversion, transfers and consumptive uses of water exceeding 19 ML/d"* (4.2 MIGD).

As currently foreseen, withdrawal of water from Georgian Bay would be returned to Lake Ontario via the York-Durham Sewage System. This proposed 'intra basin' transfer of water would invoke the *"prior notice and consultation"* requirements of the Charter. The MNR identified themselves as the primary regulator of projects involving the water resources of Ontario, including the Great Lakes.

Ministry of Environment & Energy (MOEE)

The Partnership staff met with MOEE representatives to update the MOEE on the project to solicit advice on the Class Environmental Assessment and the Approvals processes, and to gain the Ministry's perspective of any significant hurdles to be overcome with any aspect of the project.

Regarding the class Environmental Assessment and Approvals processes, MOEE staff stated that any solution which contemplated the supply or sale of water to other municipalities or shared facilities with other municipalities must be included in the description of the undertaking for the EA process and could not be introduced later, otherwise the process may have to be recommenced. The Partnership has requested written expressions of interest from municipalities in Simcoe County and from the City of Barrie.

Under the EA process, MOEE staff saw no difference between a municipal application and an application from the Partnership.

Overall, MOEE staff were generally supportive of the approach with respect to the Environmental Assessment process that has been followed to date.

MOEE staff indicated that an initiative to take water from Georgian Bay and subsequently discharge it to Lake Ontario would be much more complex, from an approvals point of view, than other potential solutions and therefore they may not be supportive.

Concern was expressed by MOEE in respect of lost hydro generating capacity at Niagara Falls caused by a Georgian Bay solution. In fact it was suggested that a proposal to withdraw water from Georgian Bay and discharge it to Lake Ontario may be opposed by both the Provincial and Federal Governments.

Ministry of Municipal Affairs & Housing (MMAH)

A meeting with MOEE, MNR and MMAH was held to update the Ministries on the progress of the project and to receive comments.

Representatives were briefed on the range of technical solutions, and the project schedule was presented with a range of alternative entity structures being envisioned. Staff of the MMAH/OGTA (Office of the Greater Toronto Area) did not have specific comments, but expressed concern about input and timeframe for comment. In addition, they expressed a desire to be kept informed of progress. The Partnership will remain in contact with the MMAH/OGTA during the upcoming Public Consultation period and beyond.

Ontario Hydro

Following the MOEE statement regarding the potential for loss of hydro generation capacity, a meeting was convened with Ontario Hydro. In general, Ontario Hydro staff stated that an agreement for compensation of lost generating capacity could be negotiated. A precedent for this exists. However, this may not be required for a loss in flow at the Niagara Falls generating stations. Ontario Hydro staff identified that domestic and sanitary water uses may take precedence over water for power generation and for navigation. Ontario Hydro staff were also of the opinion that the amount of water supply being sought (up to 5 m^3/s ave day) would not have a major impact on generating capacity but would comment more fully at the next round of consultation.

Trent-Severn Waterway (TSW)

TSW, an agency of the Environment Canada, Park Service, was contacted as the principle regulator of Lake Simcoe with respect to navigation.

TSW was of the opinion that the amount of water supply being sought (up to 1 m^3/s) would have minimal impact on navigation through the lake and connecting system but would respond more fully during the next round of consultation. York Region/Consumers Utilities Partnership staff were also informed of other stakeholders and that these would have to be contacted during the public consultation process.

Orillia Water, Light and Power Commission (OWLP)

OWLP operates the Swift Rapids hydro generating station on the Severn River, downstream of Lake Simcoe. Solutions involving withdrawals of water from Lake Simcoe may impact upon the generating capacity of the Swift Rapids plant. A meeting was convened with the Generation, Supply and Engineering Superintendent of the OWLP Commission to advise and update them on the project and to obtain understanding of the issues of the OWLP Commission. OWLP will respond more fully on compensation issues for loss of any generating capacity more fully over the next few weeks. It is not thought that this is a significant area of concern at this stage in respect of impact on operating costs.

LEGAL

The law firm of Tory Tory DesLauries and Binnington were appointed by York Region as legal advisors and the following is a summary of their report.

Any analysis of the various proposed commercial structures must take into account the legal constraints on York Region. Municipal law dictates that York Region has only those powers which are expressly granted by its enabling statute or other relevant provincial legislation and those implied powers which are necessary or essential in order to enable it to exercise its express powers. The current powers of York Region with respect to water supply can be described as a "patchwork" of specific powers found in several different acts, such as the *Regional Municipalities Act*, the *Municipal Act*, and the *Public Utilities Act*. These acts were not drafted with public/private partnerships in mind, and so it is not surprising that they do not confer many of the powers required to enter into the proposed commercial structures. Legislative amendments would therefore be required in order to permit the Region's participation in many of the proposed structures.

The prospect of legislative amendment does not present an insurmountable roadblock. Recent legislative initiatives, such as the *Community Economic Development Act, 1993*, have opened the door to certain kinds of public/private partnerships, namely the provision to a municipality of certain designated "municipal capital facilities", including facilities for water. The current provincial government has already demonstrated its willingness to promote efficiency in the delivery of services with the recently enacted *Savings and Restructuring Act* (Bill 26). The Act permits, among other things, a regional municipality to assume certain prescribed powers granted by statute to an area municipality, including the distribution of water to the area's inhabitants.

The government is also undertaking a wholesale review of service delivery in the province, which is currently being carried out by the Who Does What Advisory Panel chaired by David Crombie. This Panel has recommended that a program of Municipal Legislative Reform be undertaken based on the principle of permissive rather than prescriptive law. To facilitate this approach and minimize red tape, municipalities would be granted the authority, rights, powers and privileges of a natural person, except to the extent that these powers are limited by legislation. With natural person powers, a municipal corporation could organize its affairs, charge for goods and services, enter into contracts, buy and sell land, invest and borrow money, hire people and decide their remuneration and would be subject to any general laws. These activities would not be further spelled out in legislation, except where there is a provincial interest.

The Panel has recommended that a discussion paper on proposed municipal reforms be prepared and made available to municipalities, local boards and the public prior to the introduction of legislation, giving York Region ample opportunity to comment. If the Minister of Municipal Affairs and Housing accepts the Panel's recommendations, the applicable legislation could be revised in this manner as early as the spring of 1997. Obviously, such changes would have an impact on the legal analysis of the commercial structures set out below. In addition to the above general changes, York Region may seek specific legislative amendments to permit a specific commercial structure.

Apart from the specific structural issues set out below, there are two other sets of legal issues that must be considered. The first set concerns the charging of rates and development charges. The current statutory framework does not expressly authorize the charging of these rates and charges by anyone other than York Region, and there are statutory restrictions on how the funds collected are to be applied. Unlike the fixing of rates for natural gas, which is regulated by the Ontario Energy Board, there is currently no regulatory body specifically empowered to review water rates, although the Ontario Municipal Board does have a broad jurisdiction to do so. If the commercial structure

selected requires a body other than York Region to fix or collect rates and other charges, legislative amendments would be required, and such amendments might well include the establishment of a regulatory body.

Furthermore, there is currently no authority for York Region to fix rates sufficient to make a profit. This could be an important consideration, depending on the structure selected, and legislative amendments may be required.

The second set of issues that must be addressed concerns the physical construction of waterworks and acquisition of water. The technical solution selected will dictate whether land must be acquired, either by expropriation or otherwise, within or without the Region, as well as whether water will be bought from or sold to neighbouring regional municipalities. The current statutory framework grants certain express powers to York Region, or another body, to carry out some, but not all, of these activities. These powers will have to be examined in more detail in light of the preferred technical solutions, and legislative amendments, Ontario Municipal Board approval or other consents may be required in order to pursue certain solutions.

Outsourcing

This commercial structure would require York Region to enter into one or more comprehensive operating and maintenance contracts with Consumers Utilities. Such contracts would set out the obligations of Consumers Utilities with respect to the maintenance and management of the waterworks, and likely would contain specific standards to be met. There may also be one or more contracts for the construction of new facilities by Consumers Utilities. There would be no change in the ownership of the waterworks.

The current statutory framework does not contain an express power to enter into operating and maintenance contracts with persons other than other municipalities. However, there are certain provisions which could arguably be construed to permit such contracts. Furthermore, if the contract dealt with

the operation and maintenance of new "municipal capital facilities" constructed by Consumers Utilities, there is clear statutory authority to have such facilities operated and managed by any person.

The grant of a franchise to operate the regional waterworks system or any part thereof must be done by by-law, and it would require either electoral assent or another by-law eliminating the requirement of electoral assent.

Finally, the province maintains a supervisory jurisdiction over waterworks by granting broad powers of investigation and approval to the Director appointed under the *Ontario Water Resources Act*. The taking of water in excess of 50,000 litres per day requires a permit issued by the Director. Depending on the structure of the operating and maintenance agreement, Consumers Utilities may require such a permit. Furthermore, the establishment, alteration extension or replacement of new or existing waterworks requires the approval of the Director. The Director also has a general authority to direct the manner in which waterworks are maintained and operated.

Regional Authority

This commercial structure would require the creation of a separate entity to own and operate the waterworks in York Region. In order to enjoy the same tax status as the Region, this entity must be at least 90% owned by the Region. Depending on the structure of the regional authority vehicle, legislative amendments may be required in order to permit the Region's participation, since there is only a very limited statutory authority for York Region to take an ownership interest in a certain type of utility company.

In any event, if this structure involves the sale of water by the newly created regional authority to the area municipalities, legislative amendments would be required to relieve York Region of its statutorily-imposed duty to supply water to the area municipalities. Such amendments would not be required if the regional authority vehicle sold the water to York Region for resale to the area municipalities.

If this structure involves the sale or lease of active waterworks to the regional authority vehicle, Ontario Municipal Board approval will be required. Any such sale or lease must also be structured to avoid the restrictions on "bonusing" currently forming part of the legislative framework, either by leasing or selling the works at fair market value or by doing so at less than fair market value in connection with a contract to provide "municipal capital facilities".

In addition, the grant of a franchise to the regional authority vehicle to operate the system requires the same by-laws, and possibly electoral assent, described in "Outsourcing", above. The regional authority would also require the same permit and approval from the OWRA Director described in "Outsourcing", above.

Joint Venture

This structure could take the form of a joint venture corporation, with York Region and Consumers Utilities as shareholders. Alternatively, it could be a contractual joint venture, which is a relationship defined entirely by contract between the parties that does not require the creation of a new corporate entity. Both scenarios would require York Region to enter into detailed contracts setting out each party's rights and responsibilities with respect to the waterworks as well as decision-making procedures and procedures upon termination.

The current legislative framework does not expressly authorize York Region to enter into such detailed contracts, and legislative amendments would therefore be required. As discussed in "Regional Authority", above, there is limited statutory authority for York Region to own shares in a corporation, including a joint venture corporation.

The same issues with respect to the transfer of active assets and the relief of York Region's duty to supply water will arise as discussed above in "Regional Authority". Similarly, the granting of a franchise to this

corporation will require the by-laws, and possibly electoral assent described in "Outsourcing". Finally, the corporation would be required to obtain the permit and approval from the OWRA Director described in "Outsourcing".

Build-Own-Operate-Transfer

This structure would involve a comprehensive water purchase contract with Consumers Utilities, likely over an extended period of time. While local municipalities clearly have the power to enter into such contracts, subject to Ontario Municipal Board approval of the term of the contract, it is not clear that a regional municipality, such as York Region, enjoys the same power.

Alternatively, this structure could take the form of an agreement by Consumers Utilities to supply waterworks to York Region for a period of time, with operating and maintenance contracts with Consumers Utilities, and York Region retaining control over the collection and delivery of the water. Such an arrangement is clearly authorized by the recent "municipal capital facilities" provisions.

Both types of contract would also provide for the eventual transfer of ownership of the newly built facilities to York Region. York Region has the required authority to acquire waterworks from other persons, whether within or without the geographic boundaries of York Region.

This structure may also involve the sale or lease of existing waterworks to Consumers Utilities, which would trigger the transfer of asset issues discussed in "Regional Authority", above. The granting to Consumers Utilities of the franchise to construct or operate a waterworks will require the by-laws, and possibly electoral assent, discussed in "Outsourcing". Finally, Consumers Utilities will be required to obtain the permit and approval from the OWRA Director discussed in "Outsourcing", above.

THE NEXT STEPS

The Regional Council can be satisfied that the establishment of a partnership with Consumers Utilities has added considerable value to the direction of the long-term water strategy.

This process has enabled effective relationships to be built between the Region of York and Consumers Utilities which will be vitally important as the project further develops and unfolds.

Important relationships have been created with neighbouring Regional Municipalities and again honesty and cooperation have been the principal motivators in the discussions.

Finally, the public interest has been paramount in the process with the Open Houses already having taken place as well as the Public Polling process serving to reinforce the aim of satisfying all concerned.

During the remaining part of October and throughout November and December, a significant amount of consultation will be taking place. Public Open Houses are planned and these will be supplemented by visits if requested to the individual area municipalities. In addition, progress reports to a comprehensive audience of agencies and other regional municipalities will be taking place. Feedback from all of these events and activities as well as feedback from York Region Council will be essential in order to derive a preferred solution, which will without doubt be the **correct** solution. This solution will be presented to York Regional Council on 19th December 1996 by the York Region/Consumers Utilities Partnership in order to seek their approval.