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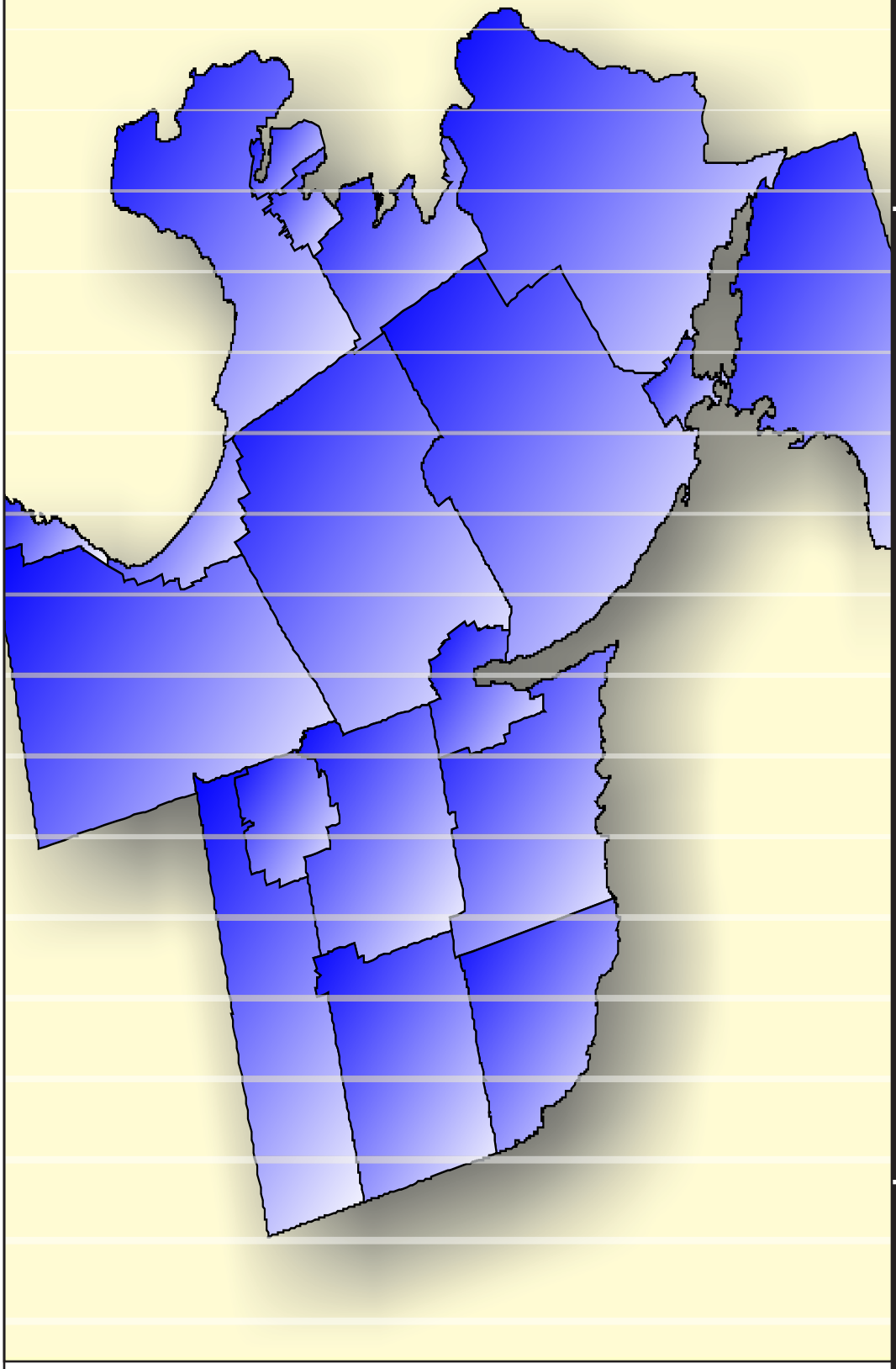
Intergovernmental Action Plan for Simcoe, Barrie & Orillia



Existing Capacities Assessment
Infrastructure Assessment Report

Ainley GROUP

Dillon Consulting
Bourrie & Associates
Clara Consulting
EDP Consulting

INTERGOVERNMENTAL ACTION PLAN FOR SIMCOE COUNTY, BARRIE, ORILLIA

INFRASTRUCTURE ASSESSMENT REPORT

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EXECUTIVE SUMMARY

The Province and Municipalities in Simcoe County, as well as the Cities of Barrie and Orillia, recognize the need to plan for long-term population growth and a healthy environment. Since August of 2004, the Province has been in discussions with the municipalities in south Simcoe, where current growth pressures appear to be most pressing. The purpose of these discussions was to determine how best to address common concerns in a cost effective and timely manner. Resulting from the discussion was the development of an Intergovernmental Action Plan (IGAP) for the County of Simcoe, and the Cities of Barrie and Orillia.

The Infrastructure Assessment Report quantifies and analyzes the capacities of the existing municipal infrastructure within the study area and describes any issues related to the water, sanitary sewer, stormwater, and transportation infrastructure.

The following table presents a basic summary of the number of persons within each Municipality that are connected to the Municipal Systems along with the total Municipal population according to the Census 2001 data.

Municipality	Serviced Population		Population Census 2001
	Wastewater	Water	
	No. of Persons	No. of Persons	
Township of Adjala-Tosorotio		2,790	10,082
City of Barrie	121,100	126,000	103,710
Town of Bradford-West Gwillimbury	17,900	18,400	22,228
Township of Clearview	4,729	7,008	13,796
Town of Collingwood	16,318	17,551	16,039
Township of Essa	6,200	7,116	16,808
Town of Innisfil	21,792	19,867	28,666
Town of Midland	14,000	16,700	16,214
Towns of New Tecumseth	19,416	18,105	26,141
City of Orillia	29,121	30,039	29,121
Township of Oro-Medonte		4,484	18,315
Town of Penetanguishene	6,000	6,764	8,316
Township of Ramara	3,027	4,150	8,615
Township of Severn	3,905	2,349	11,135
Township of Springwater	2,289	8100(2)	16104
Township of Tay	4222(1)	7,390	9,162
Township of Tiny		5,398	9,035
Town of Wasaga Beach	15,433	19,549	12,419
TOTAL	**285,452**	**321,760**	**375,906**

Serviced populations are based on 2004 data.
(1) Does not include 2004 serviced population for Victoria Harbour
(2) Serviced populations are based on 2003 data for Del Trend and Minesing.

The following table presents a summary of the residual capacity in persons for areas that are fully serviced within each Municipality.

System	Residual Capacity		Comment
	Wastewater	Water	
	No. of Persons	No. of Persons	
City of Barrie	12,050	9,550	**Historical** as per Procedure D-5-1 was used to calculate Water & Wastewater residual capacity (no growth assumed).
Town of Bradford West Gwillimbury	2,300	3,500	**MOE** as per Procedure D-5-1 was used to calculate Wastewater as the Influent flow meter at STP was malfunctioning up to and including 2002. **Historical** as per Procedure D-5-1 was used to calculate Water System residual capacity.
Town of Clearview - Stayner	1,750	400	**Historical** as per Procedure D-5-1 was used to calculate Water & Wastewater residual (no growth assumed).
Town of Clearview - Creemore	3,200	100	**Historical** as per Procedure D-5-1 was used to calculate Water & Wastewater residual (no growth assumed).
Town of Collingwood	5,700	850	**Historical** as per Procedure D-5-1 was used to calculate Water & Wastewater residual capacity.
Township of Essa - Angus	7,700	5,750	**Historical** as per Procedure D-5-1 was used to calculate Water & Wastewater residual capacity.
Town of Innisfil - Alcona	15,800	8,650	**Historical** as per Procedure D-5-1 was used to calculate Water & Wastewater residual capacity.
Town of Innisfil - Cookstown	500	-200	**Historical** as per Procedure D-5-1 was used to calculate Water & Wastewater residual capacity.
Town of Midland	8,500	3,250	**Historical** as per Procedure D-5-1 was used to calculate Water system residual. **Lower end of Range (Historical)** used to calculate Wastewater residual capacity as insufficient population data was provided.
Town of New Tecumseth - Alliston Sir Frederic Banting	1,900	5,150	**Historical** as per Procedure D-5-1 was used to calculate Water & Wastewater residual (no growth assumed).
Town of New Tecumseth - Alliston Regional Plant			**No** residual within Regional Wasertwater Plant due to current Provincial Order.
Town of New Tecumseth - Tottenham	0	2,650	**Historical** as per Procedure D-5-1 was used to calculate Water system residual (no growth assumed). **No** residual within Wasertwater due to current Provincial Order and the fact that Beeton Creek is extremely sensitive.
City of Orillia	13,650	18,750	**Historical** as per Procedure D-5-1 was used to calculate Wastewater residual (no growth assumed). **MOE** was used to calculate Water residual at the request of the City as their water demand ratio is 1:1 for Residential and ICI.

System	Residual Capacity		Comment
	Wastewater	Water	
	No. of Persons	No. of Persons	
Town of Penetanguishene - Fox Street	400	1,350	**Historical** as per Procedure D-5-1 was used to calculate Water & Wastewater residual capacity (no growth assumed).
Town of Penetanguishene - Main Street	350		**Historical** as per Procedure D-5-1 was used to calculate Water & Wastewater residual capacity (no growth assumed).
Township of Ramara - Lagoon City	350	1,300	**Historical** as per Procedure D-5-1 was used to calculate Water & Wastewater residual capacity.
Township of Ramara - Bayshore Village	150	50	**Historical** as per Procedure D-5-1 was used to calculate Water & Wastewater residual capacity.
Township of Severn - Washago	400	350	**Historical** as per Procedure D-5-1 was used to calculate Water & Wastewater residual capacity.
Township of Severn - Coldwater	450	600	**Historical** as per Procedure D-5-1 was used to calculate Water & Wastewater residual capacity.
Township of Severn - West Shore	1,000	1,000	**MOE** used for Water & Wastewater as systems have only recently been put online therefore three years of data is not available.
Township of Springwater - Elmvale	1,150	2,200	**Lower end of Range (Historical)** used to calculate Water & Wastewater residual capacity as insufficient population data was provided.
Township of Tay - Port McNicoll	50	2,900	**MOE** as per Procedure D-5-1 was used to calculate Water & Wastewater residual as insufficient historical data was provided.
Township of Tay - Victoria Harbour			
Town of Wasaga Beach	37,450	8,400	**Historical** as per Procedure D-5-1 was used to calculate Water & Wastewater residual capacity.
TOTAL	**134,455**	**96,205**	

1.0 INTRODUCTION

1.1 Context for this Report

The Province and Municipalities in Simcoe County, as well as the Cities of Barrie and Orillia, recognize the need to plan for long-term population growth and a healthy environment. Since August of 2004, the Province has been in discussions with the municipalities in south Simcoe, where current growth pressures appear to be most pressing. The purpose of these discussions was to determine how best to address common concerns in a cost effective and timely manner. Resulting from the discussion was the development of an ***Intergovernmental Action Plan*** (IGAP) for the County of Simcoe, and the Cities of Barrie and Orillia.

The four desired outcomes of the Action Plan are:

1. A defined growth (assimilative) capacity of the Lake Simcoe and Nottawasaga River watersheds;

2. Development (servicing) certainty for intensification and approved growth;

3. Defined capacity for Barrie and area's additional growth; and,

4. Effective and sustainable municipal governance.

The purpose of the IGAP is to provide the affected municipalities with the proper tools to assist them in their planning and development decision-making. Upon completion of the IGAP, it is expected that the participating governments will have a basis for:

- A long-term urban structure plan for Simcoe County and the Cities of Barrie and Orillia;

- A sustainable infrastructure strategy for Simcoe, Barrie and Orillia;

- Development certainty for affected stakeholders; and,

- A suitable governance structure and/or service coordination mechanisms to manage future growth and development.

The Province's Strong Communities program includes developing long-range planning solutions for Central Ontario. Multiple interrelated initiatives are in-place, including, the Growth Plan for the Greater Golden Horseshoe, Planning Reform, Watershed-based Source Water Protection Planning, Golden Horseshoe Greenbelt, and the 10-Year Strategic Infrastructure Investment Plan.

Unique growth and development challenges exist in Simcoe County and the Cities of Barrie and Orillia (study area). South Simcoe and Barrie, in particular, are experiencing increased development pressure, and are expected to continue to have rapid growth. A number of the municipalities in the study area rely on inland water systems which have been demonstrated to be under strain (for example the Lake Simcoe watershed has known issues as a result of phosphorus loadings). Without intervening action, the available potable water and aquaculture of these watersheds are threatened.

Through their approved official plans, the municipalities in the study area make provision for a significant amount of growth. At the same time, several major developments are being proposed that involve the establishment of new urban settlement areas or the expansion of existing urban areas. Based on current conditions, there may be insufficient existing sewer and/or water capacity to accommodate approved development and/or planned land uses within existing settlement areas.

In order to accommodate planned growth, several major infrastructure municipal class environmental assessments are underway and/or nearing completion. However, these studies have not been undertaken in a comprehensive or coordinated fashion.

The municipalities in the study area are also under increasing administrative and financial capacity constraints.

By February 2005, the Province and the municipalities in the study area had agreed to partner in the IGAP, which has resulted in the commissioning of this study.

The partnership is made up of the following Provincial Ministries and municipalities:

Provincial Ministries include:

- Municipal Affairs and Housing
- Environment
- Public Infrastructure Renewal
- Natural Resources

Municipalities include:

- Simcoe County
- Township of Adjala-Tosorontio
- City of Barrie
- Town of Bradford West Gwillimbury
- Township of Clearview
- Town of Collingwood
- Township of Essa
- Town of Innisfil
- Town of Midland
- Town of New Tecumseth
- City of Orillia
- Township of Oro-Medonte
- Town of Penetanguishene
- Township of Ramara
- Township of Severn
- Township of Springwater
- Township of Tay
- Township of Tiny, and
- Town of Wasaga Beach

The partners want to further their common interests in:

- Protecting the environment, including the water quality and quantity of the Nottawasaga River and Lake Simcoe watersheds.

- Fiscally sustainable growth, through efficient, cost-effective development and land use patterns.

- Effective municipal governance and service delivery, through inter-governmental cooperation and coordination.

The IGAP proposes a four-phase approach to address the above-noted matters of common interest. Phase I of the IGAP is an analysis of assimilative capacity of the Nottawasaga River and Lake Simcoe watersheds by the Lake Simcoe Region (LSRCA) and Nottawasaga Valley (NVCA) Conservation Authorities. Phase II of the IGAP is an Environmental Scan and Phase III (Part 1) an Existing Capacities Assessment which are being undertaken by Dillon Consulting in association with the Ainley Group, Clara Consulting, Bourrie & Associates and EDP Consulting. Phase III (Part 2) – Growth Potential Assessment and Phase IV - Implementation Assessment of the IGAP are scheduled for project initiation in February 2006 by MMAH.

This Infrastructure Assessment Report is one component of the Phase II Environmental Scan (ES) for the IGAP. The purpose of the ES is to:

- Assemble a sound and defensible database on infrastructure and services; and

- Determine existing capacity to accommodate approved development and growth.

The ES includes a review of:

- Approved development and planned land use in settlement areas;

- Existing and planned water and sanitary sewage infrastructure;

- Natural and cultural heritage resources;

- Transportation facilities;

- Public service facilities; and

- Economic indicators.

The results of the ES are documented in three foundation reports: this Infrastructure Assessment Report, a Resources Report (under separate cover) and a Communities Report (under separate cover). The results of the ES will be synthesized with the results of the Assimilative Capacity Study in the SWOT Analysis in Phase III (Part 1) – ECA of the IGAP program. In the SWOT Analysis, key planning principles concerning growth management will be applied. The ECA will provide a defensible base of foundation information for Phases III (Part 2) and IV of the IGAP process.

1.2 Purpose of this Report

The Infrastructure Assessment Report quantifies and analyzes the capacities of the existing municipal infrastructure within the study area and describes any issues related to the water, sanitary sewer, stormwater, and transportation infrastructure.

The Communities Report documents the situation in the municipally serviced (full and water only) settlement areas with regards to existing land use, approved development and planned land use. It also provides an overview of public service facilities and a snapshot of the economic base of the study area.

The Resources Report describes existing resources and associated issues in the study area in regards to natural heritage, agriculture, mineral aggregates and natural hazards.

1.3 Format of the Report

This Infrastructure Assessment Report is divided into ten main sections as shown in the Table of Contents. The Introduction provides the context and purpose of this report in regards to IGAP. Section 2.0 describes the approach to undertaking the assessment of existing infrastructure. Section 3.0 describes the study area. Section 4.0 describes Procedure D-5-1, the method used to analyze the existing capacities. Section 5.0 describes the existing situation regarding wastewater treatment, Section 6.0 documents existing water supply, Section 7.0 documents existing private systems, wastewater and water, Section 8.0 documents stormwater management and Section 9.0 provides a scan of the transportation network in the study area. Finally, Section 10 is a summary of the capacity assessment and an analysis of the capacity gaps in the studied infrastructure.

2.0 ASSESSMENT OF EXISTING INFRASTRUCTURE, APPROACH METHODS

2.1 General

Data on existing infrastructure was obtained from numerous sources as follows:

Wastewater
- Certificates of Approval as issued under Section 53 of the Ontario Water Resources Act
- Annual Reports
- Discussions with operating and engineering staff

Water
- Certificates of Approval as issued under the Safe Drinking Water Act, 2002
- Annual Reports per O. Reg. 170/03
- Permits To Take Water

(The initial Engineer's Reports were not reviewed as it is considered that, since upgrades have been required under O. Reg. 170/03, most of these documents are out of date with respect to actual current site conditions. It should also be noted that Regulation 170/03 is being revised, however, the subsequent revisions should not affect the capacities of any of the existing systems)
- Discussions with operating and engineering staff

Stormwater
- Certificates of Approval as issued under Section 53 of the Ontario Water Resources Act

Initial contact was made during mid June of 2005, with representatives of each Town/Township/City via telephone to introduce Ainley Group's involvement with the Intergovernmental Action Plan (IGAP) Study. Immediately following these introductory telephone calls, e-mails were sent to the various municipal representatives, requesting information.

As information was received it was checked for completeness. Where more information was required, subsequent information requests were made via e-mail and follow-up telephone calls.

With respect to water supply and wastewater treatment infrastructure, each facility was assessed based on the available information. The assessments were completed using methods as described hereinafter. All municipalities were provided with draft copies of applicable sections of this report. In addition, a draft copy of this report was included on Dillon's FTP Website.

The assessment methods were discussed at an IGAP meeting held on September 6, 2005 and following that meeting, the Ainley Group was advised of which method should be used to define the Residual Capacity of each facility for planning assessment. Direction was provided to the Ainley Group at the September 6, 2005 meeting with respect to the assessment of facilities as follows:

- Rated capacities of the various facilities will not allow for future works, regardless of the level of planning, design and construction completed. If it is not built and operational, its potential capacity will not be recognized. However, the Alcona to Bradford water pipeline, to be commissioned March 2006, was recognized and the water supply capacity in Bradford West Gwillimbury was adjusted accordingly.

- Residual wastewater treatment capacity is to be expressed as equivalent units, including domestic, industrial, commercial and institutional flows as well as septage and any other hauled sewage.
- The Assimilative Capacity Assessment Report, completed by others, is to be reviewed as part of the wastewater treatment facility assessments. That Report may affect the determination of Residual Capacity. The Assimilative Capacity issues will be addressed in Part 1 of Phase 3 of the overall IGAP Study.
- Issues with respect to existing effluent quality (Provincial Orders etc.) are to be recognized and identified. These issues may affect the determination of Residual Capacity.
- Residual water supply capacity is to be expressed as equivalent units including domestic, industrial, commercial and institutional demands.

During the fall of 2005, draft versions of applicable sections of the Infrastructure Assessment Report were provided to each of the municipalities for comment. Revisions were made to the Report based on comments received.

2.2 Information Status

A summary of the information gaps is provided below. It is noted that the determination of residual capacities may be impacted as a result of the information gaps.

Township of Adjala Tosorontio:

- Information regarding the ownership of the Everett STP (whether it is owned and operated by a Developer).
- Whether or not there any outstanding Provincial Orders with respect to the water supply facilities that would affect the rated capacities of the facilities.
- Whether there any other factors that should be noted which would affect the rated capacities of the water supply facilities (such as loss of hydraulic capacity in a well).
- Whether there are there any issues that prevent operating staff from meeting conditions of current Water Certificates of Approval.
- Whether there any Class EAs that have been initiated by the Township, with respect to water supply capacity or wastewater treatment.
- Why the Maximum Day Demands are decreasing drastically over the previous three years.
- The 2005 maximum day demand experienced this summer (2005) at each water supply.

Town of Bradford West Gwillimbury

- Certificates of Approval for all Stormwater Management Facilities within the Town

Clearview Township:

- 2002 maximum day water demand for Buckingham Woods
- Certificates of Approval for all Stormwater Management Facilities within the Township, and any documentation identifying the location of the Facilities

Town of Midland:

- 2002 wastewater raw water characteristics
- 2002 wastewater final effluent characteristics

- 2002 and 2003 serviced population for the sewage treatment plant (one figure was provided for serviced population, and it is assumed that this is 2004)
- Certificates of Approval for all Stormwater Management Facilities within the Township, and any documentation identifying the location of the Facilities

Township of Oro-Medonte:

- Whether there are any outstanding Provincial Orders that would affect the rated capacities of the water supply facilities.
- Whether there are there any other factors that should be noted which would affect the rated capacities of the facilities (such as loss of hydraulic capacity in a well)?
- Whether there are there any issues that prevent operating staff from meeting conditions of current Certificates of Approval?
- Whether the Township has initiated any Class EAs with respect to water supply capacity.

Town of Penetanguishene

- How biosolids are disposed of from the sewage treatment plants.
- Whether or not there are any outstanding Provincial Orders (water or wastewater) that would affect the rated capacities of the facilities.
- Whether or not there are there any other factors that should be noted which would affect the rated capacities of the facilities (such as loss of hydraulic capacity in a well).
- Whether or not there are any issues that prevent operating staff from meeting conditions of current Certificates of Approval (water and wastewater).
- Whether or not the wastewater facilities accept and treat septage and if it is metered separately from raw sewage influent. Any available records of septage received for the past 3 years, if applicable.
- Whether or not there are there any Class EAs that have been initiated by the Town, with respect to water supply capacity or wastewater treatment?
- Whether the Town is undertaking a sewage separation program to reduce I&I.
- The 2005 maximum day demand experienced this summer at each water supply.
- Bypass information for the Fox Street Sewage Treatment Plant
- 2002 and 2003 maximum day water demands for Lepage
- Serviced population for Payette water supply system for 2002 and 2003 (one figure was provided for serviced population, and it is assumed that this is 2004)
- Serviced population for Main Street Sewage Treatment Plant for 2002 and 2003 (one figure was provided for serviced population, and it is assumed that this is 2004)
- Serviced population for Fox Street Sewage Treatment Plant for 2002 and 2003 (one figure was provided for serviced population, and it is assumed that this is 2004)
- Certificates of Approval for all Stormwater Management Facilities within the Township, and any documentation identifying the location of the Facilities

Township of Ramara:

- Certificates of Approval for all Stormwater Management Facilities within the Township, and any documentation identifying the location of the Facilities

Township of Springwater:

- 2002 and 2003 serviced populations for the Elmvale Sewage Treatment Plant (one figure was provided for serviced population, and it is assumed that this is 2004)

- 2002 serviced population for Minesing water supply system. Either 2002 and 2003 or 2002 and 2004 for all other water supply systems (have one year data for these systems – either 2003 or 2004)
- Certificates of Approval for all Stormwater Management Facilities within the Township, and any documentation identifying the location of the Facilities

Township of Tay:

- Port McNicoll and Village of Victoria Harbour average daily wastewater flow for 2002
- Port McNicoll wastewater 2002 raw water characteristics
- Port McNicoll wastewater 2002 final effluent characteristics
- Village of Victoria Harbour wastewater 2003 and 2003 raw water characteristics
- Village of Victoria Harbour Wastewater serviced population
- 2002 maximum day water demands for all water supply systems
- Certificates of Approval for all Stormwater Management Facilities within the Township, and any documentation identifying the location of the Facilities

2.3 Wastewater Treatment Assessment, General

There are 24 municipal wastewater treatment facilities in Simcoe County, serving approximately 285,000 persons.

The design of each of the facilities has been approved under the Ontario Water Resources Act and a Certificate of Approval has been issued for each facility. The Certificates of Approval provide detailed information with respect to the design Average Daily Flows (ADF) and the Peak Flows (PF) for all of the facilities. In addition to the design flow ratings, the Certificates also list the effluent parameters (both design objectives and requirements). A summary of this information is provided in Appendix A – Wastewater Treatment Capacity Assessment.

Annual Reports were reviewed to ascertain historical data, including; wastewater flows (ADF and PF), influent (raw sewage) characteristics, effluent characteristics, population serviced, wastewater overflow (spill) events and industrial flows (if applicable). A summary of this information is provided in Appendix A. As a result of a meeting held on September 6, 2005, the rational for assessing the residual capacity of wastewater treatment facilities was determined. The rational was confirmed by the MOE (with qualifications) at a meeting held on December 20, 2005. A copy of the minutes of that meeting is included in Appendix B – December 20, 2005 Minutes for Meeting.

Based on the data obtained, the existing facilities were assessed with respect to residual capacity.

Two methods were used to determine residual wastewater treatment capacity. The methods are defined in MOE Procedure D-5-1 and are described as follows:

Method 1 – Three years of historical information (including serviced population) was used to determine current average day flow/capita (ADF/c) which was used to estimate residual capacity

Method 2 – Residual capacity was determined using MOE Guidelines. The spare hydraulic capacity was converted to residual capacity in units using the MOE Guideline upper limit of 450 L/c/d.

With respect to Appendix A, descriptions of the columns are presented below:

- **Classification** - Wastewater systems are classified as per the Schedule 1: Facility Classification Point System, Ontario Water Resources Act, O.Reg. 129/04.

- **Rated Average Daily Flow** - The Rated ADF is identified from the respective system Certificate of Approval. This value indicates the average flow that the system was designed to handle.

- **Rated Peak Flow** - The Rated PF is written within the Certificates of Approval. It represents the peak flow that the system was designed to handle.

- **Average Daily Flow** - The historical ADFs for each system were averaged over 2 or 3 years (depending on available information) for the years 2002 to 2004, for the purpose of the wastewater assessments.

- **Peak Flow** - The historical PF for each system was determined using the data provided.

- **Population** – The population for the facility represents the number of residents that are connected to the system. In some cases, the number of serviced residential units was multiplied by the persons per unit (ppu) to determine the serviced population.

- **Persons Per Unit (ppu)** – Persons per unit were obtained from the Simcoe County webpage ***Source***: *Hemson Consulting Ltd., May 1997*. These forecasts represent an updated version of those originally presented in the *Growth Outlook for Simcoe County* prepared by Hemson Consulting Ltd. in December 1995. These forecast results take into consideration the preliminary release of population and household figures from 1996 Census. 1991 populations which were previously unavailable due to boundary changes after 1991 have also been incorporated. In some cases, the ppu was provided by the Municipality.

- **Population (Units)** – Serviced residential units.

- **Spare Hydraulic Capacity, Method 1** - The spare hydraulic capacity was determined based on historical data by subtracting the Actual (historical) Average Daily Flow from the Rated Average Daily Flow.

$$SpareHydraulicCapacity = RatedADF - ActualADF$$

- **Residual Capacity, Method 1 (using historical ADF)** – The Residual Capacity for each system was calculated by first determining the ADF per capita. The Actual ADF was divided by the current serviced population to obtain the ADF per capita.

$$ActualADF/Cap = \frac{ActualAverageDailyFlow}{CurrentServicedPopulation}$$

- The Spare Hydraulic Capacity (Method 1) was then divided by the Actual Average Daily Flow per Capita to determine the Residual Capacity of the system.

$$\textit{Residual Capacity (MOE)} = \frac{\textit{Spare Hydraulic Capacity}}{\textit{Actual ADF / Cap}}$$

The historical information was used to determine existing per capita flows. However, for the determination of Residual Capacity under Method # 2, the MOE Guidelines for the Design of Sanitary Sewage Systems were consulted to determine theoretical spare hydraulic capacity. This provides a conservative assessment of the existing spare capacity of the various plants.

- **Residual Capacity, Method 2 (using MOE Guideline)** - The Residual Capacity was calculated using the Ministry of the Environment (MOE) design Guidelines with respect to ADF per capita. The theoretical spare hydraulic capacity was divided by 0.45 m^3/cap/day (the upper limit of Average Daily Flow recommended by the MOE Design Guidelines).

$$\textit{Residual Capacity (MOE)} = \frac{\textit{Spare Hydraulic Capacity}}{0.45m^3 \textit{ / Cap / day}}$$

2.4 Water Supply Assessment, General

There are 89 municipal, residential, water supply systems in Simcoe County, servicing approximately 318,000 persons.

The facilities have been approved under the Safe Drinking Water Act and a Consolidated Certificate of Approval has been issued for each facility. The Certificates of Approval provide detailed information with respect to the rated capacity (Maximum Day Demand or MDD) for each of the facilities. A summary of this information is provided in Appendix C – Water Supply Capacity Assessment. In addition to the Certificates of Approval, the Permits To Take Water were also reviewed. The Permits To Take Water list the permitted water takings that are allowed from the water source while the Certificates of Approval outline the equipped capacity of the water supplies. For example, a groundwater supply may be made up of several wells with a total, permitted maximum water taking of (say) 100 m^3/d. The system may be equipped (pumps etc.) for a total taking of only 85 m^3/d. Both ratings were considered in assessing the various water supply systems. In cases where the rated capacity, as defined by the Certificate of Approval, exceeded the permitted water taking, as defined by the Permit To Take Water, the permitted water taking was used to assess the system. In all other cases, the ratings as identified by the Certificates of Approval were used for assessment purposes.

Annual Reports were reviewed to ascertain historical data, including; Maximum Daily Demand (MDD), raw and treated water quality, population serviced, and industrial water demands (if applicable). A summary of that information is also provided in Appendix A. As a result of a meeting held on September 6, 2005, the rational for assessing the residual capacity of water supply works was determined. The rational was confirmed by the MOE (with Qualification at a meeting

held on December 20, 2005). Minutes of the meeting were prepared and a copy is included in Appendix B. The rational is described as follows:

- If there are 3 or more years of historical data (including serviced population), the calculation of residual capacity can be based on that data.
- If there is less than 3 years of historical data, use 0.45 m^3/capita/day (upper end of MOE Guideline suggested range) with a max day factor as per MOE Guideline.

Therefore, two methods were used to determine residual water supply capacity. The methods are described as follows:

Method 1 – Three years of historical information was used to determine the maximum day demand (MDD) and the serviced population. The highest MDD and serviced population during the three years was used in the assessment of the residual capacity.

Method 2 – Spare capacity was determined using MOE Guidelines. The spare capacity was converted to residual capacity in units using the MOE Guideline upper limit of 450 L/c/d and a max day factor as per MOE Guidelines.

With respect to Appendix C, descriptions of the columns are presented below:

- **Rated Supply Capacity** - The rated supply capacity is identified in the Certificate of Approval for a system. This value is the equipped capacity, in cubic meters per day.

- **Permitted Water Taking Capacity** - The permitted water taking capacity is identified in the Permit To Take Water for a system. The value indicates the maximum amount of water, in cubic meters, that can be taken from a source in a given day.

- **System Classification** - A 'small municipal residential system' is a municipal drinking-water supply system that services a major residential development but serves fewer than 101 private residences. A 'large municipal residential system' is a municipal drinking-water supply system that services a major residential development and serves more than 100 private residences. The definitions which classify a system are taken from the Safe Drinking Water Act, 2002, Ontario Regulation 170/03 Amended to O.Reg. 253/05, Drinking-Water Systems.

- **Historical MDD** - The historical maximum day demands were listed for the three years provided. The highest MDDs over the three years were used in the assessment of the system. However, in some cases, the highest recorded MDDs were not used to assess the system if it occurred in the winter months. The intention was to eliminate data caused by watermain breaks, flushing etc.

- **Serviced Population** - The serviced population for the system represents the number of residents that the water supply system serves. In some cases, the number of serviced residential units was given and it was necessary to multiply that value by the population density (persons per unit). The highest population/persons per unit over the three years of data provided were used for the assessment of the systems.

- **MDD / Cap** – The maximum day demands per capita were calculated by dividing the highest historical MDD by the highest serviced population, over the three years. This value describes the water demand per person.

- **Spare Supply Capacity Method 1** - The spare supply capacity was calculated by subtracting the historical Maximum Day Demand from the Rated Capacity of the system.

$$Spare\ Supply\ Capacity = Rated\ Capacity - Maximum\ Daily\ Demand$$

- **Spare Water Taking Capacity** - This value defines the difference between the Rated Supply Capacity from the Certificate of Approval and the Permitted Water Taking Capacity from the Permit To Take Water. In some cases there is more source water supply capacity than what the system is equipped to treat and pump. This may be important to future growth in that treatment works and pumping capacity can be expanded relatively easily if needed.

- **Residual Capacity, Method 1 (using historical MDD)** - Residual Capacity was calculated by dividing the Spare Supply Capacity by the historical Maximum Day Demand per Capita.

$$Residual\ Capacity = \frac{Spare\ Supply\ Capacity}{MDD\ /\ Cap}$$

The historical information was used to determine existing per capita water demands. However, for the determination of residual capacity under Method # 2, the upper limit of the range, outlined in the MOE Guidelines for the Design of Water Distribution Systems, was used to determine theoretical spare hydraulic capacity. This provides a conservative assessment of the existing spare capacity of the various water supply facilities.

- **Residual Capacity, Method 2 (using MOE Guideline)** - Residual Capacity was calculated by dividing the Spare Supply Capacity (Method 2) by the upper limit of Average Day Demand recommended by the MOE Design Guidelines (0.45 m^3/cap/day) and the Maximum Day Factor (MDF). The MDF was selected from the MOE Design Guidelines using the serviced population of the system.

$$Residual\ Capacity = \frac{Spare\ Supply\ Capacity}{0.45m^3\ /\ cap\ /\ day\ x\ MDF}$$

- **Spare Supply Capacity Method 2** – The spare supply capacity was calculated by subtracting the calculated MDD from the rated capacity. The calculated MDD was derived using MOE Guidelines (0.45 m^3/c/d and the appropriate factor).

- **Persons Per Unit (ppu)** – Persons per unit were obtained from the Simcoe County webpage ***Source***: *Hemson Consulting Ltd., May 1997*. These forecasts represent an updated version of those originally presented in the *Growth Outlook for Simcoe County* prepared by Hemson Consulting Ltd. in December 1995. These forecast results take into consideration the preliminary release of population and household figures from 1996 Census. 1991 populations which were previously unavailable due to boundary changes after 1991 have also been incorporated. In some cases, the ppu was provided by the Municipality.

3.0 STUDY AREA

The Study area is described as the limits of Simcoe County, coupled with the city limits of Barrie and Orillia. The general locations of all water and wastewater systems are shown on the three servicing maps provided in Appendix D – Existing Wastewater Serviced Boundaries, Appendix E – Existing Fully Serviced Boundaries and Appendix F – Existing Water Serviced Boundaries.

The servicing maps outline the existing serviced boundaries (as per the information received from the municipalities, June-December 2005), unless otherwise stated in sections 5 and 6, and the OP Boundaries. The purpose of the existing serviced boundaries is to show the extent of the servicing within the systems. When these boundaries are compared to the OP Boundaries a gap is created illustrating the areas of potential servicing and development. The gaps between the boundaries will be further analyzed in the Existing Capacities Assessment Synthesis Report (SWOT).

4.0 MOE PROCEDURE D-5-1: Calculating And Reporting Uncommitted Reserve Capacity at Sewage and Water Treatment Plants

MOE Procedure D-5-1 (latest revision March 1995) was used as the basis for the calculation of residual hydraulic capacity of the water supply and wastewater treatment facilities. Currently, the MOE refers to Procedure D-5-1 when a municipality proposes to re-rate the plant or where the MOE argues that a facility must be expanded. The MOE has not officially approved residual capacity figures on a facility by facility basis since the mid 1990's. There is concern that the residual capacity figures published in this Report, will lead some municipalities to false expectations with respect to the approval of growth. The MOE has emphasized that there are a number of facility and system operational factors which contribute to system effectiveness and real capacity (as opposed to paper capacity).

In addition, it must be noted that any municipality that owns a facility that has less than 20% reserve hydraulic capacity (historical ADF or MDD is 80% of the rated capacity), should begin to plan for a future expansion (Class EA, final design and construction). The MOE may not recommend development to the planning approval authority beyond the 80% level without a commitment to such planning.

Certain important factors must be taken into account when calculating uncommitted reserve capacity. Procedure D-5-1, requires a municipality to consider the following:

1. *capacity and condition of the infrastructure* The condition of the infrastructure (pipes) is not part of the IGAP assessment since it is considered that pipes can be easily replaced or upsized if need be. However, some consideration must be made to the capacity and the physical condition of both the water distribution and wastewater collection systems when a municipality intends to follow Procedure D-5-1 to determine uncommitted reserve capacity.

2. *types of land use which may create high seasonal fluctuation or diurnal variations, sewage characteristics etc.* It is considered that the historical data will reflect seasonal variations and land use and that these factors should be considered in the future when each municipality undertakes its own assessment. With respect to sewage characteristics and the ability of a wastewater facility to meet effluent criteria, information was provided by the various municipalities. Any restrictions with respect to plant operation are noted in the Report.

3. *condition and performance characteristics of plant* Each municipality was asked to comment on operating conditions with respect to Provincial Orders, ability to meet the conditions of the Certificates of Approval and any other operator concerns. These comments are included as footnotes in this Report. For the future determination of uncommitted reserve capacities, municipalities may have to expand on these issues.

The IGAP range of residual capacities is presented in this Report for preliminary planning purposes. Each municipality will be required to do its own due diligence with respect to determining uncommitted reserve capacity. The historical data was used as one end of the range, based on the understanding that the flow meter records that were provided for both water demand and wastewater flow are accurate. However, for future determination of uncommitted reserve capacity, confirmation of flow meter calibration is recommended. The other end of the range is based on the use of MOE Guideline design information.

It is not crucial that the residual capacities be exact for IGAP purposes. IGAP is simply trying to establish the most favorable areas for growth to occur, based on a number of factors. Residual capacity is only one of those factors.

Given the high level of the review within this study we have applied a 10% buffer to all residual capacity calculations and the subsequent Gap analysis that are based on historical flows. In particular, prior to the calculating the spare capacity within an existing Water or Wastewater Treatment system we increased the recorded Maximum Day Demand (MDD) or Average Daily Flow (ADF) during the previous three years by 10%. In addition we also increased the MDD or ADF per capita flow allowance by 10% prior calculating the equivalent population that could be serviced.

It is also noted that although the historical assessment may indicate that there is ample residual capacity for growth, if the Official Plan has not been updated, then the residual capacity will be restricted to the current OP figures. Therefore, municipalities may be required to update Official Plans as part of the process of determining uncommitted reserve capacity.

In summary, the IGAP assessment of reserve capacity (defined as Cr in Procedure D-5-1) for the municipally owned facilities in Simcoe County, Barrie and Orillia, is not to be considered as approved by the MOE. Many other factors need to be considered before the MOE will accept uncommitted reserve capacity calculations for actual development purposes.

5.0 WASTEWATER TREATMENT

5.1 General

There are 24 municipally owned wastewater treatment facilities across the Study Area. Each of these systems has been assessed with respect to capacity. Specific information with respect to each of the facilities has been provided in Appendix A. The following sections provide brief summaries of the assessments along with comments on the potential for expansion for each of the facilities.

The location and extent of the municipal wastewater infrastructure of each system within Simcoe County, Barrie and Orillia, is shown in Appendix D- Existing Wastewater Serviced Areas. The systems that are serviced by both municipal water and wastewater are represented in Appendix E- Existing Fully Serviced Areas.

The residual capacity ranges have been approximated to the nearest fifty. The values within the tables have been rounded to the nearest one. As noted with Section 4, we applied a 10% buffer to all residual capacity calculations and the subsequent Gap analysis that are based on historical flows. In particular, prior to the calculating the spare capacity within an existing Wastewater Treatment Facility we increased the recorded Average Daily Flow (ADF) during the previous three years by 10%. In addition we also increased the ADF per capita flow allowance by 10% prior calculating the equivalent population that could be serviced.

It should be noted that hauled sewage is not included in any part of the historical flow records. Bill 81 (the Nutrient Management Act) received Royal Assent on June 27, 2002. This will ultimately cause an increase in hauled sewage and will affect the Residual Capacities of many of the WWTP's. This is not applicable for the Township of Tay as their hauled sewage is metered with raw sewage.

5.2 City of Barrie

The City of Barrie wastewater treatment plant (WWTP) is a Class 4 facility owned and operated by the City of Barrie. The facility is located at 249 Bradford Street and the effluent is discharged to Kempenfelt Bay. The plant provides treatment, which includes grit removal, conventional activated sludge process, tertiary nitrification, alum addition and filtration for phosphorus removal with UV disinfection of the effluent. The facility has sodium hypochlorite disinfection for the chlorination of the tertiary filters, and emergency chlorination of secondary plant effluent and raw sewage bypass. Biosolids are aerobically and anaerobically digested and disposed of by land application. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the City advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. However, in 2005 there were problems meeting the ammonia limit due to the disposal of supernatant from Biosolids Storage and there were also some process aberrations. The City advises that these issues are being addressed through short- term (changes to standard operating procedures), medium-term (on-line analysis) and long-term (future expansion) strategies.

The facility does accept hauled sewage, which is not included in the metered inflow. The records provided for "Hauled Sewage are; 13,425.5m^3 in 2003, 13,622.2m^3 in 2004 and 12,831.75m^3 in 2005. Assuming that this hauled sewage is discharged to the plant on a regular basis over the entire year, the historical average daily rate is 37m^3/day (37m^3/day x 365 days = 13,500m^3). Using

the historical per capita flow of 0.405m^3/cap/day this 37m^3/day would equate to approximately 33 units or 90 persons. This is not a major factor at the moment with respect to hydraulic capacity.

The City advised that an emergency overflow (by-pass of tertiary treatment) occurred on June 9, 2005 due to an exceptionally heavy rainfall. This event has not been considered with respect to historical wastewater flows and therefore, does not affect the spare capacity calculation.

A summary of the plant information is presented in Table 1.

TABLE 1 – SUMMARY OF WASTEWATER TREATMENT FACILITY

CITY OF BARRIE

System Name	Rated Capacity m³/d	Historical Average ADF m³/d	Serviced Population (Persons)	Historical ADF/cap m³/c/d	Spare Capacity m³/d Historical	Residual Capacity based on historical flow (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on MOE Guidelines (Persons)
Barrie	57,100	47,036*	116,300**	0.404	5,361	12,050	4,765	10,589

Footnotes:
- *The Class EA for the sewage treatment plant expansion is complete and the recommended expansion is 76,100 m^3/day . The City of Barrie is proceeding with pre-design and detailed design.*
- *The City advised that the Class EA for the plant expansion includes the expansion of the City of Barrie offsite biosolids storage facility in Oro-Medonte.*
- *The City advised that there are no other Class EAs that have been initiated with respect to Wastewater.*
- *With respect to I&I, the City advises that they have a separated sanitary and storm system*

** Based on three years of historical data (2002-2004).*
*** Based on three years of population data (2002-2004).*

For planning purposes, the Residual Capacity of the Barrie wastewater treatment facility could be considered as a range of 10,600 to 12,050 persons. However, there is sufficient historical data and therefore, that data can be used in Procedure D-5-1. The Residual Capacity based on that method of assessment is 12,050 persons.

The service area, as defined in the Official Plan, is the current city limits.

5.3 Town of Bradford West Gwillimbury

The Town of Bradford West Gwillimbury wastewater treatment plant is a Class 3 facility, owned and operated by the Town. The facility is located at 225 Dissette Street and the effluent is discharged to the Holland River. The plant provides treatment, which includes grit removal, screening, conventional activated sludge process, sequencing batch reactor for phosphorus removal and tertiary treatment with filtration and UV disinfection of the effluent. Biosolids are aerobically digested and disposed of by land application. At the present time, there are no outstanding

Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the Town advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does accept septage, which is received at the wastewater treatment plant in a separate receiving area. The volumes received at the location are metered through SCADA. The hauled sewage flows were; 2523.4m^3 in 2004, 2133.2m^3 in 2003 and 2740m^3 in 2002. All of these values were reported in the annual operating report submitted to the Ministry of the Environment as per the conditions contained in the Certificate of Approval. Assuming that this hauled sewage is discharged to the plant on a regular basis over the entire year, the historical average daily rate is 7.5m^3/day (7.5m^3/day x 365 days = 2,700m^3). Using the historical per capita flow of 0.321m^3/cap/day this 7.5m^3/day would equate to approximately 7 units or 23 persons. This is not a major factor at the moment with respect to hydraulic capacity.

A summary of the plant information is presented in Table 2.

TABLE 2 – SUMMARY OF WASTEWATER TREATMENT FACILITY

TOWN OF BRADFORD WEST GWILLIMBURY

System Name	Rated Capacity m³/d	Historical ADF m³/d	Serviced Population (Persons)	Historical ADF/cap m³/c/d	Spare Capacity m³/d Historical	Residual Capacity based on historical flow (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on MOE Guidelines (Persons)
Bradford	8,870	5,584*	17,400**	0.321	2,727	7,725	1,040	2,311

Footnotes:
- *No raw sewage or effluent bypass events took place at the plant.*
- *The Town is in the early design stage of a major expansion to the wastewater treatment facility which includes the addition of an extended aeration process.*
- *Town has pre-sold 1240 residential units of capacity to a developer*
- *Town has set aside 770 equivalent residential units of capacity for future industry and 179 environmental and other units*
- *Town advises that according to its calculations, there are currently 931 spare units of unallocated capacity*
- *The Town does not have combined sewers. In an on-going effort to reduce inflow/infiltration, in 2004, twelve manholes were repaired to decrease inflow/infiltration and thirty manhole covers were equipped with carriage bolts on air vents as their location in the road profile allowed excessive inflow/infiltration. In 2005, additional manholes are being addressed*

** Based on three years of historical data (2002-2004).*
*** Based on three years of population data (2002-2004).*

For planning purposes, the Residual Capacity of the Bradford West Gwillimbury wastewater treatment facility could be considered as a range of between 2,300 to 7,750 persons. However, the influent flow meter at the STP was not working properly up to and including 2002 and therefore, according to Procedure D-5-1, historical data cannot be used. The Residual Capacity is, therefore,

2,300 persons. It must be noted that the Residual Capacities are expressed as equivalent population.

The Town is currently in the final design stages for an expansion to the WWTP and an application for a revised Certificate of Approval has been submitted to the MOE. Additional wastewater pumping stations will need to be constructed in the future to service the lands within the current Official Plan area, (two additional new pumping stations and one pumping station replacement). A replacement wastewater pumping station is currently under construction and is scheduled for completion in the summer of 2006. The Town's Master Servicing Report, which was completed in 2003, addressed Schedule A and B type projects.

5.4 Township of Clearview

There are two wastewater treatment plants located in the Township of Clearview; namely Stayner and Creemore. The Stayner wastewater treatment plant is a Class 2 facility owned by the Town and operated by COLLUS (Collingwood Utility Services). The facility is located on lot 26 of the Second Concession and the effluent is discharged to Lamont Creek. The plant provides secondary treatment using an extended aeration process with phosphorus removal. Effluent is discharged in proportion to the flow in the receiving creek, following storage in polishing ponds. Sludge is wasted to one of the ponds and is treated using the Sutton concept. The sludge pond was emptied in 1999. Biosolids are disposed of on land following a drying process. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, COLLUS advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does not accept septage.

The Creemore WWTP is a Class 2 facility owned by the Town and operated by COLLUS. The facility is located on lot 8 of the Fourth Concession and the effluent is discharged to the Mad River. The plant provides treatment, which includes screening, aeration, phosphorus removal with membrane filtration and UV disinfection of the effluent. Biosolids are aerobically digested and disposed of by land application. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, COLLUS advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does not accept septage.

A summary of the plant information is presented in Table 3.

TABLE 3 – SUMMARY OF WASTEWATER TREATMENT FACILITIES

CLEARVIEW TOWNSHIP

System Name	Rated Capacity m³/d	Historical ADF m³/d	Serviced Population (Persons)	Historical ADF/cap m³/c/d	Spare Capacity m³/d Historical	Residual Capacity based on historical flow (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on MOE Guidelines (Persons)
Stayner	2,500	1,500*	3,400**	0.441	850	1,751	970	2,156
Creemore	1,400	375*	1,329**	0.282	988	3,187	802	1,782
Total Municipal Residual Capacity						4,938		3,938

Footnotes:
- *No raw sewage or effluent bypass events took place from either plant*
- *The Municipality does not have any combination sewers; however the Township is undertaking a 3 year program to identify and address I&I.*

** Based on three years of historical data (2002-2004).*
*** Based on one year of population data (2004).*

For planning purposes, the Residual Capacity of the Stayner wastewater treatment facility could be considered as a range between 1,750 to 2,150 persons. There is sufficient historical data and therefore, that data can be used in Procedure D-5-1. With respect to the population data, there has not been any significant growth over the past 3 years and therefore no change in population. The Residual Capacity based on that method of assessment is 1,750 persons.

The range for the Creemore facility is considered to be 1,800 to 3,200 persons. With respect to the population data, there has not been any significant growth over the past 3 years and therefore no change in population. There is sufficient historical data and therefore, that data can be used in Procedure D-5-1. The Residual Capacity based on that method of assessment is 3,200 persons.

It must be noted that the Residual Capacities are expressed as equivalent population.

With respect to Class EA's, the Township is conducting an Overall Clearview Sewer EA (for Nottawa/Batteaux, Osler, Airport lands, Stayner, New Lowell, Brentwood) and is currently finalizing alternative options.

The Creemore currently serviced area is defined as per the Official Plan Boundary of the former Village of Creemore, April 1997.

5.5 Town of Collingwood

The Collingwood wastewater treatment plant (WWTP) is a Class 3 facility owned and operated by the Town of Collingwood. The facility is located on Birch Street and the effluent is discharged to Collingwood Harbour. The plant provides treatment, which includes grit removal, screening, a

conventional activated sludge process, dual point alum addition for phosphorus removal and UV disinfection of the effluent. Biosolids are anaerobically digested and disposed of by land application. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, COLLUS (Collingwood Utilities Service) advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does accept hauled sewage, which is included in the metered inflow. The hauled sewage inflows were; 13,950 m³ in 2003 and 16,030 m³ in 2004. Assuming that this hauled sewage is discharged to the plant on a regular basis over the entire year, the historical average daily rate is 44m^3/day (44m^3/day x 365 days = 16,000m^3). Using the historical per capita flow of 1.078m^3/cap/day this 44m^3/day would equate to approximately 14 units or 43 persons. This is not a major factor at the moment with respect to hydraulic capacity.

A summary of the plant information is presented in Table 4.

TABLE 4 – SUMMARY OF WASTEWATER TREATMENT FACILITY

TOWN OF COLLINGWOOD

System Name	Rated Capacity m³/d	Historical ADF m³/d	Serviced Population (Persons)	Historical ADF/cap m³/c/d	Spare Capacity m³/d Historical	Residual Capacity based on historical flow (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on MOE Guidelines (Persons)
Collingwood	24,545	16,151*	14,979**	1.078	6,779	5,715	17,804	39,565

Footnotes:
- *No untreated or partly treated sewage bypass events took place from the Collingwood Sewage Treatment Plant in 2004. No further sewage bypass information is available at this time.*
- *The Town recognizes the fact that the historical ADF of 1,078 m³/c/d is extremely high. The Town is planning a major infrastructure repair project, which will address this concern.*

** Based on three years of historical data (2002-2004).*
*** Based on three years of population data (2002-2004).*

For planning purposes, the Residual Capacity of the Collingwood wastewater treatment facility should be considered as the lower end of the range suggested in Table 4, that being 5,700 persons. The Residual Capacity should be reassessed in the future, after the Town has repaired its wastewater collection system. Based on the MOE Guideline figures, the Residual Capacity could be increased to as much as 39,550 persons depending on the level of repairs to the collection system. It must be noted that the Residual Capacities are expressed as equivalent population.

The Town has an uncommitted industrial wastewater allocation of 3,500 m^3/day which must be deducted from the calculated spare capacity.

The Town has not currently initiated any Class EAs with respect to wastewater treatment however, they are budgeting to expand the plant in 2006.

5.6 Township of Essa

The Angus wastewater treatment plant is a Class 2 facility owned by the Township and operated by OCWA (Ontario Clean Water Agency). The facility is located at 143 Centre Street and the effluent is discharged to the Nottawasaga River. The plant provides treatment, which includes grit removal, screening, extended aeration secondary treatment with phosphorus removal and tertiary filtration with UV disinfection of the effluent. Biosolids are aerobically digested and disposed of by land application. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, OCWA advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The Angus STP does not accept septage but the plant is currently being expanded and the expansion will allow septage to be accepted. The expansion should be completed in 2006. The plant expansion has been designed to accept 11 m^3/d of septage but it will not be metered.

A summary of the plant information is presented in Table 5.

TABLE 5 – SUMMARY OF WASTEWATER TREATMENT FACILITY

TOWNSHIP OF ESSA

System Name	Rated Capacity m³/d	Historical ADF m³/d	Serviced Population (Persons)	Historical ADF/cap m³/c/d	Spare Capacity m³/d Historical	Residual Capacity based on historical flow (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on MOE Guidelines (Persons)
Angus	5,511	2,233*	6,200**	0.360	3,055	7,711	2,721	6,047

Footnotes:
- *The Township is not undertaking a sewage separation program to reduce I&I.*
- *Information regarding raw sewage or effluent bypass events is not available at this time.*

** Based on three years of historic data (2002-2004).*
***Based on three years of population data (2002-2004).*

For planning purposes, the Residual Capacity of the Angus wastewater treatment facility could be considered as a range between 6,050 to 7,700 persons. However, based on historical information and Procedure D-5-1, the residual capacity is 7,700 persons. It must be noted that the Residual Capacities are expressed as equivalent population.

5.7 Town of Innisfil

There are two wastewater treatment plants located in the Town of Innisfil, Alcona Lakeshore and Cookstown. Both facilities are owned and operated by the Town of Innisfil.

The Alcona Lakeshore wastewater treatment plant is a Class 2 facility located at 1578 St. John's Road and the effluent is discharged to the top end of Cook's Bay in Lake Simcoe. The plant provides treatment, which includes grit removal, screening, extended aeration process with tertiary alum addition and filtration for phosphorus removal and UV disinfection of effluent. Biosolids are aerobically digested and disposed of by land application. At the present time, there are no

outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the Town advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does accept hauled sewage, and volumes are determined using hauler's receipts. The recorded volumes are; 2,430 m³ in 2004, 2,520 m³ in 2003 and 1,430 m³ in 2002. Assuming that this hauled sewage is discharged to the plant on a regular basis over the entire year, the historical average daily rate is $7m^3$/day ($7m^3$/day x 365 days = $2,500m^3$). Using the historical per capita flow of $0.374m^3$/cap/day this $7m^3$/day would equate to approximately 6 units or 19 persons. This is not a major factor at the moment with respect to hydraulic capacity.

The Cookstown WWTP is a Class 1 WWT facility located on lot 23 of the Fourteenth Concession and the effluent is discharged to Cookstown Creek. The plant provides treatment, which includes grit removal and extended aeration mechanical treatment. Effluent is discharged seasonally into the receiving creek, following storage in lagoons. Sludge is wasted to the lagoons and is treated using the Sutton concept. Biosolids are disposed of on land following a drying process. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the Town advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does not accept septage.

A summary of the plant information is presented in Table 6.

TABLE 6 – SUMMARY OF WASTEWATER TREATMENT FACILITY

TOWN OF INNISFIL

System Name	Rated Capacity m³/d	Historical ADF m³/d	Serviced Population (Persons)	Historical ADF/cap m³/c/d	Spare Capacity m³/d Historical	Residual Capacity based on historical flow (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on MOE Guidelines (Persons)
Alcona	14,370	7,162*	19,170**	0.374	6,492	15,796	5,744	12,763
Cookstown	825	567*	1,524**	0.372	202	493	139	309
Total Municipal Residual Capacity						16,289		13,072

Footnotes:

- *The Town advised that they are not undertaking a sewage separation program at this time to reduce I&I. The system is relatively new, and I&I is not perceived to be an urgent problem, although there are future plans to measure this.*
- *No untreated or partly treated sewage bypass events took place from the Alcona Lakeshore waste water treatment plant in 2002, 2003 and 2004.*
- *No untreated or partly treated sewage bypass events took place from the Cookstown waste water treatment plant in 2002, 2003 and 2004.*
- *Flows to the Alcona WWTP include backwash waste from the water filtration plant. The future backwash waste will likely increase in proportion to the future WFP expansions.*

** Based on three years of historical data (2002-2004).*

*** Based on three years of population data (2002-2004).*

For planning purposes, it is recommended that the Residual Capacity of the Alcona wastewater treatment facility be considered as a range of 12,750 to 15,800 persons. However, based on historical data and Procedure D-5-1, the Residual Capacity is 15,800 persons. With respect to Cookstown, the range is between 300 to 500 persons. According to Procedure D-5-1, the Residual Capacity is 500 persons. It must be noted that the Residual Capacities are expressed as equivalent population.

The Town is planning to initiate a Class EA with respect to wastewater sometime in the next five years.

5.8 Town of Midland

The Town of Midland wastewater treatment plant (WWTP) is a Class 4 wastewater treatment (WWT) facility owned and operated by the Town. The facility is located at the east corner of William Street and Bay Street and the effluent is discharged to the Midland Bay. The plant provides treatment, which includes a conventional activated sludge process with dual point alum addition for phosphorus removal. Biosolids are anaerobically digested and disposed of by land application. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the Town advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does accept hauled sewage, which is received and metered at an in-plant, dedicated, receiving tank and fed into the treatment process. The price rate for hauled sewage increased in 2005 by 720% to $45/cubic meter, which has the net effect of deterring disposal as long as the MOE permits land application. The recorded septage volume in 2004 was 362 m^3. Assuming that this hauled sewage is discharged to the plant on a regular basis over the entire year, the historical average daily rate is 1m^3/day (1m^3/day x 365 days = 362m^3). Using the historical per capita flow of 0.634m^3/cap/day this 1m^3/day would equate to approximately 1 unit or 2 persons. This is not a major factor at the moment with respect to hydraulic capacity.

A summary of the plant information, based on three years of historical data, is presented in Table 7.

TABLE 7 – SUMMARY OF WASTEWATER TREATMENT FACILITY

TOWN OF MIDLAND

System Name	Rated Capacity m^3/d	Historical ADF m^3/d	Serviced Population (Persons)	Historical ADF/cap $m^3/c/d$	Spare Capacity m^3/d Historical	Residual Capacity based on historical flow (Persons)	Spare Capacity m^3/d MOE	Residual Capacity based on MOE Guidelines (Persons)
Midland	15,665	8,870*	14,000**	0.634	5,908	8,477	9,365	20,811

Footnotes:
- *No bypass information is available for the Midland waste water treatment plant at this time*

- *The Town advised that in the future it anticipates that leachate and septage will need to be discharged into the plant, which will reduce the Residual Capacity for domestic and industrial/commercial/institutional uses.*

** Based on three years of historical data (2002-2004).*
*** Based on one year of population data (2004).*

For planning purposes, the Residual Capacity of the Midland Wastewater Treatment Facility could be considered as a range from 8,500 to 20,800 persons, however, due to a lack of population data the lower end must be considered. Therefore, the Residual Capacity is 8,500 persons. It must be noted that the Residual Capacities are expressed as equivalent population.

There are no current EA's with respect to expansion of the sewage treatment plant capacity. A Class EA filed in 1994 for the sewage treatment plant addressed the immediate expansion as carried out in 1995, and the "Ultimate Site Expansion Capacity".

There is a continuing program for separation and I&I reduction as originally set out in a 1994 Sewer Needs Study. The Town has no combination sewers per se, but there are isolated CB's that may be connected to the sanitary sewer. There are split manholes that may result in overflow to the sanitary system in extreme rainfall events. The Town has greatly reduced its inflow component (by about 30%). However, the issue of future increases in septage and leachate flows will reduce the spare wastewater capacity.

Regarding by-pass events, the Corporation of the Town of Midland Wastewater Operations 2003 Annual Operations Report indicates that there was nothing to report for 2003.

5.9 Town of New Tecumseth

There are three municipal wastewater treatment plants located in the Town of New Tecumseth and they are all owned and operated by the municipality.

The Tottenham Wastewater Treatment Plant (WWTP) is a Class 2 wastewater treatment (WWT) facility located at 100 Mill Street West and the effluent is discharged into Beeton Creek. The plant provides treatment which includes screening, extended aeration process, alum addition for phosphorus removal and tertiary treatment including, mechanical mixers, continuous contact filtration units and UV disinfection. Sludge is wasted to a lagoon and is treated using the Sutton concept. Biosolids are disposed of on land following a drying process. At the present time, there is an unresolved Provincial Order that restricts the Residual Capacity of the Plant. The facility does not accept septage.

The Sir Frederic Banting WWTP is a Class 2 (WWT) facility located on lot 1 at the Second Concession and services part of Alliston. The effluent is discharged into the Boyne River. The plant provides treatment, which includes grit removal, screening, extended aeration process and tertiary filtration with chlorine disinfection of the effluent. Biosolids are aerobically digested and disposed of by land application. The Town does not have sufficient biosolids storage capacity during the period when land application is not permitted. Excess sludge is pumped via a forcemain to the Regional Wastewater Plant for storage. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the Town advises that there are no issues that prevent operating staff from meeting the conditions of the

current Certificate of Approval. This facility does not normally accept septage, however since the commencement of maintenance work at the Regional WPCP in April 2005 septage has been received at this facility. From April 2005 until September 2005 this facility has received 1,356 m^3 of septage. It is not metered. The amount received is recorded by the hauler.

The New Tecumseth Regional WWTP is a Class 2 (WWT) facility located on lot 8 at the Thirteenth Concession and services Beeton and part of Alliston. The effluent is discharged into the Nottawasaga River. The facility provides treatment, which includes grit removal, continuous feed sequencing batch reactors with phosphorus removal and tertiary filtration with UV disinfection on the effluent. Biosolids are combined with the biosolids from the Regional plant at the Regional plant. The Town does not have sufficient biosolids storage capacity during the period when land application is not permitted. The facility does accept septage. The amount received is recorded by the hauler. It is not metered. As a result of commencement of maintenance work at the Regional WPCP in April 2005, septage is currently being accepted at the Alliston WPCP. In 2003 this facility received 1,051m^3 of septage, in 2004 this facility accepted 2,869 m^3 of septage and from January through March of 2005 this facility accepted 696 m^3 of septage. Assuming that this hauled sewage is discharged to the plant on a regular basis over the entire year, the historical average daily rate is 8m^3/day (8m^3/day x 365 days = 3,000m^3). Using the historical per capita flow of 0.505m^3/cap/day this 8m^3/day would equate to approximately 5 units or 16 persons. This is not a major factor at the moment with respect to hydraulic capacity.

The 2004 total sewage and water flows for Honda in Alliston were reviewed along with the details on the size of the property. The following presents the results of the analysis:

Total Yearly Sewage Usage (2004)	550,000	m^3/year
Total Area (ha)	133	ha
Average Sewage Usage per day (2004)	1,506.85	m^3/day
Average Sewage Usage per hectare per day (2004)	11.33	m^3/ha/day

Total Yearly Water Usage (2004)	790,000	m^3/year
Total Area (ha)	133	ha
Average Water Usage per day (2004)	2,164.38	m^3/day
Average Water Usage per hectare per day (2004)	16.27	m^3/ha/day

The flow per hectare per day for both water and sewage is comparable to many other industrial/commercial areas throughout the study area. In addition the values are relatively low when compared to the values within the MOE Design Guidelines of 35 m^3/ha/day for light industry up to 55 m^3/ha/day for heavy industry (Section 2.1.1.3 of the MOE Guidelines for the Design of Water Distribution Systems). Therefore, it was agreed that the decision to express residual capacity as equivalent population (including ICI) is acceptable.

A summary of the plant information is presented in Table 8.

TABLE 8 – SUMMARY OF WASTEWATER TREATMENT FACILITIES

TOWN OF NEW TECUMSETH

System Name	Rated Capacity m³/d	Historical ADF m³/d	Serviced Population (Persons)	Historical ADF/cap m³/c/d	Spare Capacity m³/d Historical	Residual Capacity based on historical flow (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on MOE Guidelines (Persons)
Tottenham	4,082	2,281*	4,997**	0.456	1,573	0	1,833	4,074
Sir Frederic Banting	5,681	3,360*	3,534**	0.951	1,985	1,897	4,091	9,090
Regional	5,063	3,499*	10,885**	0.321	1,214	0	165	366
Total Municipal Residual Capacity						1,897		13,530

Footnotes:
- *The Town is not undertaking a sewage separation program to reduce I&I*
- *There have been no bypass events at the Tottenham, Sir Frederic Banting and the New Tecumseth Regional plant at this time.*
- *The serviced population for the WWTPs is an estimate as of January 2005.*
- *There are outstanding Provincial Orders at both the Regional WPCP and the Tottenham WPCP. The Town has indicated that there are no other factors that they are aware of that would affect the rated capacities of the facilities. The Town has advised that the design of the Regional WPCP makes it difficult to meet the C of A requirements.*
- *A Town-Wide Class Environmental Assessment for Wastewater Treatment has been completed and approved.*
- *There has been little growth in New Tecumseth throughout 2002, 2003 and 2004 therefore, the serviced populations represent the average over the three years.*

** Based on three years of historical data (2002-2004).*
*** Based on one year of population data (2004).*

For planning purposes, the Residual Capacity of the Tottenham facility should be considered as 0 persons. This is due to the current Provincial Order and the fact that the Beeton Creek is considered to be extremely sensitive. However, if the issues associated with the Provincial Order can be addressed to the satisfaction of the Ministry of the Environment, the Residual Capacity could be as high as 3,150 persons. With respect to the Regional Plant, the Residual Capacity is also 0 due to the current work that is being done to address the Provincial Order. If the Plant can be returned to its design capacity, the Residual Capacity would be in the order of 3,450 persons. The Residual Capacity of the Sir Frederic Banting WWTP ranges between 1,900 and 9,100 persons. Based on historical data and Procedure D-5-1, the Residual Capacity is actually 1,900 persons.

It must be noted that the Residual Capacities are expressed as equivalent population.

The Regional Plant services a specific area within Alliston as well as all of Beeton. The Sir Frederic Banting Plant services the north half of Alliston.

5.10 City of Orillia

The City of Orillia wastewater treatment plant is a Class 3 facility owned and operated by the City. The facility is located at 40 Kitchener Street and the effluent is discharged to Lake Simcoe. The plant provides treatment, which includes grit removal, screening and a conventional activated sludge process with dual point alum addition for phosphorus removal and chlorine disinfection of the effluent. Biosolids are anearobically digested and disposed of by land application. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the City advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does accept septage, which is estimated from truck volumes. The 2004 flow was 14,357 m^3, the 2003 flow was 11,069 m^3 and the 2002 flow was 11,969 m^3. Assuming that this hauled sewage is discharged to the plant on a regular basis over the entire year, the historical average daily rate is 39m^3/day (39m^3/day x 365 days = 14,500m^3). Using the historical per capita flow of 0.590m^3/cap/day this 39 m^3/day would equate to approximately 21 units or 67 persons. This is not a major factor at the moment with respect to hydraulic capacity.

A summary of the plant information is presented in Table 9.

TABLE 9 – SUMMARY OF WASTEWATER TREATMENT FACILITY

CITY OF ORILLIA

System Name	Rated Capacity m³/d	Historical ADF m³/d	Serviced Population (Persons)	Historical ADF/cap m³/c/d	Spare Capacity m³/d Historical	Residual Capacity based on historical flow (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on MOE Guidelines (Persons)
Orillia	27,300	16,768*	28,414**	0.590	8,855	13,641	14,514	32,253

Footnotes:
- *No raw sewage or effluent bypass events took place in 2002, 2003 or 2004*

**Based on three years of historical data (2002-2004).*
*** Based on three years of population data (2002-2004).*

For planning purposes, the Residual Capacity of the Orillia facility could be considered as a range of 13,650 to 32,250 persons. However, the historical data indicates a higher than normal per capita flow and therefore, according to Procedure D-5-1, the Residual Capacity is 13,650 persons. It must be noted that the Residual Capacities are expressed as equivalent population.

The City advises that there have been no Class EA's initiated to expand the capacity of the WWTP.

The current serviced area is defined as per the City of Orillia Wastewater System Master Plan, November 2004.

5.11 Town of Penetanguishene

There are two wastewater treatment plants located in the Town of Penetanguishene, Fox Street and Main Street. Both plants are Class 4 wastewater treatment facilities owned and operated by the Town. The Fox Street wastewater treatment plant (WWTP) is located on Fox Street and the effluent is discharged to Penetanguishene Bay. The plant provides treatment, which includes an extended aeration process, effluent filtration and chlorine disinfection of the effluent. Biosolids are aerobically digested. Biosolids are disposed of by land application on agricultural fields in north Simcoe County. The Town does not have sufficient biosolids storage capacity (six months) during the period when land application is not permitted. The Town currently enters into agreements with land owners to store and dispose/utilize biosolids. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the Town advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does not accept septage.

The Main Street WWTP is located on Main Street and the effluent is discharged to Penetanguishene Bay. The plant provides treatment, which includes grit removal, an extended aeration process, tertiary filtration for phosphorus removal and chlorine disinfection of the effluent. Biosolids are aerobically digested and are disposed of as noted previously. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the Town advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does not accept septage.

A summary of the plant information is presented in Table 10.

TABLE 10 – SUMMARY OF WASTEWATER TREATMENT FACILITY

TOWN OF PENETANGUISHENE

System Name	Rated Capacity m³/d	Historical ADF m³/d	Serviced Population (Persons)	Historical ADF/cap m³/c/d	Spare Capacity m³/d Historical	Residual Capacity based on historical flow (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on MOE Guidelines (Persons)
Fox St.	1,500	1,024*	1,169**	0.876	373	387	974	2,164
Main St.	4,545	3,851*	4,831**	0.797	309	352	2,371	5,269
Total Municipal Residual Capacity						739		7,433

Footnotes:
- *Two untreated or partly treated sewage bypass events took place from the Main Street Sewage Treatment Plant in March and May of 2004. The total volume of the bypass was 16, 000 m^3.*
- *Two untreated or partly treated sewage bypass events took place from the Main Street Sewage Treatment Plant in May of 2003 releasing 141 m3 and in August of 2003 releasing 219 m^3 of raw sewage. No information for 2002 is available at this time.*
- *No bypass information is available for the Fox Street Sewage Treatment Plant at this time.*

** Based on three years of historical data (2002-2004).*

*** Based on 1 year of population data (2004).*

There has been little growth in Penetanguishene therefore the serviced population can be considered the average over three years.

For planning purposes, the Residual Capacity of the Fox Street facility could be considered as a range of 400 to 2,150 persons. However, the historical data indicates a higher than normal per capita flow and therefore, according to Procedure D-5-1, the Residual Capacity is 400 persons. Similarly, the Residual Capacity of the Main St. plant is 350 persons based on historical data and MOE Procedure D-5-1. It must be noted that the Residual Capacities are expressed as equivalent population.

The Health Centre is not connected to the Sewage Treatment Plant.

The wastewater treatment plants each service a specific area of Town at the noted rated capacities. The operator advised that flow can be diverted to either plant by simply removing sand bags in one particular manhole. This fact does not affect the Residual Capacities.

5.12 Township of Ramara

There are two wastewater treatment plants located in the Township of Ramara, Lagoon City and Bayshore Village. Both facilities are owned and operated by the Township.

The Lagoon City plant is a *Class 2* facility located on lot 14 at the Fifth Concession and the effluent is discharged to a wetland area which connects to Lake Simcoe. The plant provides treatment, which includes grit removal, screening and extended aeration process. The effluent is discharged to a wetland area that is not part of the treatment process and it is not required to achieve effluent quality criteria. Biosolids are stored for the time being and there is no aerobic treatment. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the Township advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does accept septage, but it is not included in the metered flow. At this time there are no records available as receipt of septage commenced in fall 2005.

The Bayshore Village plant is a Class 2 facility located on lot 21 at the Seventh Concession and the effluent is discharged to a seasonally operated spray irrigation system, on two fields which are adjacent to the facility. Treatment is effected through two facultative waste stabilization ponds. Sludge is collected in the ponds and Biosolids are disposed of by land application. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the Township advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does not accept septage. The Township advised that the issue of spray irrigation capacity at Bayshore Village is currently being studied.

A summary of the plant information is presented in Table 11.

TABLE 11 – SUMMARY OF WASTEWATER TREATMENT FACILITIES

TOWNSHIP OF RAMARA

System Name	Rated Capacity m³/d	Historical ADF m³/d	Serviced Population (Persons)	Historical ADF/cap m³/c/d	Spare Capacity m³/d Historical	Residual Capacity based on historical flow (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on MOE Guidelines (Persons)
Lagoon City	1,713	1,356*	2,308**	0.588	221	342	674	1,499
Bayshore	399	295*	661***	0.446	75	152	102	226
Total Municipal Residual Capacity						494		1,725

Footnotes:
- *There have been no incidences of untreated or partly treated sewage bypass events in Lagoon City or Bayshore Village.*
- *The Township advises that sanitary sewer repair programs are in place to reduce I&I.*
- *Although the rated capacity of the Lagoon City plant is 2,273 m³/d, only 2 of 3 clarifiers have been built. The actual capacity is 1,713 m³/d (2004 Annual Operation Report prepared by C. C. Tatham & Associates Ltd, March 2005)*

** Based on three years of historical data (2002-2004).*
*** Based on two years of population data (2002 and 2004).*
**** Based on three years of population data (2002-2004).*

The serviced population for Lagoon City is based on two years of population. However, due to little growth, the population can be considered the average over three years.

For planning purposes, the Residual Capacity of the Lagoon City facility could be considered as a range from 350 to 1,500 persons. However, the historical data indicates a higher than normal per capita flow and therefore, according to Procedure D-5-1, the Residual Capacity is 350 persons. With respect to the Bayshore Village facility, the Residual Capacity is in the order of 150 persons.

It must be noted that the Residual Capacities are expressed as equivalent population.

5.13 Township of Severn

There are three active wastewater treatment plants located in the Township of Severn, Washago, West Shore and Coldwater. All three facilities are owned and operated by the Township.

The Washago wastewater treatment plant is a Class 1 facility with a lagoon located on Canal Road and the effluent is discharged to the Severn River. The facility consists of a two celled seasonal discharge waste stabilization pond. Biosolids are disposed of in the pond. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the Township advises that there are no issues that prevent

operating staff from meeting the conditions of the current Certificate of Approval. The facility does not accept septage.

The Coldwater WWTP is a Class 2 facility located on Lot 22, Concession 12 in Coldwater Village, Severn Township and the effluent is discharged to the Coldwater River. The plant provides treatment, which includes an extended aeration process with alum addition for phosphorus removal. Biosolids are aerobically digested and are disposed of by land application. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the Township advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does not accept septage.

The West Shore WWTP is a Class 2 facility located on Lot 6, Concession 10, north side of New Brailey Line, west of Hwy No. 11 and the effluent is discharged to Lake Couchiching at Hedgemere Landing. The plant is an extended aeration process sewage treatment plant utilizing sequencing batch reactors with tertiary effluent filters and UV disinfection of the effluent. Biosolids are digested aerobically and disposed of by land application. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the Township advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does not accept septage.

A summary of the plant information is presented in Table 12.

TABLE 12 – SUMMARY OF WASTEWATER TREATMENT SYSTEMS

TOWNSHIP OF SEVERN

System Name	Rated Capacity m^3/d	Historical ADF m^3/d	Serviced Population (Persons)	Historical ADF/cap $m^3/c/d$	Spare Capacity m^3/d Historical	Residual Capacity based on historical flow (Persons)	Spare Capacity m^3/d MOE	Residual Capacity based on MOE Guidelines (Persons)
Washago	228	92*	318**	0.291	126	394	85	188
Coldwater	545	371*	1,323**	0.281	137	442	-50	-112
West Shore	1,390	No data	2,250***	N/A	N/A	N/A	N/A	N/A
Total Municipal Residual Capacity						836		76

Footnotes:

- *No raw sewage or effluent bypass events took place from the Sewage Treatment Plant into the Coldwater River in 2002.*
- *Three untreated or partly treated sewage bypass events took place from the Sewage Treatment Plant into the Coldwater River in 2003. The bypass events took place on June 28 from 15:00 to 16:00 releasing 10,000 Litres, June 30 from 15:00 to 16:00 and on August 15 from 21:00 to 22:00 releasing 60,000 Litres due to a power failure.*
- *Three untreated or partly treated sewage bypass events took place from the Sewage Treatment Plant into the Coldwater River in 2004. The bypass events took place on February 2 from 7:30*

to 15:30 because secondary effluent was pumped from the Sewage Treatment Plant to divert flow to facilitate the maintenance of the secondary clarifier which was taken off-line for a scheduled repair. The second bypass took place from 16:45 on March 31 until 7:30 on April 1, releasing 32,300 Litres of raw sewage. The third bypass took place at 20:00 on May 23 until 10:45 on May 24 due to high flows from the flooding of the river.

- *Sewage bypass information for West Shore and Washago are not available at this time.*
- *The Township advised that no Class EAs have been initiated by the Township with respect to Wastewater Treatment.*
- *Available residual capacity (MOE) for West Shore was provided by municipality.*

** Based on three years of historical data (2002-2004).*
*** Based on three years of population data (2002-2004).*
**** Based on one year of population data (2005)*

For planning purposes, the Residual Capacity of the Washago facility could be considered as a range of 200 to 400 persons. However, the historical data indicates a lower than normal per capita flow and therefore, according to Procedure D-5-1, the Residual Capacity is 400 persons. With respect to the Coldwater facility, the range is from 0 to 450 persons. However, the historical data indicates a lower than normal per capita flow and therefore, according to Procedure D-5-1, the Residual Capacity is 450 persons. The Residual Capacity of the West Shore facility based on MOE Guidelines is estimated to be in the order of 1,000 persons.

It must be noted that the Residual Capacities are expressed as equivalent population.

The currently serviced area for the West Shore system is as per the Class EA.

5.14 Township of Springwater

The Elmvale wastewater treatment plant is a Class 2 facility owned by the Township of Springwater and operated by OCWA. The facility is located on Lot 4 of the Tenth Concession and the effluent is discharged to the Wye River. The plant provides treatment, which includes grit removal, screening, extended aeration process with dual point alum addition and tertiary filtration for phosphorus removal and UV disinfection of the effluent. Biosolids are aerobically digested and disposed of by land application. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the Town advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does not accept septage.

A summary of the plant information is presented in Table 13.

TABLE 13 – SUMMARY OF WASTEWATER TREATMENT FACILITY

TOWNSHIP OF SPRINGWATER

System Name	Rated Capacity m³/d	Historical ADF m³/d	Serviced Population (Persons)	Historical ADF/cap m³/c/d	Spare Capacity m³/d Historical	Residual Capacity based on historical flow (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on MOE Guidelines (Persons)
Elmvale	1,800	1,094*	2,289**	0.478	597	1,136	770	1,711

Footnotes:
- *OCWA advises that the Township is not undertaking an I&I Separation Program*
- *No raw sewage or effluent bypass events took place from the waste water treatment plant into the Wye River in 2002.*
- *An untreated or partly treated sewage bypass event took place from 21:30 to 23:00 on August 21, 2003 releasing 100,000 L from the inlet works of the waste water treatment plant into the Wye River due to power failure.*
- *Two untreated or partly treated sewage bypass event took place in 2004. The first took place from 16:00 to 16:15 on January 4, releasing 100,000 litres from the inlet works of the waste water treatment plant to the driveway and ditch on the treatment plant site due to high flows and a plugged hydra sieve. The second bypass event to the Wye River took place from 14:00 March 5 to 8:00 March 9 due to extremely high flow in the event of spring run-off.*

** Based on three years of historical data (2002-2004).*
*** Based on one year of population data (2004).*

For planning purposes, the Residual Capacity of the Elmvale facility could be considered as a range of between 1,150 to 1,700 persons. However, only one year of serviced population was provided and the historical data indicates a slightly higher than normal per capita flow. Therefore, according to Procedure D-5-1, the Residual Capacity is 1,150 persons. It must be noted that the Residual Capacities are expressed as equivalent population.

The Township has advised that there are 21 hectares of land within the Elmvale planning area that have been designated for future industry. In Section 6.16, an equivalent population of 1,750 persons was calculated for that future area. If this figure were to be deducted from the above mentioned range, the residual capacity for residential growth would be negative.

5.15 Township of Tay

There are two wastewater treatment plants located in the Township of Tay; namely Port McNicoll and the Village of Victoria Harbour. Both facilities are owned and operated by the Township. The Port McNicoll wastewater treatment plant is a Class 2 facility located at 551 First Street and the effluent is discharged to Hogg Bay in Severn Sound. The plant provides treatment, which includes screening, a membrane bio-reactor modified activated sludge process, membrane filtration, three chemical addition systems, alum, citric acid and sodium hypochlorite and UV disinfection of the effluent. Biosolids are aerobically digested and disposed of by land application. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the

rated capacity of the plant. In addition, the Township advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does accept septage and leachate, which is included in the metered inflow.

The Village of Victoria Harbour WWTP is a Class 2 facility located north of Park View Street west of the Adeline Avenue easement and the effluent is discharged into Sturgeon Bay of Severn Sound. The plant provides treatment, which includes grit removal, screening, extended aeration process with alum addition and tertiary filtration for phosphorus removal and chlorine disinfection of the effluent. Biosolids are aerobically digested and disposed of by land application. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the Township advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does not accept septage.

A summary of the plant information is presented in Table 14.

TABLE 14 – SUMMARY OF WASTEWATER TREATMENT FACILITY

TOWNSHIP OF TAY

System Name	Rated Capacity m³/d	Historical ADF m³/d	Serviced Population (Persons)	Historical ADF/cap m³/c/d	Spare Capacity m³/d	Residual Capacity based on historical flow (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on MOE Guidelines (Persons)
Port McNicoll	1,918	1,180*	4,222**	0.279	620	2,017	18	40
Victoria Harbour	2,364	1,840*	N/A	N/A	340	N/A	unknown	unknown
Total Municipal Residual Capacity						N/A		N/A

Footnotes:

- *One treatment plant bypass event took place on August 13, 2001 at the Port McNicoll sewage treatment plant due to start-up problems with the plant control system. In October 2002, a plant bypass event took place releasing 35 m^3 over a 3.5 hours period.*
- *Two secondary sewage bypass events took place at the Port McNicoll sewage treatment plant in 2002. The first event took place over a twelve hour period in March releasing 250 m^3 of sewage due to an alarm failure. The second event took place over a twelve hour period in June releasing 114 m^3 of sewage due to sludge handling failure.*
- *Two plant bypass events took place at the Port McNicoll sewage treatment plant in 2004. The first event took place March 5, releasing 708 m^3 of sewage due to heavy rainfall and snowmelt. The second event took place May 24, releasing 1350 m^3 of sewage due to heavy rainfall. One plant bypass also took place on January 14, 2005, 400 m^3 of sewage was released through a controlled bypass due to rain and snowmelt.*
- *There were no raw sewage by-passes in 2002 at the Victoria Harbour waste water treatment plant.*

- *1,482 m^3 of mixed liquor was transported from Victoria Harbour to Port McNicoll to avoid bypass on February 26 and 27, 2002. Five filter bypasses were executed for maintenance purposes*
- *One plant bypass event took place at the Victoria Harbour sewage treatment plant on March 24, 2003. 250 m^3 of sewage was released over 2 hours. One filter bypass event took place from March 25 to 26 due to high flows.*
- *Two plant bypass events took place at the Victoria Harbour sewage treatment plant in 2004. The first release of 620 m^3 of sewage took place over a 2.25 hour period in March. The second bypass took place in May, releasing 5,700 m^3 of sewage over a 20.75 hour period.*
- *The Township advised that no sewer separation program is being undertaken, however an I&I study is being undertaken.*
- *The Township advised that no Class EAs have been initiated by the Township with respect to Wastewater Treatment.*

**Based on two years of historical data (2003 and 2004).*
*** Based on two years of population data (2003 and 2004).*

For planning purposes, the Residual Capacity of the Port McNicoll facility is limited to 50 persons, based on MOE Guidelines, as there is insufficient historical data. With respect to the Victoria Harbour facility the Residual Capacity cannot be determined until the value for serviced population is provided.

It must be noted that the Residual Capacity is expressed as equivalent population.

5.16 Town of Wasaga Beach

The Wasaga Beach wastewater treatment plant is a Class 3 facility owned by the Town and operated by OCWA. The facility is located on lot 5 at the Fifteenth Concession and the effluent is discharged to the Nottawasaga River. The plant provides treatment, which includes grit removal, screenings, an extended aeration process with alum addition and tertiary filtration for phosphorus removal and UV disinfection of the effluent. Biosolids are aerobically digested and disposed of by land application. At the present time, there are no outstanding Provincial Orders associated with the facility that would affect the rated capacity of the plant. In addition, the Town advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval. The facility does accept septage, which is included in the metered inflow.

A summary of the plant information is presented in Table 15.

TABLE 15 – SUMMARY OF WASTEWATER TREATMENT FACILITY

TOWN OF WASAGA BEACH

System Name	Rated Capacity m³/d	Historical ADF m³/d	Serviced Population (Persons)	Historical ADF/cap m³/c/d	Spare Capacity m³/d Historical	Residual Capacity based on historical flow (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on MOE Guidelines (Persons)
Wasaga Beach	15,433	4,093*	15,433**	0.265	10,930	37,463	8,488	18,863

Footnotes:
- *OCWA has advised that there were no sewage bypass events for 2002, 2003 and 2004 at the Wasaga Beach Wastewater Treatment Plant.*
- *The Town is not undertaking an I & I study*
- *The Town advised that no Class Environmental Assessments have been initiated with respect to wastewater.*

** Based on three years of historical data (2002-2004).*
*** Based on three years of population data (2002-2004).*

For planning purposes, the Residual Capacity of the Wasaga Beach facility could be considered as a range of 18,850 to 37,450 persons. However, the historical data indicates a lower than normal per capita flow and therefore, according to Procedure D-5-1, the Residual Capacity is 37,450 persons. The large difference in the range is directly related to the low historical ADF/capita (0.265) as compared to the MOE Guideline (0.45). It must be noted that the Residual Capacity is expressed as equivalent population.

The service area is defined as per the Town of Wasaga Beach Class EA for Proposed Upgrade and Expansion of Sewage Treatment Capacity and Provision of New Outfall, June 1995.

6.0 WATER SUPPLY

6.1 General

There are 89 municipally owned water supply systems across the Study Area. Each of these systems has been assessed with respect to water supply capacity. Specific information with respect to each of the systems has been provided in Appendix C. The sections following provide brief summaries of the assessments.

The location and extent of the municipal water supply infrastructure for each system within Simcoe County, Barrie and Orillia, is shown in Appendix F- Existing Water Serviced Areas.

The residual capacity ranges have been approximated to the nearest fifty. The values within the tables have been rounded to the nearest one. As noted with Section 4, we applied a 10% buffer to all residual capacity calculations and the subsequent Gap analysis that are based on historical flows. In particular, prior to the calculating the spare capacity within an existing Water System we increased the recorded Maximum Day Demand (MDD) during the previous three years by 10%. In addition we also increased the MDD per capita flow allowance by 10% prior calculating the equivalent population that could be serviced.

6.2 Township of Adjala-Tosorontio

At the present time, there are 7 municipal groundwater supply systems within the Township of Adjala-Tosorontio. The systems and their appurtenances are as follows:

- The Everett system is comprised of three wells, two treatment facilities (one with a hydropneumatic tank, one with a storage tank) and an inground storage reservoir.
- The Colgan system is comprised of three wells, a treatment facility, 5 hydro-pneumatic tanks and an inground reservoir.
- The Lisle system is comprised of two wells, a treatment facility and 5 hydropneumatic tanks.
- The Loretto Heights system is comprised of one well, a treatment facility and 3 hydropneumatic tanks.
- The Rosemont system is comprised of two wells, two treatment facilities, 5 hydropneumatic tanks and 2 inground reservoirs.
- The Weca system is comprised of two wells, two treatment facilities and 17 hydropneumatic tanks.
- The Hockley system is comprised of one well, a treatment facility and 3 hydropneumatic tanks.

Based on the definitions found in Regulation 170/03, all of the systems are classified as "small municipal residential" except for the Everett system, which is "large".

A summary of the Adjala – Tosorontio water supply systems assessment is presented in Table 16.

TABLE 16–SUMMARY OF WATER SUPPLY SYSTEMS

TOWNSHIP OF ADJALA-TOSORONTIO

System Name	Rated Capacity m^3/d	Historical MDD m^3/d **	Serviced Population (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m^3/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m^3/d MOE	Residual Capacity based on 0.45 $m^3/c/d$ and MDD factor (MDD) (Persons)
Everett	3,917	1,253	1,902**	0.659	2,538	3,501	1,777	1,580 (2.5)
Colgan	157 *	182	213****	0.852	-42***	-45	-106	-86 (2.75)
Lisle	657	119	168****	0.709	526	674	449	363 (2.75
Loretto Heights	137	70	78****	0.892	60	61	40	33 (2.75)
Rosemont	73	61	141****	0.433	6	13	-101	-82 (2.75)
Weca	916	290	246****	1.178	597	461	611	494 (2.75)
Hockley	90	62	42****	1.479	22	13	38	31 (2.75)
Total Municipal Residual Capacity						4,679		2,332

Footnotes:
- *At the present time, there are no outstanding Provincial Orders associated with any facility that would affect the rated capacity. In addition, the Township advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificates of Approval*
- *Historical MDDs were calculated by multiplying ADD by a factor of 3*
- *The historical demand of the Colgan system exceeds the rated capacity of the system.*

** Based on Permit to Take Water Rating.*
** Represents the highest maximum day demand for 2002-2004.*
***Represents the highest serviced population for 2002-2004.*
***** Based on one year of population data*

There is a significant spare water supply capacity in Everett and moderate spare capacities in Lisle and Weca. It is considered that the remaining four systems have either exceeded the rated capacity (Colgan) or are approaching the rated capacity.

For planning purposes the range of the Residual Capacities of the seven Adjala-Tosorontio water supply systems could be considered as follows:

Everett	- 1,600 to 3,500 persons
Colgan	- 0 persons
Lisle	- 350 to 650 persons
Loretto Heights	- 50 persons
Rosemont	- 0 persons

Weca - 450 to 500 persons
Hockley - 0 to 50 persons

Due to little growth throughout Adjala-Tosorontio, with the exception of Everett, the 2004 population represents the highest population over three years. Therefore, based on Procedure D-5-1, the historical data would allow the higher end of the range except in the cases of Weca and Hockley where the Residual Capacities are limited to the lower end of the range.

6.3 City of Barrie

The water supply in the City of Barrie is made up of thirteen (13) groundwater wells, three (3) reservoirs, three (3) water towers and five (5) booster stations. The City is divided into five (5) pressure zones. According to the Permit To Take Water, the approved water taking is 106,436.8 m³/d. However, the City advised that due to formation deterioration, the actual capacity of the wells, including Well # 18 which is under construction and will be operational in 2006, is in the order of 92,490 m³/d. The City also advised that there were no issues in 2002, 2003 and 2004 that prevented the operating staff from meeting the conditions of the Certificate of Approval.

The City has advised that a Class EA for a new Surface Water Treatment Plant is complete and the construction of a new facility is recommended. The City is proceeding to the detailed design stage.

A summary of the water supply system assessment is presented in Table 17.

TABLE 17 – SUMMARY OF WATER SUPPLY SYSTEM

CITY OF BARRIE

System Name	Actual Capacity m³/d ***	Historical MDD m³/d	Serviced Population (Persons)	MDD/c/d m³/cap/d	Spare Supply Capacity m³/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on 0.45 m³/c/d and MDD factor (MDD) (Persons)
Barrie	92,490	78,159*	126,000**	0.620	6,515	9,548	-1,065	-1,434 (1.65)

Footnotes:
- *There are no outstanding Provincial Orders*
** Represents the highest maximum day demand for 2002-2005.*
***Represents the highest serviced population for 2002-2005.*
**** Actual Capacity is the Rated Capacity minus an allowance for* deterioration of the existing wells.

For planning purposes the Residual Capacity of the Barrie water supply system could be considered as a range of 0 to 9,550 persons. However, based on Procedure D-5-1 the historical data would allow up to 9,550 persons. It must be stressed that the Residual Capacity is an equivalent

population, which includes industrial, commercial and institutional water demands. The City of Barrie plans to service residential development up to a population of approximately 160,000 persons. Industrial, commercial and institutional growth will continue beyond the aforementioned residential population and the future water supply must meet those needs. In that regard, the City is planning to increase its water supply capacity in the near future and is in the early design stages of a new surface water supply facility. The new surface water supply facility is expected to be on line in 2008 with an initial Phase 1 capacity of 60,000 m^3/day.

The City advises that it has initiated a Class EA for an additional groundwater supply (Well 19). A PIC for Well 19 was held October 12, 2005.

6.4 Town of Bradford West Gwillimbury

The Town of Bradford West Gwillimbury currently has a water supply system that is comprised of seven (7) wells, five (5) treatment facilities (one with an inground reservoir) and two (2) standpipes (with booster pump stations and top-up chlorination facilities). The combined, rated capacity of the supply works is 13,226.4 m^3/d as per the Permit To Take Water. The Certificate of Approval rates the overall system at 13,236.48 m^3/d.

It is noted that the existing Certificate of Approval (issued June 23, 2005) approves the construction of a new water storage reservoir (10,000 m^3) complete with booster pump station and top-up chlorination facilities. These works are part of the future water supply from the Town of Innisfil (currently under construction). This future supply will increase the Town's overall water supply by 7,100 m^3/d initially with an additional 5,900 m^3/d capacity increase in the future. These increases will allow for future growth within Bradford West Gwillimbury.

For the purposes of this assessment, the interim water supply from Innisfil of 750 m^3/day has been recognized.

A summary of the Bradford West Gwillimbury water supply system is presented in Table 18.

TABLE 18 - SUMMARY OF WATER SUPPLY SYSTEM

TOWN OF BRADFORD WEST GWILLIMBURY

System Name	Rated Capacity m^3/d	Historical MDD m^3/d	Serviced Population (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m^3/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m^3/d MOE	Residual Capacity based on 0.45 m^3/c/d and MDD factor (MDD) (Persons)
BWG	13,986*	11,749**	18,400***	0.639	2,237	3,504	-918	-1,133 (1.8)

Footnotes:

- *There are no outstanding Provincial Orders associated with the water supply works*
- *There are no factors that affect the rated capacity of the wells (formation degradation etc) that cannot be addressed by the operating staff*
- *There are no issues that prevent the operating staff from meeting the conditions of the current Certificate of Approval*
- *There are no Class EA planning processes currently underway to expand the capacity of the water supply.*

** Includes 750 m^3/day supply from Innisfil*
** Represents the highest maximum day demand for 2002-2004.*
***Represents the highest serviced population for 2002-2004.*

For planning purposes the Residual Capacity of the Bradford West Gwillimbury water supply system could be considered as a range of 0 to 3,500 persons. However, based on Procedure D-5-1 the historical data would allow up to 3,500 persons. It should be noted that at the present time, the Town operator is forced to dump water at the rate of about 300 equivalent residential units at the end of the distribution system in Bond Head in order to maintain a fresh water supply (to limit THM production). This spare capacity should be recognized in the future.

6.5 Township of Clearview

The Township of Clearview has six municipal groundwater supply systems as follows:

- The New Lowell system is comprised of five wells, a treatment facility and an inground storage reservoir.
- The Stayner system is comprised of three wells, three treatment facilities and a grade level reservoir.
- The Creemore system is comprised of two wells, a treatment facility and a grade level reservoir.
- The McKean system is comprised of three wells, a treatment facility, six pressure tanks and an in-ground reservoir.
- The Colling-Woodlands system is comprised of five wells, a treatment facility, five precharged pressure tanks and an in-ground reservoir.
- The Buckingham Woods system is comprised of two wells, a treatment facility and two precharged pressure tanks.

Based on definitions found in Regulation 170/03, four of these systems are large and two, Buckingham Woods and Colling-Woodlands, are classified as small.

A summary of the Clearview water supply systems assessment is presented in Table 19.

TABLE 19 - SUMMARY OF WATER SUPPLY SYSTEMS

TOWNSHIP OF CLEARVIEW

System Name	Rated Capacity m³/d	Historical MDD m³/d	Serviced Population **** (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m³/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on 0.45 m³/c/d and MDD factor (MDD) (Persons)
New Lowell	747 *	581**	672	0.865	107	113	-85	-69 (2.75)
Stayner	6,541	5,430**	4,166	1.303	567	396	2,791	3,101(2.0)
Creemore	2,688	2,317**	1,543	1.502	139	84	952	847 (2.5)
McKean	1,055	503**	392	1.283	502	355	570	461 (2.75)
Colling-Woodlands	270	190**	188	1.013	61	55	38	31 (2.75)
Buckingham Woods	76 *	59***	48	1.229	Not used	Insufficient Data	17	14 (2.75)
Total Municipal Residual Capacity						1,003		4,384

Footnotes:

- *There are no outstanding Provincial Orders that would affect the rated capacities of the systems*
- *The New Lowell wells did have some issues with respect to excessive well drawdown but that seems to have been corrected through the enforcement of a lawn watering ban. The issue is being reviewed under the Township's Overall Water EA.*
- *The Township has completed a Class EA with respect to the short term water supply for Stayner*
- *The Township is currently finalizing the list of alternatives as part of an Overall Clearview Water Class EA to determine future water supplies for Nottawa/Batteaux, Osler Bluff area, Airport lands, Stayner, New Lowell and Brentwood.*
- *There has been little growth in Clearview throughout 2002, 2003 and 2004 therefore, the serviced population for all systems represents the average over the three years.*

** Based on Permit To Take Water Rating*
*** Represents the highest maximum day demand for 2002-2004.*
****Represents the highest maximum day demand for 2003 and 2004.*
***** Based on one year of population data*

For planning purposes the Residual Capacity of the Clearview water supply systems could be considered as a range as follows:

New Lowell	- 0 to 100 persons
Stayner	- 400 to 3,100 persons
Creemore	- 100 to 850 persons
McKean	- 350 to 450 persons
Colling-woodlands	- 50 persons
Buckingham Woods	- 0 persons

Based on Procedure D-5-1, the historical data would be used to determine the Residual Capacity for all systems except Buckingham Woods (note that for Stayner and Creemore this is the limiting case).

6.6 Town of Collingwood

The Collingwood water supply is from Nottawasaga Bay, through the Town's Raymond A. Barker Ultra-Filtration water plant (WFP), which is owned and operated by the Collingwood Public Utilities Service Board. The overall system also includes an elevated water storage facility and an in-ground water storage/booster pump station facility. The 2004 rated capacity of the WFP was 27,355 m^3/d. Based on a recently issued (Dec/05) Certificate of Approval, the revised capacity is 31,140 m^3/day. The CPU is planning to expand the capacity of the WFP, but for the purpose of this assessment, the 2004 rating has been used.

The WFP provides water to Collingwood, New Tecumseth and the Town of The Blue Mountains. Water supply agreements have been entered into with the other 2 municipalities and the details for the supply volumes are summarized in Table 20 as follows:

TABLE 20 – Collingwood Water Supplies to Other Municipalities

Years	New Tecumseth m^3/d	The Blue Mountains m^3/d	Total m^3/d
2004 and 2005	9,500	1,000	10,500
2006 and 2007	9,500	2,500	12,000
2008 and 2009	9,500	4,000	13,500
2010 to 2017	13,000	8,000	21,000
2018 to 2024	16,000	8,000	24,000
2025 to 2029	20,000	8,000	28,000
2030	23,500	8,000	31,500

Considering the current obligations to New Tecumseth and the Town of The Blue Mountains, the current (2005) water supply capacity that is allocated for Collingwood's use is calculated to be 20,640 m^3/d (31,140 – 10,500 = 20,640)

It is noted that the WFP does not provide water to the major industries in Town. Alternatively, the CPU supplies potable water to the major industries in the east end of Town and non potable water, called "Process Water", for cooling purposes through a separate pumping station and common intake. The CPU does have the ability to expand that untreated industrial water supply if required. However, an assessment of that system has not been undertaken as part of this Report.

A summary of the water supply system assessment is presented in Table 21.

TABLE 21 –SUMMARY OF WATER SUPPLY SYSTEM

TOWN OF COLLINGWOOD

System Name	Rated Capacity m³/d	Historical MDD m³/d	Serviced Population (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m³/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on 0.45 m³/c/d and MDD factor (MDD) (Persons)
Collingwood	20,640	17,877*	17,551**	1.019	975	870	5,634	6,589(1.9)

Footnotes:
- *There have been no Provincial Orders with respect to Water that would affect the rated capacity of the facility. In addition, the COLLUS advises that there are no issues that prevent operating staff from meeting the conditions of the current Certificate of Approval.*

** Represents the highest maximum day demand for 2002-2004.*
***Represents the highest serviced population for 2002-2004.*

For planning purposes, the Residual Capacity of the Collingwood water supply system could be considered as a range of 850 to 6,600 persons. Based on Procedure D-5-1, the historical data would be used to determine the Residual Capacity. Therefore the system is limited to a Residual Capacity of 850 persons.

The Town is currently in the design stage of an expansion to the WFP, which will further increase the capacity significantly. It must also be noted that although the Town is expanding the Water Filtration Plant, the increase in capacity may be intended to service other municipalities.

6.7 Township of Essa

At the present time, there are 3 municipal water supply systems within the Township of Essa. The Angus system is comprised of two treatment facilities, each with an inground reservoir, and three wells. The Thornton-Glen system is comprised of four wells, a treatment system and a standpipe. The Baxter system is comprised of one well, one standby well, a treatment system and five hydro-pneumatic tanks. The systems are owned by the Township, and are currently operated by Ontario Clean Water Agency (OCWA). Based on the definitions found in Regulation 170/03, Angus and Thornton-Glen systems are classified as "large municipal residential" and Baxter is classified as "small".

A summary of the Essa water supply systems is presented in Table 22.

TABLE 22 –SUMMARY OF WATER SUPPLY SYSTEMS

TOWNSHIP OF ESSA

System Name	Rated Capacity m³/d	Historical MDD m³/d	Serviced Population (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m³/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on 0.45 m³/c/d and MDD factor (MDD) (Persons)
Angus	6,554 *	3,094**	6,210***	0.498	3,150	5,748	965	1,072 (2.0)
Thornton-Glen	1,540	658**	750****	0.877	816	846	612	494 (2.75)
Baxter	225	132**	156****	0.846	80	86	32	26 (2.75)
Total Municipal Residual Capacity						6,680		1,592

Footnotes:
- *There are no outstanding Provincial Orders that would affect the rated capacities of the systems*
** Based on Permit to Take Water Rating.*
*** Represents the highest maximum day demand for 2002-2004.*
****Represents the highest serviced population for 2002 and 2004.*
***** Based on one year of population data.*

There has been little growth in Thornton and Baxter throughout 2002, 2003 and 2004 therefore the serviced populations represent the highest over the three years.

For planning purposes the Residual Capacity of the Essa water supply systems could be considered to be the following ranges:

Angus - 1,050 to 5,750 persons
Thornton-Glen - 500 to 850 persons
Baxter - 50 to 100 persons

However, based on Procedure D-5-1 the historical data would allow the upper limit of the Residual Capacity range to be selected for each system.

6.8 Town of Innisfil

There are seven groundwater supply systems and one surface water supply system within the Town of Innisfil. The systems and their appurtenances are as follows:

- The Innisfil Heights system is comprised of one treatment facility, one highlift pumping station with an inground reservoir, and two wells (one duty and one standby).
- The Crossroads system is comprised of one treatment facility, two above grade storage tanks and seven wells.

- The Stroud system is comprised of one treatment facility with an inground reservoir and three wells.
- The Churchill system is comprised of one treatment facility with an inground storage reservoir and three wells (one standby).
- The Golf Haven system is comprised of one treatment facility with an inground storage reservoir and one well.
- The Goldcrest system is comprised of one treatment facility, one above grade storage tank and two wells.
- The Cookstown system is comprised of three treatment facilities, one inground storage reservoir, two standpipes and four wells (three duty and one standby).
- The Alcona Lakeshore water supply is from Lake Simcoe. The overall system also includes a treatment facility, an inground storage reservoir and two clear wells.

All systems are owned and operated by the Town. Based on definitions found in Regulation 170/03, seven of these systems are large and one (Goldcrest) is classified as small.

All of the systems provide water to residential properties. There are some commercial demands in Stroud, Cookstown and Alcona and there are industrial/commercial demands in the Innisfil Heights service area. For all of the systems, except Innisfil Heights, the historical MDD has been used to determine the per capita water demand, including commercial needs.

With respect to the water demands in Innisfil Heights, an attempt has been made to arrive at an equivalent serviced population, allowing for the significant industrial water demand component. The average historical MDD for the other Innisfil water supply systems was calculated to be 0.816 $m^3/c/d$. Using that figure, the equivalent population for the Innisfil Heights service was estimated as follows:

Historical MDD / 0.816 $m^3/c/d$ = population

882 m^3/d / 0.816 $m^3/c/d$ = 1,080 persons

At 3.2 ppu, the number of existing, equivalent residential units is 338

A summary of the Innisfil water supply systems assessment is presented in Table 23.

TABLE 23 - SUMMARY OF WATER SUPPLY SYSTEMS

TOWN OF INNISFIL

System Name	Rated Capacity m³/d	Historical MDD m³/d	Serviced Population (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m³/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on 0.45 m³/c/d and MDD factor (MDD) (Persons)
Innisfil Heights	2,799 (1)	882*	1,080***(2)	0.817	1,829	2,036	1,584	1,408 (2.5)
Crossroads	2,030	900*	1,715**	0.525	1,040	1,802	101	89 (2.5)
Stroud	2,098 (3)	1,700*	1,872***	0.908	228	228	-8	-7 (2.5)
Churchill	743 (4)	614*	520**	1.181	68	52	100	80 (2.75)
Golf Haven	378 (5)	378*	535***	0.707	-38	-49	-284	-230(2.75)
Goldcrest	324	245*	195**	1.256	55	39	83	67 (2.75)
Cookstown	851 (6)	921*	1,390**	0.663	-162	-222	-713	-634(2.5)
Alcona Lakeshore WTP	12,700	6,829*	12,560****	0.544	5,188	8,675	1,961	2,294 (1.9)
Total Municipal Residual Capacity						12,560		3,068

Footnotes:
- *There are no outstanding Provincial Orders that would affect the rated capacities of the systems*
- *Losses in well capacities are not significant enough to affect available capacity*

** Represents the highest maximum day demand for 2002-2004. For Innisfil Heights, the 2002 MDD was calculated by multiplying the ADD by a factor of 2.5*
***Represents the highest serviced population for 2002 and 2004.*
**** Based on one year of population data*
***** Represents the highest serviced population for 2002- 2004.*

(1) 90% of actual rated capacity due to well deterioration
(2) Calculated Equivalent Population
(3) 80% of actual rated capacity due to well deterioration
(4) Based on Permit to Take Water Rating.
(5) The rated capacity of the well cannot be pumped. Therefore, it was assumed that the existing MDD rate is the maximum that the system can produce.
(6) This is the Permit To Take Water Rating less the permitted capacity for Well No. 2 (720m³/day) in Cookstown. Well No. 2 is a standby well only, and is not relied on for regular use.

It should be noted that the Town of Innisfil has entered into an agreement to sell water to Bradford West Gwillimbury. Innisfil is in the process of expanding the Alcona Lakeshore WFP to a rated

capacity of 25,797m^3/day to accommodate the future demands of Innisfil and Bradford West Gwillimbury. This proposed expansion has recently been awarded for construction with a completion date of February 2007. In the interim the current spare capacity within the Lakeshore WTP will be used to supply approximately 750m^3/day water to Bradford West Gwillimbury.

There is a significant spare water supply capacity in Innisfil Heights, Crossroads and Stroud. It is considered that Churchill and Goldcrest are approaching the rated capacity, and that Cookstown and Golf Haven are at the rated capacity.

There had been little growth in Innisfil (except Alcona Lakeshore), therefore the serviced population represents the average population over three years.

Three years of historical data was available for every systems, as a result, the Residual Capacities that could be considered for the systems are as follows:

Innisfil Heights	- 1,400 to 2,050 persons
Crossroads	- 100 to 1,800 persons
Stroud	- 0 to 250 persons
Churchill	- 50 to 100 persons
Golf Haven	- 0 persons
Goldcrest	- 50 persons
Cookstown	- 0 persons
Alcona Lakeshore	- 2,300 to 8,700 persons

Based on Procedure D-5-1 the historical data would allow the upper limit of the Residual Capacity range to be selected for the Innisfil Heights, Crossroads, Stroud and Alcona Lakeshore systems. With respect to Golf Haven, the water quality is such that no further growth should be allowed to be serviced from that system.

It should be noted that the Town is currently undertaking a Schedule B EA to look at the option of abandoning the wells associated with the Crossroads Water Supply System and to service that area from the Alcona Lakeshore WFP. If this EA concludes that the system should be abandoned and connected to the Alcona Lakeshore plant the spare capacity of the Alcona Lakeshore would be reduced by approximately 2,000 m³/d in order to provide that service.

6.9 Town of Midland

The Midland water supply system is made up of five (5) well field areas, which comprise 13 groundwater wells. The system includes two (2) pressure zones and three (3) above ground storage facilities. All water is metered. There are 5,350 residential water services and 350 services to industrial, commercial and institutional establishments. The current population density (Simcoe County Records) is 2.8 ppu. Therefore, the current serviced population is in the order of 14,980 persons. The Town advised that the recorded maximum day demand has decreased dramatically over the past 3 years due to a change in Town policy with respect to water rates for industrial users. The recorded MDDs are as follows:

2002 = 15,811 m³/d
2003 = 13,221 m³/d

2004 = 11,507 m³/d
2005 = 14,221 m³/d which occurred on June 23 (records to September)

Although the trend seems to be a reduction of about 2,000 m³/d/year up to 2004, it is recognized that such a trend cannot continue. This is evidenced by the MDD in 2005.

A summary of the Midland water supply system is presented in Table 24.

TABLE 24 - SUMMARY OF WATER SUPPLY SYSTEMS

TOWN OF MIDLAND

System Name	Rated Capacity m³/d	Historical MDD m³/d	Serviced Population (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m³/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on 0.45 m³/c/d and MDD factor (MDD) (Persons)
Midland	20,776*	15,811**	16,700 ***	0.947	3,384	3,249	6,497	7,599 (1.9)

Footnotes:
- *There are no outstanding Provincial Orders that would affect the rated capacities of the systems*
- *Losses in well capacities are not significant enough to affect available capacity*

**Based on Permit to Take Water Rating.*
*** Represents the highest maximum day demand for 2002-2004.*
****Represents the highest serviced population for 2002-2004.*

For planning purposes the Residual Capacity of the Midland water supply facility could be considered as a range of 3,250 to 7,600 persons. However, based on Procedure D-5-1 the historical data limits the Residual Capacity to 3,250 persons.

6.10 Town of New Tecumseth

There are presently two separate groundwater supply systems within New Tecumseth, Alliston and Tottenham. Both systems are classified as large as they serve well over 100 units. The Alliston water supply system consists of six wells to service itself and the communities of Hillcrest and Beeton. The Alliston system also receives water through a 600 mm diameter transmission main from the Collingwood Water Filtration Plant. The annual average flow rates provided to Alliston by agreement are listed in Table 25.

TABLE 25 – WATER DEMANDS FROM COLLINGWOOD PER AGREEMENT

Period	Annual Average Flow
Up to December 31, 2003	6,000 m^3/day
January 1, 2004 to December 31, 2009	9,500 m^3/day
January 1, 2010 to December 31, 2017	13,000 m^3/day
January 1, 2018 to December 31, 2024	16,000 m^3/day
January 1, 2025 to December 31, 2029	20,000 m^3/day
After January 1, 2030	23,500 m^3/day

Certificate of Approval No. 8185-67FPTT

The Alliston water supply system includes seven groundwater wells, eight treatment facilities, an elevated water storage tank and three storage reservoirs. The Tottenham water supply system is comprised of four groundwater wells which supply the Mill Street Treatment and Storage Facility. The system also includes two treatment facilities, a circular storage reservoir, and elevated storage tank and one clearwell.

Both water supply systems are owned and operated by the Town of New Tecumseth.

A summary of the New Tecumseth water supply systems assessment is presented in Table 26.

TABLE 26 – SUMMARY OF WATER SUPPLY SYSTEMS

TOWN OF NEW TECUMSETH

System Name	Rated Capacity m^3/d	Historical MDD m^3/d ***	Serviced Population **** (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m^3/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m^3/d MOE	Residual Capacity based on 0.45 m^3/c/d and MDD factor (MDD) (Persons)
Alliston	23,886 *	15,667	13,355	1.173	6,652	5,155	12,468	14,582(1.9)
Tottenham	6,000 **	3,506	4,750	0.738	2,143	2,640	1,725	1,916 (2.0)
Total Municipal Residual Capacity						7,795		16,499

Footnotes:
- *No Provincial Orders*

** Includes 9,500 m^3/d supplied from Collingwood. This is the current demand that the municipality is obligated to pay for. See Section 6.6 for future water demands from Collingwood.*
*** Based on Permit to Take Water Rating.*
**** Represents the highest maximum day demand for 2002-2004.*
*****Represents the highest serviced population for 2003 and 2004.*

The historical maximum daily demand (MDD) for Alliston was determined by adding the total daily flows from Wells 1, 4, 5, 6, 7, and 8 and the Hillcrest Supply. The MDD was then selected for 2002, 2003 and 2004. The highest MDD from 2002-2004 was used in the assessment of the residual capacity.

The serviced populations for Tottenham and Alliston did not significantly change from 2002 to 2004 therefore the populations are considered the highest over the three years.

For planning purposes a range for the Residual Capacities of the New Tecumseth water treatment facilities could be considered as follows:

Alliston - 5,150 to 14,600 persons
Tottenham - 1,900 to 2,650 persons

For Tottenham, based on Procedure D-5-1, the historical data would allow up to 2,650 persons. For Alliston, based on Procedure D-5-1 the historical data would limit the Residual Capacity to 5,150 persons.

The Town has initiated a Class Environmental Assessment for a Town-Wide Water Distribution and Storage Master Servicing Plan Study.

6.11 City of Orillia

The assessment of the Orillia water supply system is based on a review the City's "Water System Master Plan Update" dated April 2003 as prepared by the Ainley Group. A discussion was also held with City staff on August 10, 2005. The important points to be noted are as follows:

- The total supply capacity is listed as 32,925 m^3/d in the April 2003 Master Plan, however, additional wells will be added to the system in 2006, bringing the total capacity to 39,502 as per the Certificate of Approval.
- The total available storage is noted as being 19,638 m^3 in the April 2003 Master Plan (Harvie Hill = 9,257, Rosemary Road = 1,338 and 9,043)
- The 2001 population (Census Canada) = 29,121 with 11,610 residences, 106 industries, 395 commercial establishments and 38 institutions.
- Ratio of domestic water demand to ICI is 1:1 (Master Plan Section 4.2)
- Predicted population growth is 1.5% per year to 2034 (Master Plan Section 4.2)
- Trunk watermains are sufficient to supply the ultimate population with water throughout the City (Master Plan Section 5.2)
- Based on the rated capacity of 39,500 m^3/d, the existing water supply can satisfy predicted City water demands until the year 2028 (Figure 5.3 of Master Plan)

A summary of the Orillia water supply system assessment is presented in Table 27.

TABLE 27 – SUMMARY OF WATER SUPPLY SYSTEMS

CITY OF ORILLIA

System Name	Rated Capacity m³/d	Historical MDD m³/d	Serviced Population (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m³/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on 0.45 m³/c/d and MDD factor (MDD) **** (Persons)
Orillia	39,502 *	21,086**	30,039***	0.702	16,307	21,119	15,170	18,729 (1.8)

Footnotes:
- *There are no outstanding Provincial Orders that would affect the rated capacities of the systems*
- *The water supply system has experienced odour and taste problems in the past.*

** There are two wells that are not in service but the City advises that they expect them to be within a year, therefore full rated capacity was recognized.*
*** Represents the highest maximum day demand for 2002-2004.*
****Represents the highest serviced population for 2002-2004.*
***** Orillia uses a figure of 0.3 m³/c/d for domestic water demands and 0.29 m³/c/d for ICI with an MDD factor of 1.6 to predict future water demands. That would result in a higher residual capacity.*

For planning purposes the Residual Capacity of the Orillia Water Supply System could be considered to have a range of 18,750 to 21,100 persons. However, the City has requested that the lower end of the range be used as their water demand ratio is 1:1 for residential and ICI. Therefore, the residual capacity is limited to 18,750 persons.

The current serviced area is defined as per the City of Orillia Water System Master Plan, October 1996.

6.12 Township of Oro-Medonte

The Township of Oro-Medonte is comprised of 12 municipal groundwater supply systems. The systems and their appurtenances are as follows:

- The Lake Simcoe Regional Airport is a large municipal, non-residential system, however it is operated by the Township. It is comprised of two wells, a treatment facility and three hydropneumatic tanks and services the Airport terminal building and five commercial lots.
- The Cedarbrook system is comprised of two wells, a treatment facility and three pressure tanks.
- The Craighurst system is comprised of three wells, a below ground concrete reservoir, a treatment facility and four hydropneumatic tanks.
- The Canterbury system is comprised of two wells, a treatment facility and three pressure tanks.

- The Shanty Bay System is comprised of three wells, a treatment facility and a stand pipe.
- The Warminister system is comprised of one well, a treatment facility and an inground reservoir.
- The Maplewood system consists of one well, a treatment facility, an underground reservoir and a hydraulic pressure tank (currently not in use).
- The Robincrest system is comprised of two wells, a treatment facility and two reservoirs.
- The Harbourwood water system consists of two wells, a treatment facility and one standpipe.
- The Medonte Hills system is comprised of two wells, a treatment facility and five hydropneumatic tanks.
- The Sugar Bush system is comprised of two wells, two treatment facilities and an inground reservoir.
- The Horseshoe Highlands system consists of two wells, a treatment facility and a water tower.

Based on the definitions found in Regulation 170/03, Horseshoe Highlands, Sugarbush, Medonte Hills, Shanty Bay and Warminister are classified as "large municipal residential" and Canterbury, Craighurst, Maplewood, Robincrest and Cedarbrook are classified as "small". The Lake Simcoe Regional Airport is a large municipal non- residential system.

A summary of the Oro-Medonte water systems assessment is presented in Table 28.

TABLE 28 - SUMMARY OF WATER SUPPLY SYSTEMS

TOWNSHIP OF ORO-MEDONTE

System Name	Rated Capacity m³/d	Historical MDD m³/d	Serviced Population (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m³/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on 0.45 m³/c/d and MDD factor (MDD) (Persons)
Canterbury	209	50**	46***	1.087	154	129	152	123 (2.75)
Craighurst	458	184**	138***	1.333	256	174	287	232 (2.75)
Horseshoe Highlands	3,370	3,706**	1,380***	2.686	-707	-239	1,817	1,615 (2.5)
Maplewood	164	150**	127***	1.181	-1	-1	6	5 (2.75)
Robincrest	850*	503**	243***	2.070	297	130	549	444 (2.75)
Sugarbush	2,485	956**	869***	1.100	1,434	1,185	1,410	1,139(2.75)
Cedarbrook	196	86**	65***	0.323	102	70	116	93 (2.75)
Harbourwood	922	517**	354***	1.460	353	220	484	391 (2.75)
Regional Airport	73	21**	53***	0.396	50	114	7	6
Medonte-Hills	393	346**	367***	0.943	12	12	-61	-49 (2.75)
Shanty Bay	1,220 *	391**	302***	1.295	790	555	846	684 (2.75)
Warminister	600 *	605**	540***	1.120	-66	-53	-68	-55 (2.75)
Total Municipal Residual Capacity						2,295		4,628

Footnotes:
- *Provincial orders?*
** Based on Permit To Take Water Rating*
*** Represents the highest maximum day demand for 2002-2004.*
**** Based on one year of population data (2004).*

There has been little growth in Oro-Medonte, therefore the serviced population represents the highest population over the three years.

For planning purposes a range of Residual Capacities could be considered for each of the Oro-Medonte Water Supply Systems, as follows:

Canterbury	- 100 to 150 persons
Craighurst	- 150 to 250 persons
Horseshoe Highlands	- 0 to 1,600 persons
Maplewood	- 0 persons
Robincrest	- 150 to 450 persons
Sugarbush	- 1,150 to 1,200 persons
Cedarbrook	- 100 persons
Harbourwood	- 200 to 400 persons
Regional Airport	- 0 to 100 persons
Medonte-Hills	- 0 persons
Shanty Bay	- 550 to 700 persons
Warminister	- 0 persons

Based on procedure D-5-1 the historical data would allow for the upper limit of persons in the cases of Canterbury, Medonte Hills, Sugarbush and the Lake Simcoe Regional Airport. Based on procedure D-5-1 the historical data would limit the Residual Capacity to the lower limit of persons in the cases of the remaining water supply systems.

6.13 Town of Penetanguishene

There are two groundwater supply systems within the Town of Penetanguishene. The Payette system is comprised of one treatment facility, two inground reservoirs, an elevated water storage reservoir and five wells (the two wells at Robert Street West at Champlain Road are currently inoperable). The Lepage system is comprised of a treatment facility, six bladder-type pressure tanks and two wells. Both systems are owned and operated by the Town. Based on definitions found in Regulation 170/03, the Payette system is classified as large and the Lepage system is classified as small.

Industrial/commercial and institutional demands account for about 40% of the water demand in Payette. For both Payette and Lepage the historical MDD has been used to determine the per capita water demand, including industrial/commercial and institutional needs.

A summary of the Penetanguishene water supply systems assessment is presented in Table 29.

TABLE 29 - SUMMARY OF WATER SUPPLY SYSTEMS

TOWN OF PENETANGUISHENE

System Name	Rated Capacity m³/d	Historical MDD m³/d	Serviced Population (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m³/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on 0.45 m³/c/d and MDD factor (MDD) (Persons)
Payette	11,000*	8,316**	6,700****	1.241	1,852	1,357	4,970	5,522 (2.0)
Lepage	432*	53***	64****	0.823	Not used	Insufficient Data	353	285 (1) (2.75)
Total Municipal Residual Capacity						1,357		5,807

Footnotes:
- *Provincial orders?*
** Based on Permit To Take Water Rating*
*** Represents the highest maximum day demand for 2002-2004.*
**** Based on one year of historical data (2004).*
***** Based on one year of population data (2004).*
(1) The Lepage system cannot support any new growth, see note below.

The historical demand for Payette is based on an average of the water flow records for three years and includes all industrial, commercial and institutional demands. There has also been little growth therefore the serviced population is considered the highest over the three years. For planning purposes the Residual Capacity could be considered as a range between 1,350 and 5,500 persons. However, based on procedure D-5-1 the historical data would limit the Residual Capacity to 1,350 persons.

The historical demand for Lepage is based on the water flow records for 2004 only. As such the Residual Capacity was calculated based on MOE Design Guideline data only, and the Residual Capacity based on procedure D-5-1 is 300. It should also be noted that in the opinion of the Operator, the Lepage system cannot support any new growth. Therefore, the residual capacity should be considered as 0 persons.

6.14 Township of Ramara

The Township of Ramara water distribution system consists of six municipal supply systems. The Lagoon City and South Ramara systems draw water through intake pipes from Lake Simcoe while the remaining four systems are groundwater sources. The systems and their appurtenances are as follows:

- The Lagoon City system consists of a raw water intake well, a treatment facility, and an elevated water reservoir.

- The South Ramara System is comprised of a redwood intake crib, a treatment facility and two above ground storage reservoirs.
- The Bayshore Village System is comprised of three wells, a treatment facility and an underground reservoir.
- The Davy Drive well supply consists of three wells, a treatment facility and three pressure tanks to sustain pressure within the system.
- The Park Lane system is comprised of two wells (one standby), a treatment facility and two hydropneumatic pressure tanks.
- The Val Harbour water supply system consists of two wells, two underground reservoirs and a treatment facility.

Based on the definitions found in Regulation 170/03, Bayshore Village and Lagoon City/Brechin are classified as "large municipal residential" and Park Lane, Davy Drive, South Ramara and Val Harbour are classified as "small".

A summary of the Ramara water distribution system is shown in Table 30.

TABLE 30 - SUMMARY OF WATER SUPPLY SYSTEMS

TOWNSHIP OF RAMARA

System Name	Rated Capacity m^3/d	Historical MDD m^3/d	Serviced Population (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m^3/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m^3/d MOE	Residual Capacity based on 0.45 $m^3/c/d$ and MDD factor (MDD) (Persons)
Bayshore Village	1244	1,062*	675**	1.574	75	43	408	330 (2.75)
Park Lane	50	44*	43**	1.035	2	1	-3	-2 (2.75)
Lagoon City	4,000	2,548*	3,000**	0.849	1,197	1,281	956	951 (2.25)
Davy Drive	76	38*	80**	0.475	34	65	-23	-19 (2.75)
South Ramara	387	365*	213**	1.715	-14	-7	124	100 (2.75)
Val Harbour	207	172*	140**	1.231	18	13	34	28 (2.75)
Total Municipal Residual Capacity						1,397		1,388

Footnotes:
- *There are no outstanding Provincial Orders that would affect the rated capacities of the facilities.*
- *There is no Permit to Take Water for Park Lane, as it is under 50,000 L/day.*

** Represents the highest maximum day demand for 2002-2004.*

***Represents the highest serviced population for 2002-2004.*

For planning purposes the ranges for Residual Capacities for the Ramara water supply systems that could be considered are as follows:

Bayshore Village	- 50 to 350 persons
Park Lane	- 0 persons
Lagoon City	- 950 to 1,300 persons
Davy Drive	- 0 to 50 persons
South Ramara	- 0 to 100 persons
Val Harbour	- 0 to 50 persons

Based on Procedure D-5-1 the historical data allows for the upper limit of Residual Capacity in all cases except for Bayshore Village, South Ramara and Val Harbour. In these cases Procedure D-5-1 limits the Residual Capacity to the lower limit.

6.15 Township of Severn

At the present time, there are six municipal water supply systems within the Township of Severn. Three of the systems are surface water supplies, obtaining water from Lake Couchiching and three of the systems are groundwater sources. The systems and their appurtenances are as follows:

- The Severn Estates system is comprised of a treatment facility and one well.
- The Sandcastle Estates system is a surface water system that obtains water from Lake Couchiching. It is comprised of a treatment facility, a contact chamber/clearwell and six pre-charged hydro-pneumatic pressure tanks.
- The Bass Lake Woodlands system is comprised of a treatment facility, a chlorine contact chamber and reservoir, four pre-charged hydro-pneumatic pressure tanks and three wells.
- The Washago system is a surface water system that obtains water from Lake Couchiching. It is comprised of a treatment facility, a contact chamber and a clearwell.
- The Coldwater system is comprised of one treatment facility, a below grade reservoir, five pre-charged hydro-pneumatic pressure tanks, and three wells (two duty and one standby). The systems are owned and operated by the Township.
- The West Shore system is a surface water system that obtains water from Lake Couchiching. It is comprised of a treatment facility, UV disinfection, a contact chamber and a clearwell.

Based on the definitions found in Regulation 170/03, Severn Estates and Sandcastle Estates systems are classified as “small municipal residential” and Bass Lake Woodlands, Washago, Coldwater and West Shore are classified as “large”.

A summary of the Severn water supply systems assessment is presented in Table 31.

TABLE 31 –SUMMARY OF WATER SUPPLY SYSTEMS

TOWNSHIP OF SEVERN

System Name	Rated Capacity m³/d	Historical MDD m³/d	Serviced Population (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m³/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on 0.45 m³/c/d and MDD factor (MDD) (Persons)
Severn Estates	109	47*	62**	0.757	57	69	108	26 (2.75)
Bass Lake Woodlands	818	548*	324**	1.691	215	116	417	337 (2.75)
Sandcastle Estates	389	236*	167**	1.410	129	83	182	147 (2.75)
Washago	544	252*	365**	0.691	267	351	93	75 (2.75)
Coldwater	2,138	1,377*	1,431**	0.962	623	589	528	469 (2.5)
West Shore	2,780	No data	2,250	unknown	unknown	unknown	unknown	unknown
Total Municipal Residual Capacity						1,208		1,054

Footnotes:
- *The Township advises that there are no outstanding Provincial Orders that would affect the rated capacities of any of the facilities.*
- *There are no issues that would affect the rated capacities of the facilities or prevent the operating staff from meeting conditions of the current Certificates of Approval.*
- *The Township advises that they have not initiated any Class EAs with respect to water supply capacity.*

** Represents the highest maximum day demand for 2002-2004.*
***Represents the highest serviced population for 2002-2004.*

There is a significant spare water supply capacity in Coldwater and moderate spare capacities in the other four systems.

For planning purposes the ranges for Residual Capacities for the Severn water supply systems that could be considered are as follows:

Severn Estates	- 50 persons
Bass Lake Woodlands	- 100 to 350 persons
Sandcastle Estates	- 100 to 150 persons
Washago	- 100 to 350 persons
Coldwater	- 450 to 600 persons
West Shore	- 1,000 persons (Based on MOE Guidelines)

Based on Procedure D-5-1 the historical data allows for the upper limit of Residual Capacity in all cases except for Bass Lake Woodlands and Sandcastle Estates. In these cases Procedure D-5-1 limits the Residual Capacity to the lower limit.

The currently serviced area for the West Shore systems is as per the Class EA.

6.16 Township of Springwater

The urban areas of the Township of Springwater are serviced by communal water supply systems. The Township owns all of the systems except for the Snow Valley system. In addition, all systems are operated by OCWA on behalf of the Township. It is understood that the Snow Valley system, which was recently put on line, will eventually be owned by the Township.

The Springwater water distribution system is comprised of eight municipal water supply systems, of which seven are classified as large and one, Vespra Downs, small. The systems and their appurtenances are as follows:

- The Anten Mills well supply system consists of three groundwater wells, a treatment facility, a grade level storage reservoir and three hydraulic tanks.
- The Del Trend system is comprised of three groundwater wells, a treatment facility and an underground storage reservoir.
- The Elmvale system consists of two groundwater wells, two treatment facilities and two elevated storage tanks.
- The Snow Valley water system includes three groundwater wells, a treatment facility, a concrete storage reservoir and five hydraulic tanks.
- The Vespra Downs system is small and is comprised of two groundwater wells, a treatment facility and eight pressure tanks.
- The Minesing well supply system consists of three groundwater wells, a treatment facility, a ground level water reservoir and three hydraulic tanks.
- The Hillsdale water system is comprised of two groundwater wells, a treatment facility and an elevated storage reservoir.
- The Midhurst water system is comprised of four groundwater wells (one is standby), two treatment facilities and two storage reservoirs.

A summary of the Springwater water supply systems assessment is presented in Table 32.

TABLE 32 - SUMMARY OF WATER SUPPLY SYSTEMS

TOWNSHIP OF SPRINGWATER

System Name	Rated Capacity m^3/d	Historical MDD m^3/d	Serviced Population (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m^3/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m^3/d MOE	Residual Capacity based on 0.45 $m^3/c/d$ and MDD factor (MDD) (Persons)
Anten Mills	1,558 *	363**	348***	1.043	1,158	1,009	1,127	911 (2.75)
Del Trend	1,618 *	597**	318***	1.877	962	466	1,225	990 (2.75)
Elmvale	4,546	2,038**	2,289***	0.890	2,304	2,353	2,228	2,201(2.25)
Hillsdale	1,185	601**	1,068***	0.563	524	846	-17	-15 (2.5)
Midhurst	6,850 *	3,267**	2,904***	1.125	3,256	2,631	3,910	3,861 (2.25)
Minesing	740	742**	639***	1.161	-76	-60	-51	-41 (2.75)
Snow Valley	1,400 *	713**	507***	1.406	616	398	773	624 (2.75)
Vespra Downs	169 *	127**	69***	1.841	29	14	84	67 (2.75)
Total Municipal Residual Capacity						7,703		8,599

Footnotes:

- *At the present time, there are no outstanding Provincial Orders associated with the facilities that would affect the rated capacity of the plants. OCWA advises that Hillsdale Well #1 was removed from service as a result of treatability problems associated with high pH and general raw water quality. The rated capacity of the system was reduced by 285m^3/day to reflect this. Minesing has screens that plug. This is an on-going operational issue, which does not affect the capacity of the system. With respect to issues that are issues that prevent operators from meeting the conditions of the Certificate of Approval, OCWA advises that Hillsdale has residents that are not downstream of the chlorine contact chamber. OCWA also advises that Snow Valley and Phelpston has SCADA which is not recording and trending the required information to be in compliance with the regulations.*

** Based on Permit To Take Water Rating*
*** Represents the highest maximum day demand for 2002-2004.*
**** Based on one year of population data*

The Hillsdale and Midhurst urban areas also have designated employment lands. Therefore, the actual spare capacities for residential growth in those areas is less than stated in Table 32.

It should be noted that there is an existing small groundwater system serving 13 lots in the Centre Vespra area. That supply is high in nitrates and the Township is currently looking at options to resolve the problem through a Class EA process. Any new water supply system will be developed to provide water to between 250 and 410 lots, depending on future development. It is also noted

that the Snow Valley water supply system may be used to provide water to Centre Vespra. It should be noted that a fourth well will be operational in the Snow Valley system which will increase the rated capacity.

OCWA advises that an EA has been completed for building a new well in Minesing.

For planning purposes the Residual Capacities for the Springwater water supply systems must be taken as the low end of the range due to a lack of historical population data.

Anten Mills - 900 persons
Del Trend - 450 persons
Elmvale - 2,200 (see paragraph below)
Hillsdale - 0 persons, includes allowance for designated industry
Midhurst - 2,650 persons, includes allowance for designated industry
Minesing - 0 persons
Snow Valley - 400 persons
Vespra Downs - 0 persons

The Township has advised that there are 21 hectares of land within the Elmvale planning area that have been designated for future industry. At a water demand rate of say 35 m^3/ha/d, the resulting additional max day demand would be in the order of 735 m^3/d. If this amount was to be deducted from the total spare capacity, the resulting spare capacity would be in the order of 1,570 m^3/d. This amount would service an estimated 1,750 persons (equivalent, including ICI) based on MOE Guidelines.

The Township also advised that the rated capacity of the Del Trend water supply system is restricted by its inability to treat the water. Therefore, in order to provide water for growth, an upgrade to the treatment works is necessary at that facility.

The currently serviced area for Elmvale is as per the Official Plan for the Old Village Limits, March 1987.

6.17 Township of Tay

There are four surface water treatment plants and one groundwater well supply system within Tay and all are owned and operated by the Township. Of the systems, three are classified as large and two are small. The Victoria Harbour/Port McNicoll surface water treatment plant is comprised of a 400 mm intake pipe, a zebra mussel control system, a treatment facility, two below grade water reservoirs and one standpipe. The Rope surface water treatment plant is comprised of a 100 mm diameter intake pipe, a zebra mussel control system, a treatment facility and a below grade treated water clearwell. The Midland Bay Woods surface water treatment plant consists of a 200 mm intake pipe, a zebra mussel control system, a treatment facility and a below grade treated water clearwell. The Bayberry Estates well supply system includes two groundwater wells, a treatment facility and an underground storage reservoir. The Waubaushene surface water treatment plant consists of a 200 mm diameter intake pipe, a zebra mussel control system, a treatment facility and a below grade treated water clearwell.

A summary of the Tay water supply systems assessment based on MOE Design Guidelines is presented in Table 33. Insufficient data was available to assess the systems based on historical water demands.

TABLE 33 –SUMMARY OF WATER SUPPLY SYSTEMS

TOWNSHIP OF TAY

System Name	Rated Capacity m³/d	Historical MDD m³/d	Serviced Population (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m³/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m³/d MOE	Residual Capacity based on 0.45 m³/c/d and MDD factor (MDD) (Persons)
Victoria Harbour/Port McNicoll	7,845	7,620	5,800**	1.314	Not used	Insufficient Data	2,625	2,917(2.0)
Rope	432	111	60**	1.850	Not used	Insufficient Data	358	289 (2.75)
Midland Bay Woods	301*	267	230**	1.161	Not used	Insufficient Data	16	13 (2.75)
Bayberry Estates	392	68	100**	0.680	Not used	Insufficient Data	269	217 (2.75)
Waubaushene	1,225*	760	1,200**	0.633	Not used	Insufficient Data	-125	-111 (2.5)
Total Municipal Residual Capacity						N/A		3,325

Footnotes:
- *Provincial orders?*

** Based on Permit To Take Water Rating*
*** Represents the highest maximum day demand for 2003 and 2004.*
****Represents the highest serviced population for 2003 and 2004.*

For planning purposes, the Residual Capacities for the Tay water supply systems, based on MOE Design Guidelines, could be considered as follows:

Victoria Harbour/Port McNicoll - 1,400 persons (see note below)
Rope - 300 persons
Midland Bay Woods - 0 persons (see not below)
Bayberry Estates - 0 persons (see note below)
Waubaushene - 0 persons

It should be noted that the Township advised that they are decommissioning Midland Bay Woods, Bay Berry and Waubaushene water supply systems within the next two years as a result of water problems associated with chlorine contact time. These areas will be serviced from the Victoria Harbour plant via extensions to the distribution system. Thus, the residual capacities of these

systems can be considered to be zero. Since these systems will be serviced from Victoria Harbour in the future, the residual capacity of Victoria Harbour has been reduced accordingly.

The Township advises that chlorine contact issues at Victoria Harbour and Rope will be addressed by the Township in the near future.

The Township advises that there are no other factors which would affect the rated capacities of the facilities.

The Township advises that there have not been any Class EAs initiated with respect to water supply capacity.

6.18 Township of Tiny

There are nineteen separate groundwater supply systems, owned and operated by the Township of Tiny. All of them are ground water sources. The Renouf water system is a private system that the Township was ordered to take over and operate. When it was constructed it had no Certificate of Approval or Permit to Take Water. As of October 31, 2005 this water system will be shut down and decommissioned. Everyone in this area is required to install a new well. Therefore, this system is not included in the assessment.

The remaining eighteen systems and their appurtenances are as follows:

- The Perkinsfield system consists of two treatment facilities one of which has a below grade reservoir, one above grade reservoir, 6 precharged pressure tanks and five wells (one of which is not in service and one of which is not connected).
- The Bluewater system consists of two treatment facilities, one of which has an inground reservoir, seven precharged pressure tanks and three wells.
- The Georgian Bay Estates system consists of one treatment facility, seven pre-charged pressure tanks, one inground reservoir and three wells.
- The Georgian Sands system consists of four treatment facilities, thirty three precharged pressure tanks, an off-site above ground reservoir and three wells.
- The Lafontaine (L.A. Place) system consists of one treatment facility with an inground reservoir and two wells.
- The Tee Pee Points system consists of one treatment facility with an inground reservoir, four precharged pressure tanks and one well.
- The Sand Castle Estates system consist of one treatment facility, six precharged pressure tanks and two wells.
- The Vanier Woods consists of one treatment system with an inground reservoir, one pre-charged pressure tank and two wells.
- The Wyevale system consists of four treatment facilities (one not in use), one of which has an inground reservoir, and one of which has eight precharged pressure tanks and five wells.
- The Cooks Lake system consists of a treatment facility with an inground reservoir, five precharged pressure tanks and two wells.
- The Georgian Highlands system consists of a treatment facility with an inground reservoir and one well.
- The Lefaive system consists of one treatment facility, five precharged pressure tanks and two wells.

- The Pennorth system consists of one treatment facility, three precharged pressure tanks and one well.
- The Rayco system consists of one treatment facility, three precharged pressure tanks and two wells.
- The Sawlog Bay system consists of one treatment facility, eight precharged pressure tanks and two wells (one lead and one standby).
- The Thunder Bay system consists of one treatment system, eight precharged pressure tanks and two wells.
- The Whip-Poor-Will 2 system consists of one treatment facility with an inground reservoir, three precharged pressure tanks and two wells.
- The Woodland Beach system consists of a treatment facility, five precharged pressure tanks and two wells.

Based on the definitions found in Regulation 170/03, all of the systems are classified as "small municipal residential" except for the Perkinsfield, Bluewater, Georgian Bay Estates Georgian Sands and Vanier Woods systems, which are "large".

A summary of the Tiny Township water supply systems is presented in Table 34.

TABLE 34 – SUMMARY OF WATER SUPPLY SYSTEMS

TOWNSHIP OF TINY

System Name	Rated Capacity m^3/d	Historical MDD m^3/d	Serviced Population (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m^3/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m^3/d MOE	Residual Capacity based on 0.45 $m^3/c/d$ and MDD factor (MDD) (Persons)
Perkinsfield	1,382*	601	437**	1.376	721	476	841	680 (2.75)
Bluewater	836	936	614**	1.525	-194	-115	77	62 (2.75)
Georgian Bay Estates	949	647	559**	1.157	238	187	257	208 (2.75)
Georgian Sands	3,145	2,139	1,591**	1.344	792	536	1,355	1,204 (2.5)
Lafontaine (L.A.Place)	198*	195	148**	1.316	-16	-11	15	12 (2.75)
Tee Pee Points	123*	165	237**	0.697	-59	-77	-170	-137 (2.75)
Sand Castle Estates	490	112	83**	1.346	367	248	387	313 (2.75)
Vanier Woods	360	123	104**	1.183	225	173	231	187 (2.75)
Wyevale	920*	732	515**	1.422	115	73	283	229 (2.75)

Cooks' Lake	400*	207	224**	0.926	172	169	123	100 (2.75)
Georgian Highlands	752	247	211**	1.173	480	372	491	397 (2.75)
Lefaive	309	161	172**	0.938	132	128	96	78 (2.75)
Pennorth	61	95	83**	1.142	-43	-34	-42	-34 (2.75)
Rayko	194	123	83**	1.475	59	37	91	74 (2.75)
Sawlog Bay	189*	131	91**	1.440	45	28	76	62 (2.75)
Thunder Bay	200	183	47**	3.910	-1	0	142	115 (2.75)
Whip-Poor-Will 2	360	464	151**	3.077	-150	-44	173	140 (2.75)
Woodland Beach	170	196	49**	3.968	-46	-10	109	88 (2.75)
Total Municipal Residual Capacity						2,133		3,776

Footnotes:
- *Provincial orders?*

** Based on Permit To Take Water Rating.*
*** Represents the highest maximum day demand for 2003-2005.*
****Represents the highest serviced population for 2003 and 2004.*

There has been little growth throughout the Township of Tiny therefore the highest population can be considered the highest from 2003 - 2005.

For planning purposes the ranges for Residual Capacities for the Tiny water supply systems that could be considered are as follows:

Perkinsfield - 500 to 700 persons
Bluewater - 0 to 50 persons
Georgian Bay Estates - 200 persons
Georgian Sands - 550 to 1,200 persons
Lafontaine (L.A. Place) - 0 persons
Tee Pee Points - 0 persons
Sand Castle Estates - 250 to 300 persons
Vanier Woods - 150 to 200 persons
Wyevale Central - 50 to 250 persons
Cook's Lake - 100 to 150 persons
Georgian Highlands - 350 to 400 persons
Lafaive - 100 to 150 persons
Pennorth - 0 persons
Rayco - 50 persons
Sawlog Bay - 50 persons
Thunder Bay - 0 to 100 persons
Whip-Poor-Will 2 - 0 to 150 persons
Woodland Beach - 0 to 100 persons

In all cases, except for Cook's Lake and Lefaive, Procedure D-5-1 limits the Residual Capacity to the lower limit. In the cases of Cook's Lake and Lefaive Procedure D-5-1 allows for the upper limit of Residual Capacity to used.

6.19 Town of Wasaga Beach

The Wasaga Beach water supply system is comprised of two separate groundwater well fields; Powerline Road and Jenetta Street. There are 7 wells, one in-ground water reservoir, two treatment facilities and two elevated water storage tanks. Chlorine contact is provided at the Jenetta Street site within an oversized discharge main and at the Powerline Road site within the in-ground reservoir. The entire supply works is operated by OCWA.

A summary of the Wasaga Beach water supply system is presented in Table 35.

TABLE 35 –SUMMARY OF WATER SUPPLY SYSTEMS

TOWN OF WASAGA BEACH

System Name	Rated Capacity m^3/d	Historical MDD m^3/d	Serviced Population (Persons)	MDD/c/d m3/cap/d	Spare Supply Capacity m^3/d Historical	Residual Capacity based on historical demand (Persons)	Spare Capacity m^3/d MOE	Residual Capacity based on 0.45 $m^3/c/d$ and MDD factor (MDD) (Persons)
Wasaga Beach	31,415	19,990*	19,549**	1.023	9,426	8,380	14,701	17,194 (1.9)

Footnotes:
- *There are no outstanding Provincial orders related to the water supply facility*
** Represents the highest maximum day demand for 2002-2004.*
***Represents the highest serviced population for 2002-2004.*

For planning purposes the Residual Capacity of the Wasaga Beach Water Supply System could be considered to be a range of between 8,400 to 17,200 persons. However, based on Procedure D-5-1 the historical data would limit the Residual Capacity to 8,400 persons. It should be noted that the serviced population of Wasaga Beach fluctuates dramatically during summer weekends. This is evident by the high historical maximum day factor of 3.13. This accounts for the great extent of the Residual Capacity range.

7.0 STORMWATER MANAGEMENT

7.1 General

There are 185 municipally owned Stormwater Management Facilities across the Study Area. This does not include any facilities located in the Town of Penetanguishene, the Township of Ramara, the Township of Springwater or the Township of Tay, as no information was provided for these areas.

The focus of the Stormwater Management Assessment is to identify any Stormwater Management Ponds that have the potential to be retrofitted or upgraded to meet current standards for quality and/or quantity controls. The Certificates of Approval for all municipally owned facilities within the study area have been requested. This information will allow the year of construction to be identified with focus being placed on facilities that were built prior to and including 1995, being the year the Level 1 Quality Control requirements were published by the Ministry of Natural Resources. Therefore everything following this date is assumed to have Level 1 quality control, unless otherwise noted.

The following sections provide summaries of the facilities and their approximate drainage areas broken down by Municipality along with brief comments on the potential for retrofits of the facilities.

7.2 Township of Adjala Tosorontio

In accordance with the Certificates of Approval provided by the Township there are 3 Stormwater Management Facilities within the Township of Adjala Tosorontio. All 3 facilities are stormwater ponds owned by the Township. The locations of these facilities are shown on the Adjala-Tosorontio Stormwater Management ponds map in Appendix G. All 3 of the facilities meet Level 1 quality control requirements.

7.3 City of Barrie

In accordance with the Certificates of Approval provided by the City there are 146 Stormwater Management Facilities within the City of Barrie. A drawing entitled "Storm Water Pond Locations Revised April 2005" provided by the City indicates that of these facilities, 98 are stormwater management ponds owned by the City with the remaining being 48 privately owned and operated. Approximately 70% of Barrie drains to Lake Simcoe (the remaining drains to the Nottawasaga Valley) however roughly 40% of the City drains uncontrolled into Lake Simcoe and does not have any quantity and/or quality controls.

Of the 98 Municipal facilities, there are 28 that do not meet Level 1 quality control requirements and therefore have potential for retrofit. The remaining 70 ponds as well as around 110 mechanical stormwater devices in the City provide quality control to developed areas. The facilities that do not meet Level 1 requirements are summarized in the following table along with their Certificate of Approval number, year of construction and their approximate drainage area. The locations of these ponds are shown on the Barrie Stormwater Management Ponds map in Appendix H.

TABLE 38 – BARRIE STORMWATER PONDS

Barrie Stormwater Management Ponds			
Constructed Prior to 1995 (inclusive)			
Pond Label	**C of A No.**	**Date**	**Drainage Area (hectares)**
D3	3-0514-92-006	1992	46
G1	3-1191-86-006	1986	12
H3a	3-0662-88-006	1988	5.04
H3b	3-0662-88-006	1988	7.2
H10	3-0224-94-006	1994	1.07
K6	3-1522-89-916	1991	59.8
L1	3-1667-89-916	1991	7.1
L2	3-0294-87-006	1987	63.6
L3	3-0294-87-006	1987	10.4
L4	3-1318-95-006	1995	4.3
L5	3-0975-83-877	1987	37.9
L6	3-0975-83-877	1987	52.4
L7	3-0975-83-877	1987	
L8	3-1995-89-906	1990	66
L16	3-1995-89-906	1990	
L17	3-1995-89-906	1990	
L9	3-1232-89-916	1995	12
L10	3-1667-89-916	1991	9.2
L11	3-1524-90-916	1991	18.9
L12	3-0311-90-006	1990	29.9
L15	3-1235-89-916	1991	19.8
L28	3-0347-95-006	1995	2
R1	3-1264-94-006	1994	17.8
R2	3-1264-94-006	1994	23.6
R3	3-1264-94-006	1994	25
R15	3-0417-91-006	1991	20
T1	3-0815-95-006	1995	17.2
V1	3-0489-87-006	1987	16
Total Area			**584.65**
Percentage of the Total City Area			**7.5%**

In addition to the Facilities described above, the Lake Simcoe Regional Conservation Authority (LSRCA) has identified a number of ponds within the City of Barrie that do not meet Level 1 quality control requirements. These facilities are summarized in the following table along with their Certificate of Approval number, year of construction and their approximate drainage area.

TABLE 39 – BARRIE STORMWATER PONDS IDENTIFIED BY LSRCA

Barrie Stormwater Management Ponds

Identified by LSRCA as Not Meeting Level 1 Quality Control Requirements

Pond Label	C of A No.	Date	Drainage Area (hectares)
L13	3-1734-95-966	1996	10.9
U1	3-0869-97-006	1997	53.5
U2	3-0830-98-006	1998	
W4	3-1745-98-966	1996	12.1
S1	Not Available		16.0
S2	Not Available		20.2
D2	Not Available		8.7
K1	Not Available		59.2
K2	Not Available		52
K3	Not Available		28.0
K4	Not Available		17.3
K5	Not Available		
W1	Not Available		3.0
W2	Not Available		18.1
Total Area			**299**
Percentage of the Total City Area			**4.0%**

7.4 Town of Bradford West Gwillimbury

The Town of Bradford West Gwillimbury has 3 permanent Stormwater Management Facilities and 1 temporary Facility. The Town was unable to provide Certificates of Approval for these facilities. The locations of the 4 facilities are shown on the Bradford West Gwillimbury Stormwater Facilities map in Appendix I.

7.5 Township of Clearview

In accordance with the Certificates of Approval provided by the Township there are 3 Stormwater Management Facilities within the Township of Clearview. Of these facilities, 2 are stormwater ponds owned by the municipality. The township advised that the Villages of Stayner Subdivision has a stormwater pond however, no further information was provided. The locations of the 2 ponds are shown on the Clearview Stormwater Management Ponds map in Appendix J. All of the ponds meet Level 1 quality control requirements.

7.6 Town of Collingwood

In accordance with the Certificates of Approval provided by the Town there are 5 Stormwater Management Facilities within the Town of Collingwood. All 5 facilities are stormwater ponds owned by the Town. The locations of these facilities are shown on the Collingwood Stormwater Management Ponds map in Appendix K.

There is 1 Facility that does not meet Level 1 quality control requirements and has potential for retrofit. This pond is summarized in the following table along with the Certificate of Approval number, year of construction and the approximate drainage area.

TABLE 40 – COLLINGWOOD STORMWATER PONDS

Collingwood Stormwater Management Ponds			
Constructed Prior to 1995 (inclusive)			
Pond Label	**C of A No.**	**Date**	**Drainage Area (hectares)**
5	3-1478-95-006	1995	35.6
Total Area			**36**

7.7 Township of Essa

In accordance with the Certificates of Approval provided by the Township there are 8 Stormwater Management Ponds within the Township. All 8 are owned by the Township. The locations of these facilities are shown on the Essa Stormwater Management Ponds map in Appendix L. All 8 of the facilities meet Level 1 quality control requirements.

7.8 Town of Innisfil

In accordance with the Certificates of Approval provided by the Town there are 17 Stormwater Management Ponds within the Town of Innisfil. Of these ponds, 16 are owned by the Town with the remaining 1 being privately owned and operated. The locations of these ponds are shown on the Innisfil Stormwater Management Ponds map in Appendix M.

Of the 16 Municipal facilities, there are 5 that do not meet Level 1 quality control requirements and have potential for retrofit. These ponds are summarized in the following table along with their Certificate of Approval number, year of construction and their approximate drainage area.

TABLE 41 – INNISFIL STORMWATER PONDS

Innisfil Stormwater Management Ponds			
Constructed Prior to 1995 (inclusive)			
Pond Label	**C of A No.**	**Date**	**Drainage Area (hectares)**
16	3-1484-89-006	1989	15
23	3-1520-89-006	1989	16
8	3-0825-91-007	1993	6
25	3-0662-89-006	1989	14.4
7	3-0813-94-006	1994	14
Total Area			**65**

7.9 Town of Midland

In accordance with the Certificates of Approval provided by the Township there are 3 Stormwater Management Facilities within the Town. All 3 are stormwater ponds owned by the Town. The locations of these facilities are shown on the Midland Stormwater Management Ponds map in Appendix N. All 3 of the facilities meet Level 1 quality control requirements.

7.10 Town of New Tecumseth

In accordance with the Certificates of Approval provided by the Town there are 10 Stormwater Management Facilities within the Town of New Tecumseth. All 10 of these facilities are stormwater management ponds owned by the Town. The locations of these facilities are shown on the New Tecumseth Stormwater Management Ponds map in Appendix O.

Of the 10 municipal ponds, there are 2 that do not meet Level 1 quality control requirements and have potential for retrofit. These facilities are summarized in the following table along with their Certificate of Approval number, year of construction and their approximate drainage area.

TABLE 42- NEW TECUMSETH STORMWATER PONDS

New Tecumseth Stormwater Management Ponds			
Constructed Prior to 1995 (inclusive)			
Pond Label	**C of A No.**	**Date**	**Drainage Area (hectares)**
7	3-0374-94-006	1994	15.5
9	3-0606-89-926	1992	16.01
Total Area			**32**

7.11 City of Orillia

In accordance with the information provided by the City there are 10 municipally owned stormwater management facilities within the City of Orillia. Of these facilities, 4 are stormwater management ponds. The locations of these ponds are shown on the Orillia Stormwater Management Ponds map in Appendix P.

There was insufficient data to determine whether ponds 1, 3 and 4 meet Level 1 quality control requirements or not. However, based on the Certificate of Approval, pond 2 meets Level 1 quality control.

7.12 Township of Oro-Medonte

In accordance with the Certificates of Approval provided by the City there are 20 Stormwater Management Facilities within the Township of Oro-Medonte. Of these facilities, 18 are stormwater management ponds owned by the Township with the remaining 2 being privately owned and operated. The locations of these facilities are shown on the Oro-Medonte Stormwater Management Ponds map in Appendix Q.

Of the 18 Municipal facilities, there are 14 that do not meet Level 1 quality control requirements and have potential for retrofit. These facilities are summarized in the following table along with their Certificate of Approval number, year of construction and their approximate drainage area.

TABLE 43 – ORO-MEDONTE STORMWATER PONDS

Oro-Medonte Stormwater Management Ponds			
Constructed Prior to 1995 (inclusive)			
Pond Label	**C of A No.**	**Date**	**Drainage Area (hectares)**
14	3-1061-93-006	1993	18
15	3-1061-93-006	1993	21
16	3-1061-93-006	1993	18
1	NA	1987	7
2	NA	1987	7
4	NA	1995	15
7	NA	1993	12
8	NA	1990	18.4
10	NA	1992	24
11	NA	1992	
13	NA	1993	9
18	NA	1988	16.32
19	NA	1988	28
Total Area			**194**

7.13 Township of Severn

In accordance with the Certificates of Approval provided by the Township there are 6 Stormwater Management Facilities within the Township of Severn. All 6 of the facilities are stormwater ponds owned by the Township. The locations of these ponds are shown on the Severn Stormwater Management Ponds map in Appendix R.

Of the 6 Municipal ponds, there are 3 that do not meet Level 1 quality control requirements and have potential for retrofit. These facilities are summarized in the following table along with their Certificate of Approval number, year of construction and their approximate drainage area.

TABLE 44 – SEVERN STORMWATER PONDS

Severn Stormwater Management Ponds			
Constructed Prior to 1995 (inclusive)			
Pond Label	**C of A No.**	**Date**	**Drainage Area (hectares)**
1	3-0311-93-006	1993	18
2	3-0311-93-007	1994	
3	3-0311-93-008	1995	
Total Area			**18**

7.14 Township of Tiny

In accordance with the information provided by the Township there are no Stormwater Management Ponds within the Township of Tiny.

7.15 Town of Wasaga Beach

In accordance with the Certificates of Approval provided by the Town there are 7 Stormwater Management Facilities within the Town of Wasaga Beach. Of the 7 facilities, 6 are stormwater ponds owned by the Township. The locations of these ponds are shown on the Wasaga Beach Stormwater Management Ponds map in Appendix S. All 6 ponds meet Level 1 quality control requirements.

8.0 PRIVATE WASTEWATER AND WATER SYSTEMS

Based on the information received from the Ministry of Municipal Affairs & Housing and the Ministry of Environment there are several private systems within the study area. A list of these systems is provided in Tables 36 and 37, Private Wastewater Systems and Private Water Systems.

TABLE 36 – PRIVATE WASTEWATER SYSTEMS

Site Location	Certificate of Approval No.	Date	Average Daily Flow m3/day	Peak Flow Rate m3/day
Town of New Tecumseth				
Green Briar Retirement Community	3-0815-97-006	July 4, 1997	890	1,958
Township of Oro-Medonte				
Big Cedar Estates	1491-6HWHMR	November 21, 2005		108
Township of Ramara				
Ontario Educational Leadership Centre, Longford Mills	2500-5Y4L3Y	April 26, 2004	137	273

TABLE 37- PRIVATE WATER SUPPLY SYSTEMS

Site Location	Certificate of Approval No.	Date	Rated Supply Capacity m3/day
Town of New Tecumseth			
Briar Hill West, Lot 9, Conc. 14	8907-5DTRBW	January 20, 2003	1,342
Cable Bridge Water Supply, Lot 10/11, Conc. 14	7-0069-97-006	May 15, 1997	1,245
Cable Bridge Retirement Community, Lot II, Conc. 14	7-00649-92-006	October 26, 1992	518
Township of Ramara			
Ontario Leadership Centre, Longford Mills	4531-5CLHBY	September 13, 2002	90
Township of Severn			
Silver Creek Mobile Home Park	7-1203-97-986	July 27, 1998	64

9.0 ENVIRONMENTAL SCAN-TRANSPORTATION NETWORK

9.1 INTRODUCTION

The Simcoe study area is supported by transportation systems and services that address several distinct travel markets involving the movement of people, goods and services. Travel within the county and between the county and adjacent regions is augmented by 'through' travel between southern Ontario and northern Ontario/western Canada as the key road and rail corridors all pass through Simcoe.

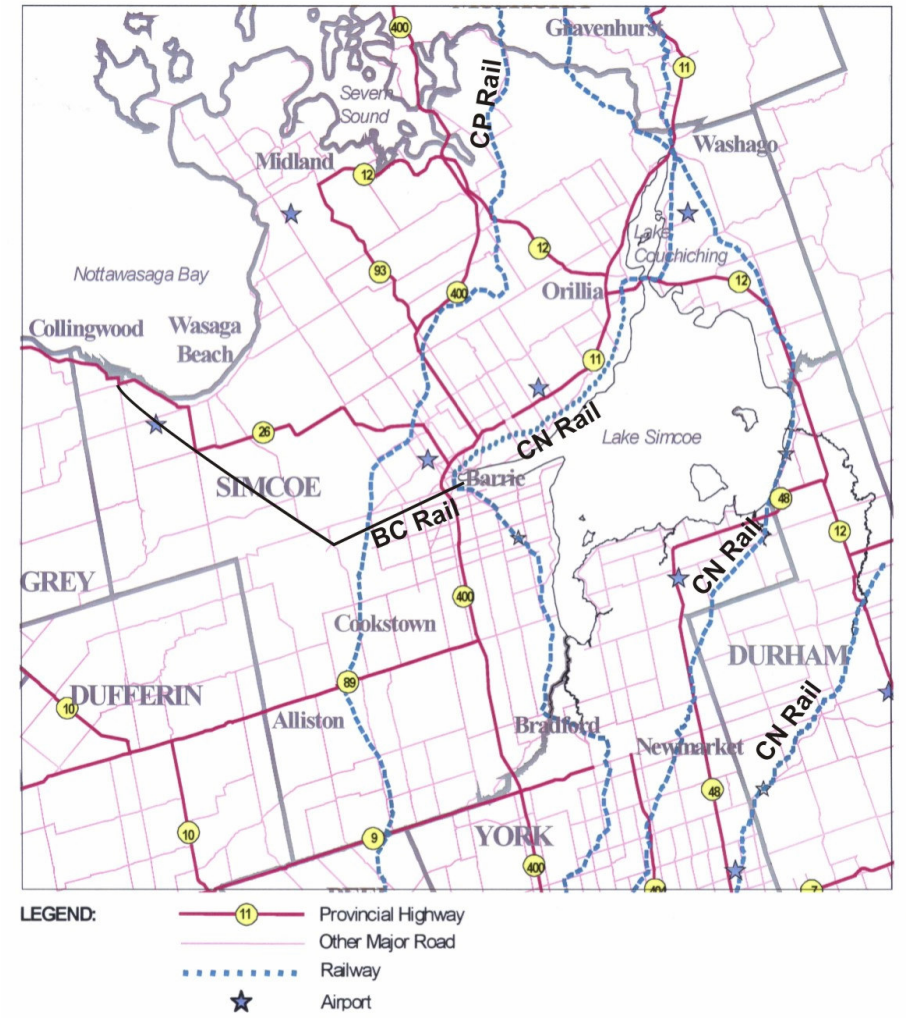
Fortunately, there are many recent transportation studies which describe the transportation network and assess its ability to address current and future travel in the study area, including the following:

- *Simcoe Area Transportation Network Needs Assessment* (URS Cole Sherman, June 2002);
- *Demographic & Economic Trends Shaping the Future of Highway Travel in Simcoe* (Hemson Consulting, June 2001);
- *City of Barrie Transportation Study* (Read, Voorhees & Associates, April 1999);
- the City of Barrie's 2003 Development Charges update;
- Simcoe County's 10-year capital works program for roads and bridges (2005);
- the City of Orillia transportation master plan (recent);
- the Georgian Triangle Area Transportation Study (June 2001); and
- Recent Environmental Assessment (EA) reports for specific infrastructure projects, including GO Transit rail service extension, the Bradford Bypass, widening of Highway 400, capacity expansion of Highway 11, a realignment of Highway 26, and various municipal road facilities including City of Barrie roadways crossing Highway 400.

The modes and services under consideration include provincial highways, GO Transit, municipal roads, municipal transit, intercity public transportation, air services and freight rail operations. All modes except marine transportation are significant parts of the total network. ***Figure 1*** illustrates the transportation network in the Simcoe area.

In the first section of this environmental scan, the current status and future plans for each mode/service are summarized based on available documentation and interviews with key staff. In particular, growth-related or expansion issues are highlighted. The second section reviews existing reports and modeling data to describe origin/destination patterns and capacity issues. The third section is a gap analysis which addresses whether existing/planned capacity is sufficient to handle approved growth and, if not, identifies transportation needs to address the approved growth.

FIGURE 1: EXISTING TRANSPORTATION NETWORK



Source: Simcoe Area Transportation Network Needs Assessment Draft Technical Report, 2002

Maintenance, rehabilitation and reconstruction needs are not detailed in this environmental scan. All transportation systems have considerable maintenance and rehabilitation needs which are exacerbated by growth and should be addressed as a first priority. In addition, growth in travel on the road systems requires the adoption of higher design standards and operational improvements (e.g., turning lanes, signalization, etc.) even before full lane expansion is triggered, since design standards and roadway conditions which may be considered to be acceptable on low-volume, two-lane roads may pose operational problems or safety risks at higher volumes.

An excellent description of the various elements in the transportation network is contained in the June 2002 report, *Simcoe Area Transportation Network Needs Assessment*, completed by URS Cole Sherman for the Ministry of Transportation of Ontario (MTO). This study also notes that over 99% of trips in the study area are by car and that travel volumes are expected to double over the next 20 to 30 years.

9.2 CURRENT STATUS / PLANS FOR THE TRANSPORTATION NETWORK

9.2.1 Provincial Highways

The provincial highway network in Simcoe includes Highways 400 and 11 along with Highways 26, 12, 93, 89, and 9. Also of interest are proposed concepts for a GTA North Transportation Corridor (Highway 427 extension) and an extension of Highway 404 including a Bradford Bypass and a connection to Highways 12 and 48. Major context documents include the Hemson study of 2001 (*Demographic & Economic Trends Shaping the Future of Highway Travel in Simcoe County*), the previously-noted URS study of 2002, and more recent growth plans from the Ontario Ministry of Public Infrastructure Renewal (PIR). The URS 2002 study conclusions would need to be reviewed and updated based on the Hemson Growth Outlook for the Greater Golden Horseshoe (2005) and the proposed Growth Plan. Also, the further use of Transportation Demand Management (TBM) tools as a way to reduce travel demand and solve deficiencies needs to be addressed. Current highway status is detailed below.

Highway 400 — The section from Canal Road to Highway 89 has Environmental Assessment (EA) approval for an ultimate 10-lane cross-section; it will likely be first widened to 8 lanes with any structures reconstructed to accommodate 10 lanes.

For the section from Highway 89 to the split with Highway 11, a study has been submitted to the Ministry of the Environment (MOE) for widening to an ultimate 10-lane cross-section. A widening to 8 lanes is likely within the 10-year horizon. Within Barrie, Highway 400 is planned to be widened to 8 lanes from the south Barrie limits to Essa Road, 10 lanes from Essa Road to Bayfield Street, and 8 lanes from Bayfield Street to the north Barrie limits.

A feasibility study (pre-EA) is being initiated to look at the potential of adding High-Occupancy Vehicle (HOV) lanes to the Highway 400 corridor from Toronto northerly to the split with Highway 11. This study will also review carpool lot provisions.

North of Barrie, no widening of Highway 400 is foreseen for a considerable time.

All interchanges through Barrie will require infrastructure investments through upgrades to be completed during planned widening/reconstruction activities or in response to development-driven initiatives. Barrie has recently completed Phase 2 of a Municipal Class EA that recommends new overpasses at Salem Road / Lockhart Road and at Harvie Road / Big Bay Point Road. New or major upgrades to interchanges require technical feasibility assessments and discussion of potential cost sharing among the province, municipality, and developers. An engineering feasibility study is currently underway for a Harvie/Big Bay Point Road interchange.

The Canal Road interchange is recommended for closure. There is potential municipal/developer interest in a new interchange just north of Canal Road. There is also potential interest in a new Highway 400 interchange in Innisfil, possibly located at the 10th Line.

Highway 11 — The section from Barrie to Gravenhurst was recently studied by MTO Southwest Region. This was a pre-EA planning study and no preliminary design work was undertaken. A major

new corridor is not proposed and the recommendation is to work within the existing corridor for widening, local bypasses and improvements to access control and interchanges.

Highway 26 — The section from west of Wasaga Beach to the east side of Collingwood has an approved new alignment (diversion) which has been graded; however, further construction is on hold by MTO.

A pre-EA study is underway for bypasses of Collingwood and Stayner. The *Georgian Triangle Area Transportation Study* recommended a corridor in the vicinity of Poplar Sideroads for a full Collingwood bypass; however, Collingwood has now expressed a preference for an alignment further to the south.

There are no plans for capacity improvements for the section from Stayner to Barrie.

Highway 12 — The section through Orillia from Highway 11 to the Narrows was reviewed for immediate needs. No expansion work is anticipated on this highway within Simcoe County. MTO has plans for widening from two to four lanes along the section between Gamebridge and Highway 48, south of Simcoe County.

Highway 93 — No capacity improvements are identified for this highway.

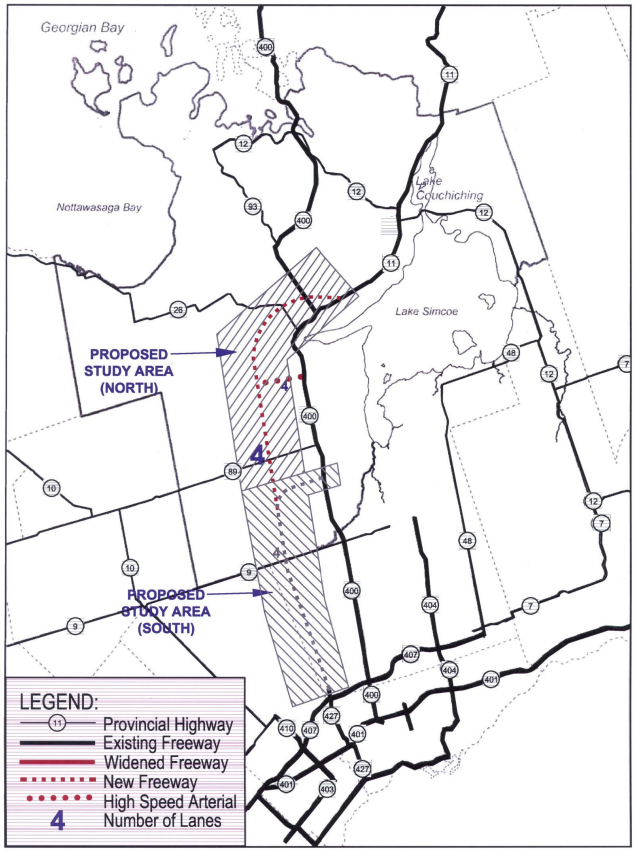
Highway 89 — A pre-EA study for the section from Highway 400 through Alliston to Rosemount will look at the need for widening from 2 to 4 lanes and a possible Cookstown bypass. The local municipality would like consideration of an Alliston bypass.

Highway 9 — There is currently no planning activity underway for changes to the highway.

Bradford Bypass and Link to Highways 12/48 — A Highway 404 extension to Ravenshoe Sideroad was approved and will be scheduled. Provincial EA approval was obtained for further extensions north linking to Highways 12 and 48 and a Bradford bypass linking to Highway 400.

GTA North Transportation Corridor — This concept was developed by the province for a transportation corridor parallel to Highway 400 involving the extension of Highway 427, with the first stage to Highway 9 and subsequently to a connection to Highway 11 north of Barrie. Also included was a connection to the proposed Bradford Bypass and a South Barrie arterial to link the new corridor with Highway 400 and the City of Barrie. These proposed links are illustrated in ***Figure 2*** below. The concept is no longer active with the province. The GTA North Corridor included elements of HOV operation and interregional transit services which are now covered by an HOV study in the Highway 400 corridor and the extension of GO Rail services to Barrie.

FIGURE 2: HIGHWAY 427 EXTENSION / GTA NORTH TRANSPORTATION CORRIDOR



Source: Simcoe Area Transportation Network Needs Assessment Draft Technical Report, 2002

9.2.2 GO Transit Rail Services

Infrastructure investment from all three levels of government including municipal, provincial, and federal are being coordinated to extend GO Rail commuter services from Bradford to Barrie. Provincial EA approval (January 2005) was received for extension of GO Rail commuter services from Bradford to Barrie. Work is underway to obtain federal approval, which is anticipated in March 2006. Service will involve four peak period trains in the morning and four trains in the evening. Full track upgrades and crossing protection will be provided in the corridor.

A preliminary design has been completed and a station will be built at Mapleview Drive. Other possible stations include downtown Barrie and in Innisfil at Bellair Beach Road. Provision of such stations is subject to further discussions/negotiations but would be covered under current environmental approvals. A GO train layover facility will be located north of Mapleview Drive on Lakeshore Drive.

9.2.3 Municipal Roads

County of Simcoe — The County has a 10-year roads and structures plan under development. Many roads require upgrades for rehabilitation, operational improvements, and to bring them up to appropriate design standards. The 10-year capital plan is estimated at $260 million. Concerning expansion growth pressures, the priority projects over the next ten years are as follows:

- County Road 90 from Barrie to Angus: An EA is underway for a widening to four lanes.
- County Road 88 from Highway 400 toward Bradford: There is a proposal to widen the road from two to four lanes. An EA has not been completed, pending agreement with Bradford for their section (east of the 10th Sideroad).
- Innisfil Beach Road from Highway 400 easterly: There is a proposal to widen the road from two to four lanes. An EA has not been conducted.

After these three priorities, there are several competing expansion projects involving road widenings from two to four lanes (Yonge Street / County Road 4 in the vicinity of both Barrie and Bradford; Innisfil Beach Road / County Road 21 from Highway 400 westerly to Thornton; County Road 27 from County Road 90 south to Thornton. An EA is also underway for possible truck climbing lanes at various locations on County Road 50 between Highways 9 and 89.

Also, growth in Barrie and Innisfil may create pressures for widening both County Road 30 (Essa Road) and County Road 54 (Huronia Road / 10th Sidroad) coming south from Barrie.

Possible new county road alignments include a current EA for a County Road 10 bypass in the industrial park near Highway 89, and a Bond Head bypass for County Road 27 to support development (no EA has been conducted yet).

No new county road interchanges are foreseen with Highway 400. Current interchanges are expected to be upgraded as part of MTO widening/rehabilitation projects.

City of Barrie — The most recent transportation study was in 1999; however, a major update of the multi-year road plan occurred during the preparation of the 2003 Development Charges Update. The only new major road alignment is the completion of Ferndale Drive between Tiffin Street and Bishop Drive (north of Ardagh Road), which has EA approval and has been tendered. Other proposed collector road extensions include the extension of Bryne Drive from south of Essa Road to north of Caplan Avenue, and the extension of Commerce Park Drive from Bryne Drive to Veterans Drive, both of which will likely be driven by area development.

The City recently completed a Municipal Class EA study of all their roads crossing Highway 400 within the city limits. Along with recommended road widenings, they have recommended two new road crossings, at Harvie Road / Big Bay Point Road and at Salem Road / Lockhart Road. EA studies to assess the need for interchanges at these two crossings will be carried out separately; the Harvie Road study is currently underway.

There are many road expansion projects planned within the City of Barrie, mostly from two to four lanes or from four to six lanes. Complete details are in the ten-year road program as outlined in the

2003 DC Study Update. It should be noted that the actual road program is subject to annual adjustments to the ten-year capital program.

Within the 2003 DC Study Update, the one- to five-year program is estimated at $86.5 million (2003$). The following road projects have construction values in excess of $1 million and are scheduled for the one- to five-year period:

- Anne Street
- Ardagh Road
- Big Bay Point Road
- Cundles Road
- Duckworth Street
- Dunlop Street
- Essa Road
- Ferndale Drive
- Harvie Road
- Huronia Road
- Lakeshore Drive
- Mapleview Drive
- Tollendale Mill Road
- Toronto Street
- Veterans Drive
- Yonge Street

The five- to ten-year program is valued at $73.5 million and includes major expansion projects on the following roadways:

- Anne Street
- Big Bay Point Road
- Duckworth Street
- Essa Road
- Fairview Drive
- Mapleview Drive
- St. Vincent Street
- Sunnidale Road
- Wellington Street

City of Orillia — Orillia recently completed a roads master plan; the major expansion projects are summarized as follows for the one- to ten-year period:

- Coldwater Road from West Street to Westmount Drive: widening from two to four lanes
- West Street widening from Coldwater Road to Borland Street, and from Borland Street to Fittons Road
- Atherley Road from Gill Street to East Street: additional westbound lane

For the 10- to 20-year period, Memorial Avenue, West Street, and Laclie Street would be expanded. Several projects are noted as being required by future development including the widening and extension of West Ridge Boulevard; extensions of Woodside Drive and King Street; and the widening of Murphy Road from Highway 12 to the city limits.

9.2.4 Municipal Transit

Barrie, Orillia, Midland and Collingwood operate municipal transit services within defined urban transit service areas. Simcoe residents and employers located outside the urban service area do not have access to public transit. Local transit connections to GO commuter rail services will also be required. Such transit services may require more equipment and operating agreements between municipal jurisdictions. In addition to regular local transit services, Barrie, Collingwood, Midland and Orillia offer accessible transit services for persons with disabilities, which will also be subject to growth pressures; such special services tend to be most effectively delivered on an area-wide basis.

9.2.5 Intercity Public Transportation

Intercity bus carriers provide scheduled and charter services within Simcoe and link areas in Simcoe to other regions. VIA and the Ontario Northland Railway (ONR) provide long-distance passenger rail services which pass through Simcoe with a stop at Washago. GO Transit currently offers hourly bus services from Barrie to Bradford and Newmarket, and Greyhound operates bus service from Barrie to Yorkdale Mall in Toronto via Highway 400. There may be an opportunity to connect the Highway 400 service to York Region's VIVA service and GO Transit's proposed Highway 407 transitway corridor at Highway 7, allowing intercity transit connections between the Simcoe area and York Region.

While important services, potential impacts of local growth on VIA, ONR, and private-sector intercity bus services should not require further consideration in this study, which deals with infrastructure requirements under provincial and municipal jurisdiction. GO Transit bus service changes will need to be assessed in view of the new GO rail expansion to Barrie, as well as the potential markets to serve commuter transit needs between Simcoe and the GTA.

9.2.6 Air Services

The Lake Simcoe Regional Airport (LSRA) is owned by Oro-Medonte, Barrie and Orillia. The LSRA commenced service in 1992 and has a 5,000-foot runway, modern terminal, apron facility, tie down and hangar facilities, aircraft/airport support services (fuelling, global positioning, marshalling, catering, car rental, hotel rental, and pilot lounge). The airport can handle commercial jets. LSRA has been designated as a "Commercial Point of Entry" and as such can accept both international passengers and freight. Local companies use the airport for executives and freight, and Medevac flights are an important service linking to local hospitals, including Royal Victoria Hospital and a future Regional Cancer Centre. Expansion plans include GPS Precision Approach (Winter 2006), Parallel Taxiway, and Servicing of the Commercial Development Area.

There are several local airfields (Mara, Midland, Collingwood, Barrie, and Base Borden) in Simcoe. For all airports, compatibility with adjacent uses is a potential growth issue.

9.2.7 Freight Rail Services

Both CP and CN have major freight rail operations passing through the study area. CP provides service to the Honda plant in Alliston and other Simcoe industries. The Barrie Collingwood Railway is a shortline operation partnered with CP and providing commodity services to many customers in the study area. Compatibility of new uses with existing rail corridors and operations is a growth-related issue.

CN and CP 'Through' Operations

Without minimizing the importance of the freight rail 'through' operations, the subject matter of this study suggest that only a brief treatment may be required. Growth in freight rail traffic through Simcoe will be accommodated in existing rail corridors with expansion of sidings, creation of more

'train meet' passing locations, and incremental extension of double tracking. Major, new intermodal facilities or rail classification yards are unlikely to be required in Simcoe.

Barrie Collingwood Railway (BCR)

The BCR utilises approximately 100 km of rail corridor, including 30 km of the Newmarket subdivision which is providing for GO Rail extension to Barrie. BCR operates as a shortline on 65 km of track. It is interconnected with CP and has the potential to become interconnected with CN as a result of the track upgrades for GO Rail. BCR primarily handles commodities such as raw lumber, wood products, bentonite, chemicals and plastics for a variety of clients. Service to a proposed ethanol plant near Highway 400 would dramatically increase rail car volumes.

Plans exist to construct additional track (mostly sidings) and rehabilitate older track. All proposed new facilities are within or near the existing rail corridor and designated industrial areas. As such, environmental approvals should not be an issue.

Impacts of growth on the BCR operations include requirements to share costs of improvements at road/rail crossings when roads are being expanded; increasing public concerns for noise, vibration and intrusion due to train operations; and achieving adequate setbacks from the corridor for various new developments. There is also a concern that land zoned industrial and suitable for rail access is being lost to Big Box developments which limits the opportunity for some new, rail dependant industries to locate in the area.

9.2.8 Origin/Destination Patterns and Road Network Capacity Issues

Traffic projections on the provincial highway network in the Simcoe study area have already been conducted and assessed by URS Cole Sherman as part of the *Simcoe Area Transportation Network Needs Assessment Draft Technical Report* (June 2002), completed for the Ministry of Transportation of Ontario (MTO). The URS study in turn relied on forecasts for population, employment, and recreational growth completed by Hemson Consulting in June 2001 (*Demographic & Economic Trends Shaping the Future of Highway Travel in Simcoe County*).

The URS study generated an origin-destination (O-D) matrix for trips to and from Simcoe based on O-D surveys conducted in 2000 for the URS study. The results of these surveys were combined with 2001 Transportation Tomorrow Survey (TTS) O-D data to derive PM peak period and Sunday peak period origin-destination matrices. The year 2000 matrices were then projected to future horizon years by applying the Hemson growth forecasts. The aggregated O-D pairs in Table 45 have been extracted from the URS report.

TABLE 45- PEAK PERIODS

Weekday PM Peak Period *(3 hours)*:

From	To	2000	2011	2021	2031	Annual Growth
GTA	Barrie	4,380	5,880	6,360	8,100	2.0%
GTA	Collingwood / Wasaga	420	510	610	710	1.7%
GTA	Penetang / Midland	210	300	310	420	2.3%
GTA	Simcoe (other)	1,900	2,330	2,760	3,350	1.8%
GTA	Muskoka / Parry Sound	1,800	2,340	2,450	2,990	1.6%
Simcoe	GTA	7,140	9,870	11,830	13,490	2.1%
All locations	Barrie	9,790	12,930	14,370	18,120	2.0%
All locations	Orillia	880	1,070	1,330	1,640	2.0%
All locations	Collingwood / Wasaga	1,280	1,740	2,100	2,540	2.2%

Sunday PM Peak Period *(3 hours)*:

From	To	2000	2011	2021	2031	Annual Growth
Barrie	GTA	970	1,370	1,410	1,570	1.6%
Collingwood / Wasaga	GTA	1,290	1,700	2,060	2,250	1.8%
Penetang / Midland	GTA	1,260	1,560	1,810	1,920	1.4%
Simcoe (other)	GTA	6,010	7,700	8,850	9,580	1.5%
Muskoka / Parry Sound	GTA	5,730	7,110	7,920	8,390	1.2%
GTA	Simcoe	2,860	3,770	4,340	4,810	1.7%
All locations	Barrie	3,580	5,170	5,520	6,690	2.0%
All locations	Orillia	650	790	820,	910	1.1%
All locations	Collingwood / Wasaga	1,530	2,160	2,720	3,160	2.4%

Note: Trips to Barrie exclude local trips.
Source: Simcoe Area Transportation Network Needs Assessment Draft Technical Report, 2002

These O-D pairs indicate that the greatest weekday PM peak period demand is comprised of trips to Barrie (approaching 10,000 peak period trips), of which approximately 45% have an origin within the GTA. In addition, another 2,500 vehicles travel from the GTA to other locations within Simcoe County, and approximately 2,000 vehicles travel through Simcoe County between the GTA and Muskoka / Parry Sound. In particular, the Hemson study noted a growing number of new Barrie residents commuting to employment areas in York Region. There is also a significant demand for PM peak period travel in the opposite direction, from Barrie and Simcoe County to the GTA (increasing from 7,140 trips in 2000, to 13,490 trips in 2031).

For the Sunday PM peak period, the O-D pairs reflect the dominance of southbound traffic, particularly recreation-based trips from Simcoe and points north (Muskoka, Parry Sound, etc.) to the GTA. These O-D pairs represent 15,260 peak period trips in 2000, increasing to 23,710 trips in 2031, of which slightly more than two thirds are "through" trips originating north of Simcoe County traveling to the GTA, and the remainder are trips from Simcoe County.

The URS study then forecasted design hour volumes (DHV) at key roadway locations/screenlines by determining the existing DHV and applying a growth factor obtained from weekday and Sunday

PM peak hour traffic models. Table 46 below summarizes the existing and projected DHV for the assessed roadway locations, compared to the existing roadway capacity.

TABLE 46- EXISTING AND PROJECTED DHV

Location	Capacity (one way)	2000 DHV	2011 DHV	2021 DHV	2031 DHV
Hwy 10 south of Primrose	2,500*	1,100	1,400	1,600	1,800
Hwy 400 north of Hwy 89	5,400	5,600	6,700	7,300	8,900
Hwy 26 west of Collingwood	2,000*	400	700	800	900
Hwy 26 at Midhurst	2,850	1,200	1,500	1,800	2,100
Hwy 400 at Dalston	3,600	2,400	3,000	3,400	3,600
Hwy 11 at Crown Hill	3,600	3,500	4,100	4,700	5,200
Hwy 11 at Washago	2,700	3,400	4,000	4,600	5,100
Hwy 12 north of Hwy 48	2,000*	1,000	1,200	1,500	2,000
Hwy 400 north of Essa	5,600	5,800	7,200	8,600	10,200
Hwy 400 north of Hwy 9	5,600	5,100	6,000	6,700	8,000
Hwy 9 west of Hwy 400	2,500*	800	1,000	1,200	1,400
Hwy 89 at Cookstown	2,500*	900	1,100	1,400	1,700
Hwy 93 at Waverly / Hwy 27	2,000*	500	610	700	750

**Two-lane highways; capacity refers to two-way capacity*
Source: Simcoe Area Transportation Network Needs Assessment Draft Technical Report, 2002

The URS study projected a significant future capacity deficiency across screenlines along the Highway 400 corridor through and south of Barrie. This deficiency is driven by summer weekend recreation-based traffic (weekday AM and PM peak commuter traffic demands are lower). The table above indicates that the corridor is currently considered to be at capacity, with long-term demand for an additional two freeway lanes per direction south of Barrie, and an additional three freeway lanes per direction within Barrie. The study identified a preferred alternative for this corridor consisting of a four-lane extension of Highway 427 from its current terminus at Highway 7, parallel to Highway 400 and skirting the Barrie planned urban limits, interchanging with both Highways 400 and 11 just north and east of Crown Hill. It was noted that this extension may be financed by applying tolls to the new highway. In addition, the study recommended widening Highway 400 from six to eight lanes from Highway 11 southerly. This alternative was preferred for providing an alternate, parallel major route to aid in traffic management, its potential for higher design standards particularly within Barrie, and its ability to facilitate Barrie's further westward development. A second north/south corridor linking southern Ontario to northern Ontario and western Canada would give added security for accommodating all future road travel.

The URS study also identified a need for additional capacity on Highway 11 north of Barrie to accommodate summer weekend demand. Highway 11 has lower capacity and higher existing and projected future volumes than Highway 400 north of Barrie. The study recommended that, wherever possible, capacity should be increased by widening or by restricting access (i.e., increasing basic lane capacity) rather than by bypassing Highway 11 on a new alignment to the north and west.

Other capacity deficiencies projected included Highway 26 between Highway 27 and Collingwood (not shown on table above). This deficiency is partially alleviated by the planned Highway 26 realignment between Collingwood and Wasaga Beach. A capacity deficiency on Highway 12 north of Highway 48 was projected; this deficiency will be addressed by the planned widening of Highway 12. Minor capacity deficiencies on Highways 10, 89, and 93 were also identified but were not deemed to be as critical as the deficiencies on the Highway 400, Highway 11, and Highway 26 corridors.

9.2.9 Summary of Growth and Transportation Issues

A number of issues related to transportation and growth in the Simcoe area have arisen from this review of existing reports, analysis of data, and discussion with staff. In particular, there are modeled capacity deficiencies on Highway 400 and other provincial highways that need to be addressed. Further, protection of a long term corridor for good movement which parallels Highway 400 around Barrie should be considered. The ability of a single Highway 400 corridor to effectively accommodate all future local, inter-regional and 'through' travel demands and economic activity needs to be considered.

Other growth related issues include how to ensure the compatibility of all transportation infrastructure and corridors (road, rail, air) with adjacent land uses (e.g., setbacks; zoning; noise by-laws; truck routes), how best to connect the municipal roadway network to existing and new highway corridors, and determining the environmental acceptability (social and natural) of the various expansion projects and bypass proposals.

Extensive macro-level modeling has already been conducted to determine the provincial highway network requirements to accommodate future growth, largely related to medium- to long-distance travel to, from, within, and through Simcoe County. The most significant capacity deficiencies are expected on Highway 400 south of Highway 11, and to a lesser degree on Highway 11 north of Barrie. Since these deficiencies are driven primarily by weekend recreational demand, preserving efficient 'through' travel to northern Ontario will be a key issue.

Additional modeling needs to be conducted to better understand the future travel demands on the County road network and determine whether the existing capital plan will address the travel generated by approved growth. Additional, expansion projects may be required and planned work may need to be brought forward. While the City of Barrie has undertaken transportation modeling to the 20-year horizon, additional infrastructure needs will arise beyond that horizon.

Another growth-related issue involves the role of local and inter-regional transit. GO rail stations still need to be finalized, including how to implement local transit connections to those stations. The municipalities will need to determine how best to provide expanded transit service beyond current urban service areas and across municipal boundaries to respond to continued greenfields development. Inter-regional bus transit opportunities will need to be developed by GO Transit to serve commuters between Simcoe and the GTA, including York Region.

Concerns have been raised over how and where to implement growth; in particular, how to retain industrial land accessible by freight rail operations for new industry opportunities, rather than utilizing such lands for commercial development not dependent upon rail accessibility.

Finally, for all modes and services, projected capital and operating costs present a significant concern, specifically how efficient and affordable the transportation servicing is for new development, and the affordability of maintaining and rehabilitating existing infrastructure in addition to financing expansion needs.

10.0 CAPACITY ASSESSMENT/GAP ANALYSIS

10.1 GAP ANALYSIS METHOD

The assessment of existing capacity deficiencies (gaps) in wastewater and water servicing is based on the capacities of the existing facilities as outlined in earlier sections of this report. Tables have been prepared which list the various water and wastewater facilities, along with residual capacity (persons), Additional Approved Population Potential (AAPP) and capacity gaps (both in persons and in m^3/d). The Tables are provided in Appendix T- Wastewater Treatment Gap Analysis (Based on Existing Infrastructure) and V- Water Supply Gap Analysis (Based on Existing Infrastructure).

Some municipalities have completed Class Environmental Assessments to expand servicing capacities, or have begun final design. Tables have been prepared to identify the water and wastewater capacity gaps after the implementation of committed capacity increases as outlined in the Class Environmental Assessments and Design Briefs. The future capacity gap assessments are provided in Appendix U- Wastewater Treatment Gap Analysis (Based on Existing + EA Approved Infrastructure) and Appendix W- Water Supply Treatment Gap Analysis (Based on Existing + EA Approved Infrastructure).

It is noted that there may be differences between water and wastewater approved development population numbers. This is due to the fact that most water and wastewater systems do not service the same areas in any given municipality. Further detail on this matter is available in the Communities Report.

Additional Approved Population Potential (AAPP) numbers were derived by assessing existing planning information and by allowing for two scenarios, namely; with no intensification and with a high level of intensification.

The capacity gap assessments for population were estimated by subtracting the AAPP figures from the residual capacities. Those populations were converted to hydraulic capacity numbers by multiplying the AAPP by the historical per capita demand figures. The gap numbers were rounded to the nearest 50 m^3/d.

The capital costs to service the capacity gaps were estimated using a rate per cubic meter that is common to the suggested method of expansion. Tables 47 and 48 provide a description of the works that are included in the rates.

TABLE 47 – WASTEWATER TREATMENT EXPANSION RATES

Type of Expansion	Estimated Cost per Cubic Meter ($/m3)	Description of Works Included
Expansion of existing wastewater treatment plant that provides a secondary level of treatment.	$2,200	Includes Engineering Design & Approvals (EA): Includes new Site; Includes Secondary Treatment; Includes expansion to outfall; Excludes expansion of collection system;
Expansion of existing wastewater treatment plant that provides a tertiary level of treatment.	$2,500	Estimate based upon the City of Barrie approved EA Document
Construction of a new facility that provides a secondary level of treatment	$2,800	Includes Engineering Design & Approvals (EA): Includes new property; Includes Secondary Treatment; Includes new outfall; Excludes expansion of collection system;
Expansion of existing wastewater treatment plant that provides a tertiary level of treatment.	$3,200	Includes Engineering Design & Approvals (EA): Includes Tertiary Treatment; Includes outfall expansion; Excludes expansion of collection system;

TABLE 48 –WATER SUPPLY EXPANSION RATES

Type of Expansion	Estimated Cost per Cubic Meter ($/$m^3$)	Description of Works Included
Expand existing Groundwater Supply system	$1,000	Includes Engineering Design & Approvals (EA & PTTW): Includes development of new Well; Includes expansion to Pumping Station; Excludes any Reservoirs; Excludes distribution mains;
Construction of a new Surface Water Treatment Plant	$1,100	Based on Preliminary Design completed by the City of Barrie for their new Surface water Treatment Plant
Expansion of an existing Surface Water Treatment Plant (SWTP)	$1,500	Includes Engineering Design & Approvals (EA & PTTW); Assumes 3 log removal filters; Includes expansion to intake and associated low lift pumping; Excludes any Reservoirs; Excludes any distribution mains;
Expansion of an existing Surface Water Treatment Plant (SWTP) and extend to another Municipality	$1,750	Includes Engineering Design & Approvals (EA & PTTW); Assumes 3 log removal filters; Includes expansion to intake and associated low lift pumping; Includes 2 day Storage Reservoirs; Includes Transmission mains;

Graphical representations of the water and wastewater gaps are provided in Appendix X- Graphical Representation of the Wastewater Treatment Capacity Gap Analysis and Appendix Y- Graphical Representation of the Water Supply Capacity Gap Analysis. The graphs illustrate a ratio between the existing residual capacity and the capacity required to service the AAPPs. For example if a

Municipal system has a residual capacity for 1,000 people and the AAPP with low intensification is 2,000 then the bar would be twice a large as the residual capacity bar. It must be noted that only major water supply systems capacity gaps (rated capacities of approximately 2,000 m^3/day and above) are illustrated in Appendix Y.

Tables have been provided to summarize the alternatives for closing the capacity gaps and the evaluation criteria necessary to do. These tables are available in Appendix Z- Recommended Alternatives for Overcoming the Wastewater Treatment Gap and Appendix AA- Recommended Alternatives for Overcoming the Water Supply Gap.

An example of the capacity gap assessment calculation is as follows:

City of Barrie – Water Supply

- Residual Capacity = 9,550 persons (from Section 6.3)
- Additional Approved Population Potential with High Intensification = 79,750 persons
- Existing Capacity Gap = 9,550 – 79,750 = - 70,200 persons (deficit)
- Water Supply Capacity Gap = -70,200 persons x 0.62 m^3/c/d = -47,900 m^3/d

City of Barrie – Wastewater Treatment

- Residual Capacity = 12,050 persons (from Section 5.2)
- Additional Approved Population Potential with High Intensification = 64,500 persons
- Existing Capacity Gap = 12,050 – 64,500 = -52,450 persons (deficit)
- Hydraulic Capacity Gap = -52,450 persons x 0.404 m^3/c/d = -23,350 m^3/d

Similar calculations were completed for all of the municipally owned water supply and wastewater treatment facilities in Simcoe County, Barrie and Orillia.

Within Appendices Z (Wastewater) and AA (Water Supply) include high level opinions of the environmental significance of the identified "Alternatives to Close the Gap". These opinions were made based on a general understanding of the anticipated impacts rather than on detailed assessment. The opinions were expressed as "N/A", "Low", "Medium", "High" and "Extremely High". The definitions for these opinions are as follows:

- **N/A** – There is no environmental impact due to the fact that there are no identified works required. There is no Gap in the residual capacity.

- **Low** – A majority of the "Low" designated projects have been the subject of previously completed Class Environmental Assessments. Depending on the completion date of the Class EA, an Addendum may be necessary if the Class EA was completed more than 5 years prior to final design and construction. The remainder of the "Low" designated projects fall under either a Schedule A or B Activity as defined by the MEA Class EA Document. Examples of these works include upgrading well pumps and reducing inflow and infiltration into existing sewers. In these cases, a minimal amount of work will be required to complete the Class EA planning process.

- **Medium** – These projects fall into the category of Schedule B Activities as defined by the MEA Class EA Document. Projects such as the transfer of water from a supply source with more than adequate residual capacity to another, near-by distribution system or the development of new groundwater supplies that are not "GUDI" have been classed as Medium. With respect to wastewater, any projects involving the transfer of either raw or treated wastewater from one municipality to an existing plant with more than sufficient capacity were rated as "Medium".

- **High** – Projects, which involve the development of a new surface water supply, were rated as requiring a "High" level of environmental assessment. This is due to the increased level of treatment and the higher cost. Included in this group are the projects that involve a connection to the Regional pipeline. With respect to wastewater, all projects involving the expansion of an existing treatment plant beyond its current rated capacity were classed as "High".

- **Extremely High** – The only project that was rated as "Extremely High" was the option of increasing the capacity of the Stayner STP with an increased discharge to Lamont Creek. It is considered that such an option will never be acceptable under any circumstances.

It must be stressed that the residual capacities that were calculated, are expressed as equivalent populations. It was assumed that future industrial, commercial and institutional growth within each serviced area would be at the existing level. The only exception is the City of Barrie whereby the City will not have any vacant residential land available for new development after a projected population of 160,000 persons is reached, which is expected in 2011/12. After that time the City will continue to encourage industrial, commercial and institutional growth and therefore an additional equivalent population was added to accommodate the future industrial, commercial and institutional growth after 2011.

It also must be stressed that the residual wastewater treatment capacities may need to be reduced in the future to allow for disposal and treatment of hauled sewage. It is considered that all municipal wastewater treatment facilities may be required to accept and treat hauled sewage. The impact may cause reductions in the residual capacities.

10.2 MUNICIPAL SERVICES GAP ANALYSIS

Within the following sections it is assumed that all Water and/or Wastewater Expansions will require the appropriate Environmental Assessment to be completed and where applicable a Permit To Take Water to be obtained. As the proposed expansions of the various water and wastewater systems discussed in the following sections are required to accommodate the approved growth, it is assumed that the current and/or future Development Charges By-laws will collect the necessary funding for the identified expansions.

10.2.1 Township of Adjala-Tosorontio

The seven communities in the Township of Adjala Tosorontio are currently serviced by municipal water supply systems only (no wastewater treatment) although there is an existing privately owned sewage treatment plant in Everett, which serves a residential development. The existing water supplies in Everett, Lisle and Weca have sufficient capacity to service the AAPP growth. There is

no approved growth anticipated in Rosemont and therefore, that water supply is adequate. With respect to the servicing of approved growth in Colgan, Loretto Heights and Hockley, all three water supply systems would need to be expanded. Table 49 presents the existing gap analysis and the estimated capital cost required to close the gaps.

TABLE 49 –TOWNSHIP OF ADJALA TOSORONTIO - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Everett	3,500	1,300	1,300	1,600	1,600	No Gap
Colgan	-50	50	50	-100	-100	$20,000 (1)
Lisle	650	100	100	450	450	No Gap
Loretto Heights	50	250	250	-200	-200	$200,000 (2)
Rosemont	0	0	0	0	0	No Gap
Weca	450	0	0	600	600	No Gap
Hockley	0	100	100	-150	-150	$250,000 (3)

Note 1: Estimated cost includes a larger well pump.
Note 2: Estimated cost includes a connecting watermain
Note 3: Estimated cost includes a new well and treatment works.

Assuming that there is sufficient groundwater at the existing well sites, it is suggested that each of the wells could be equipped with larger capacity pumps. Colgan is a significant distance from other Township communities and therefore the option of transferring capacity from another system is not considered to be viable. The increased demand could be met with the addition of a larger well pump. The Loretto Heights system is in close proximity to the Weca system, which has a residual capacity of 450 m^3/d of water supply. Therefore, it is suggested that the Loretto Heights gap be supplied from the Weca system. The existing rated capacity of the Hockley system is 90 m^3/d therefore, a significant increase is required to service the approved growth. Hockley is remote from other Township communities and a sharing of water supplies is not viable. The existing water supply system could be expanded with the addition of a new well and treatment works.

10.2.2 City of Barrie

As noted earlier the City will not have any vacant residential land available for new development after a projected population of 160,000 persons is reached which is expected in 2011. After that time the City will continue to encourage industrial, commercial and institutional growth and therefore an additional equivalent population was added to accommodate the future industrial, commercial and institutional growth after 2011.

As such, expansions of the existing water supply and wastewater treatment plants are required. The City has completed planning for the expansions and is currently in the design phase for both a new water filtration plant and an expansion of the existing wastewater treatment plant.

Wastewater Treatment

Table 50 presents the existing gap analysis exclusive of the future expansions.

TABLE 50 – CITY OF BARRIE - EXISTING WASTEWATER GAP ANALYSIS

Wastewater Treatment System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($2,500 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
City of Barrie Includes Equivalent future Pop for IC Allowance	12,050	50,050	57,900	-16,900	-20,400	$51,000,000

The City is currently in the process of expanding the existing wastewater treatment plant from a capacity of 57,100 m^3/day to 76,000 m^3/day. Table 51 present the future gap analysis and includes the committed capacity increase.

TABLE 51 – CITY OF BARRIE - FUTURE WASTEWATER GAP ANALYSIS

Wastewater Treatment System	Future Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($2,500 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
City of Barrie Includes Equivalent future Pop for IC Allowance	58,800	50,050	57,900	3,900	400	No Gap

Therefore, as illustrated in Table 51, the proposed expansion to the wastewater treatment plant will be able to service the projected population of approximately 160,000 persons and the associated industrial/commercial regardless of the level of intensification.

Water Supply

Table 52 presents the existing gap analysis exclusive of the future expansions.

TABLE 52 – CITY OF BARRIE - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($1,100 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
City of Barrie Includes Equivalent future Pop for IC Allowance	9,550	65,300	79,750	-38,050	-47,900	$52,700,000

The city is currently in the process of the constructing a new surface water filtration plant with a capacity of 60,000 m^3/day. The estimated capital cost of the proposed plant is 65 million. Table 53 presents the future gap analysis and includes the committed capacity increase.

TABLE 53 – CITY OF BARRIE - FUTURE WATER SUPPLY GAP ANALYSIS

Water Supply System	Future Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($1,100 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
City of Barrie Includes Equivalent future Pop for IC Allowance	106,300	65,300	79,750	28,000	18,100	No Gap

Therefore, as illustrated in Table 53, the new surface water filtration plant will be able to service the projected population of approximately 160,000 persons and the associated and industrial/commercial.

It should be noted that the City of Barrie's water system has been planned and designed with an approximately 15 % reserve capacity to sustain the life of the aquifer and to provide well security

10.2.3 Town of Bradford West Gwillimbury

Wastewater Treatment

Table 54 presents the existing gap analysis.

TABLE 54 – TOWN OF BRADFORD WEST GWILLIMBURY - EXISTING WASTEWATER SUPPLY GAP ANALYSIS

Wastewater Treatment System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($3,200 / m³/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m³/day)	with High Intensification (m³/day)	
Town of Bradford West Gwillimbury	2,300	22,150	27,250	-8,950	-11,250	$36,000,000

The Town is currently in the design phase of an expansion to the Bradford WPCP which could service an equivalent population of 62,150 persons. Table 55 presents the future gap analysis and includes the committed capacity increase.

TABLE 55 – TOWN OF BRADFORD WEST GWILLIMBURY - FUTURE WASTEWATER SUPPLY GAP ANALYSIS

Wastewater Treatment System	Future Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($3,200 / m³/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m³/day)	with High Intensification (m³/day)	
Town of Bradford West Gwillimbury	61,950	22,150	27,250	17,900	15,600	N/A

Therefore, Table 55 illustrates that the proposed expansion to the Wastewater Treatment Plant will provide sufficient capacity to service the approved growth.

Water Supply

The Infrastructure Report concluded that the Town of Bradford West Gwillimbury currently has a water supply residual capacity of 3,500 persons. The water supply agreement with the Town of Innisfil, allows for an imminent supply of 750 m³/day. Table 56 presents the existing water supply gap analysis including the 750 m3/day additional supply.

TABLE 56 – TOWN OF BRADFORD WEST GWILLIMBURY - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($1,500 / m³/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m³/day)	with High Intensification (m³/day)	
Town of Bradford West Gwillimbury	3,500	22,150	27,250	-13,100	-16,700	$25,000,000

The Water Supply Agreement with the Town of Innisfil allows identifies that the current water supply of 750 m^3/day mentioned earlier will increase to 7,100 m^3/day in February 2007. Table 57 presents the future gap analysis including the 7,100 m^3/day supply increase from Innisfil.

TABLE 57 – TOWN OF BRADFORD WEST GWILLIMBURY - FUTURE WATER SUPPLY GAP ANALYSIS

Water Supply System	Future Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($1,500 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Town of Bradford West Gwillimbury	13,450	22,150	27,250	-6,100	-9,700	$17,000,000 (1)

Note 1 Estimated Cost includes expansion rate of $1,500 m^3 plus $2,500,000 for an upgrade to the Transmission main feeding the Alcona Reservoir.

10.2.4 Township of Clearview

Wastewater Treatment

The Township of Clearview has two municipally owned wastewater treatment systems. Table 58 presents the existing gap analysis of these systems.

TABLE 58 – TOWNSHIP OF CLEARVIEW - EXISTING WASTEWATER SUPPLY GAP ANALYSIS

Wastewater Treatment System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($3,200 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Stayner	1,750	21,150	27,300	-9,400	-12,400	$49,700,000 (1)
Creemore	3,200	3,950	5,850	-250	-800	$2,600,000

Note 1: Estimated Cost includes expansion rate of $3,200 / m^3 plus $10,000,000 for Pump Station and forcemain to either Collingwood or Wasaga Beach

With respect to servicing the Stayner capacity gap, due to the limitations of the receiving stream (Lamont Creek), it is considered that the Township has two options to service the large amount of approved growth. The existing WPCP could be expanded to handle the increased flow but the effluent would need to be discharged elsewhere. A second option would be to pump raw wastewater to another facility (Collingwood or Wasaga Beach) for treatment and disposal into a larger body of water. It has been assumed that the expansion would provide a tertiary level of

treatment. This does not include the transmission pipe that would be required to pump either raw wastewater or final effluent. It is suggested that an additional allowance of $10,000,000 be included for the pipeline to either Collingwood or Wasaga Beach. This would result in a total capital cost of about $49,700,000.

With respect to servicing the Creemore capacity gap an expansion of the existing treatment plant, to provide tertiary treatment, is suggested at an estimated cost of 2,600,000.

Water Supply

There are six municipally owned water supply systems in the Township of Clearview. Table 59 presents the existing water supply gap analysis

TABLE 59 – TOWNSHIP OF CLEARVIEW - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($1,750 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
New Lowell	100	12,200	12,200	-11,500	-11,500	$20,000,000
Stayner	400	21,150	27,300	-29,750	-38,550	$67,500,000
Creemore	100	3,950	5,850	-6,350	-9,500	$16,500,000 (1)
McKean Subdivision	350	0	0	500	500	No Gap
Colling-Woodlands	50	0	0	50	50	No Gap
Buckingham Woods	0	0	0	0	0	No Gap

Note 1: Estimated cost includes a supply rate of $1,000 / m^3 plus $4,000,000 for a trunk watermain from the Regional Pipeline

The New Lowell water supply system currently has a residual capacity of approximately 100 persons. The existing development is serviced by individual, private, wastewater treatment systems (septics). The existing municipal water supply is not capable of being expanded sufficiently to meet this approved growth and therefore, a new water source is suggested. The regional water pipeline (Collingwood to Alliston) was constructed along the abandoned railway ROW, through New Lowell. A tee connection was provided on the regional pipeline for future servicing of New Lowell. The new infrastructure would include a trunk watermain from the regional pipeline to a new reservoir site and the construction of a new reservoir and high lift pump station facility. The estimated cost of the suggested expansion is $20,000,000.

It must be stressed that development will likely not occur to the extent noted above without the provision of municipal wastewater servicing and treatment.

With respect to water supply for the community of Stayner, it is considered that the existing groundwater wells in Stayner could not be expanded to meet the approved growth demands. For the purposes of the IGAP assessment, it is suggested that the future water supply for Stayner would have to be provided by the regional pipeline. The regional water pipeline was constructed along the abandoned railway ROW, through Stayner. A tee connection was provided on the regional pipeline for future servicing of Stayner. The new infrastructure would include a trunk watermain from the regional pipeline to a new reservoir site and the construction of a new reservoir and high lift pump station facility. The estimated cost of the suggested expansion is $67,500,000.

With respect to water supply for the community of Creemore, it is unlikely that the capacity required to service the approved growth be available from the local groundwater supply. Therefore, it is suggested that an alternate source of water will be required. The regional pipeline (Collingwood to Alliston), is approximately 11 km to the east in New Lowell. A reservoir expansion could be needed in Creemore. The new infrastructure would include a trunk watermain from the regional pipeline to a new reservoir site and the construction of a new reservoir and high lift pump station facility. The estimated cost of the suggested expansion is $16,500,000.

There is no need for an expansion of the existing McKean and Colling-Woodlands water supply systems approved growth will be serviced by the existing water supplies and by private wastewater disposal systems.

There is a proposed development (43 estate lots) proposed on land that is immediately adjacent to the Buckingham Woods Development. That development will be serviced by a new water supply. Therefore, there is no need to expand the existing water supply for the Buckingham Woods Development.

As noted below in the Collingwood Section of this Report, the future supply capacity of the Raglan Street water filtration plant in Collingwood may not be sufficient enough to provide the full water demands to New Lowell, Stayner and Creemore. As such, depending on the timing of the development in Clearview, the Township may have to obtain water supply from another source.

10.2.5 Town of Collingwood

Wastewater Treatment

Table 60 presents the existing wastewater treatment gap analysis.

TABLE 60 – TOWN OF COLLINGWOOD - EXISTING WASTEWATER SUPPLY GAP ANALYSIS

Wastewater Treatment System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($2,800 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Town of Collingwood	5,700	31,300	51,400	-30,350	-54,200	$151,800,000

With respect to wastewater treatment, it is suggested that the approved growth capacity cannot be serviced by an expansion to the existing wastewater treatment plant. This is due to the lack of available land for expansion. Therefore, it is suggested that a new facility will be required somewhere within the municipal limits. The cost of the new plant is estimated to be in the order of $2,800/m³ of capacity based on secondary treatment and the provision of a new site. Therefore, the estimated capital cost for the new plant is in the order of $151,800,000.

Water Supply

At the time of writing this Report, the Town is in the process of expanding the capacity of the existing water filtration plant from a capacity of 31,140 m³/d up to 47,140 m³/d. The estimated cost for such an expansion is $12.3 million. This equates to an approximate unit cost of $800 /m³ of capacity. Table 61 presents the existing gap analysis based on a rated system capacity of 31,140 m^3/day.

TABLE 61 – TOWN OF COLLINGWOOD - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($800 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Town of Collingwood	850	31,300	51,400	-34,100	-56,650	$45,300,000

Table 62 presents the future water supply gap analysis based on a rated system capacity of 47,140 m^3/day.

TABLE 62 – TOWN OF COLLINGWOOD - FUTURE WATER SUPPLY GAP ANALYSIS

Water Supply System	Future Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($800 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Town of Collingwood	16,550	31,300	51,400	-16,550	-39,050	$31,200,000

Based on the AAPP figures that were derived as part of the IGAP Study, the following is a summary of the potential demands that may need to be serviced by the Collingwood water supply:

- New Tecumseth (per agreement)	23,500 m³/d (current = 9,500 m³/d)
- Town of The Blue Mountains (per Agreement)	8,000 m³/d
- Collingwood, existing	56,650 m³/d
- Collingwood, future	39,050 m³/d
- New Lowell	11,500 m³/d
- Stayner	38,550 m³/d
- Creemore	9,500 m³/d
Total Potential Demand	186,750 m³/d

The PTTW would allow the existing water filtration plant to be developed up to a total capacity of 160,000 m³/d. However, the current technology would restrict the capacity to 137,000 m³/d.

The commitments made to the Town of The Blue Mountains and the Town of New Tecumseth will be considered as priorities. Allowing for Collingwood's own future water supply demands, there may not be enough capacity to meet the ultimate requirements in Clearview Township.

The estimated capital cost for the Collingwood portion of the expansion would be approximately $31,200,000.

10.2.6 Township of Essa

Essa Township has three communities, one of which (Angus) is fully serviced. Baxter and Thornton-Glen do not have municipal wastewater treatment. The provision of wastewater treatment in Baxter would be difficult, considering the distance to a suitable effluent discharge point. Therefore, development in Baxter should be limited to residential, on lots that are sized to support septic systems. The Thornton area could be serviced as part of the future servicing of the Innisfil Heights area. However, that would be the subject of a detailed Class EA planning process. For the purposes of this assessment, it is suggested that development in Thornton be restricted to residential with individual septic systems and a municipal water supply.

Wastewater Treatment

Table 63 presents the existing gap analysis for the Angus Wastewater Treatment Plant. As illustrated in the table, the existing system has sufficient capacity to service the approved growth, therefore there are no suggestions for future expansion.

TABLE 63 – TOWNSHIP OF ESSA - EXISTING WASTEWATER SUPPLY GAP ANALYSIS

Wastewater Treatment System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($3,200 / m³/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m³/day)	with High Intensification (m³/day)	
Angus	7,700	7,400	7,400	100	100	No Gap

Water Supply

Table 64 presents the existing water supply gap analysis.

TABLE 64 – TOWNSHIP OF ESSA - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($800 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Angus	5,750	7,400	7,400	-900	-900	$700,000
Thornton-Glen	850	200	200	650	650	No Gap
Baxter	100	600	600	-450	-450	$800,000 (1)

Note 1: Estimated cost includes supply rate of $1,750 / m^3 and two Day Storage Reservoir

With respect to the Angus water supply system, it is suggested that the existing water supply could be increased through an expansion to the existing system. The estimated cost of the expansion is $700,000.

The Thornton Glen water supply has sufficient residual capacity to service the approved growth.

The Baxter system is deficient by about 450 m^3/d. Considering the fact that the existing system capacity is only 225 m^3/d, it is unlikely that the existing system can be expanded. However, that possibility would need to be explored in order to assess the potential for approved growth.

10.2.7 Town of Innisfil

Wastewater Treatment

Two communities (Alcona Lakeshore and Cookstown) within the Town of Innisfil are fully serviced with municipal water supply and wastewater treatment. Table 65 presents the existing wastewater gap analysis for these systems.

TABLE 65 – TOWN OF INNISFIL - EXISTING WASTEWATER SUPPLY GAP ANALYSIS

Wastewater Treatment System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Alcona Lakeshore	15,800	15,750	15,750	0	0	N/A
Cookstown	500	850	850	-150	-150	$500,000 (1)

Note 1: Estimated Cost assumes the Inflow/Infilltration would be reduced as opposed to expanding the Wastewater Treatment Plant

The existing Alcona Wastewater Treatment Plant has sufficient capacity to service the approved growth. Therefore there are no suggestions for expansion.

With respect to the Cookstown Wastewater Treatment Plant the expansion cost would be very extensive given the extreme limitations on the receiving stream during the low flow in the summer months. Using $6,000/$m^3$ the estimated cost would be approximately $1,000,000. Alternatively it is suggested that the sewage collection system be reviewed within the intent of reducing Inflow and Infiltration (I/I) and concurrently the per capita flows to increase the available residual capacity at an estimated cost of $500,000.

Water Supply

The Town of Innisfil has six municipal water supplies. Table 66 presents the gap analysis of these systems.

TABLE 66 – TOWN OF INNISFIL - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($1,500 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Innisfil Heights	2,050	0	0	1,850	1,850	No Gap
Crossroads	1,800	0	0	1,050	1,050	No Gap
Stroud	250	400	400	-150	-150	$230,000
Churchill	50	250	250	-250	-250	$1,000,000 (1)
Goldcrest (Golf Haven and Gold Crest)	-0	250	250	-200	-200	$1,500,000 (2)
Cookstown	-200	850	850	-1,450	-1,450	$5,000,000 (3)
Alcona Lakeshore	8,650	14,550	14,550	-4,300	-4,300	$6,500,000

Note 1: Estimated cost includes trunk watermain and a booster station.

Note 2: Estimated cost includes well abandonment, river crossing and trunk watermain to connect to Alcona/Bradford Watermain.

Note 3: Estimated cost includes supply rate of \$1,750 / m^3, watermain from Alcona to Cookstown and treatment conversion.

The Innisfil Heights area is being considered as a major growth centre for both residential and employment development. The extent of the approved growth could be such that the existing water supply system could not be able to provide the required water supply. In addition, it is considered that municipal wastewater servicing could be required. The cost of providing such services is currently under review by the Town.

The Crossroads area is fully serviced, being located within the Alcona service limits. At the present time, the Town is considering abandoning the Crossroads water supply system. The existing houses within the development would be serviced from the Alcona water supply system.

The Churchill area is serviced by 3 wells with treatment (chlorination) and an in-ground reservoir. It is considered that the existing well supply cannot be expanded. As such, the approved growth in the Churchill area should be serviced with water from the Alcona/Bradford pipeline. A booster station may be required along with a trunk watermain (5 km of 200 mm dia.). The estimated capital cost is \$1,000,000,

Both of the Goldcrest and Golf Haven areas are within a reasonable distance from the Alcona/Bradford pipeline. It is suggested that both existing well systems be abandoned and that water be supplied from the pipeline. The estimated costs are as follows:

Golf Haven:	- 3 km of 200 mm dia. pipe @ \$300/m	= \$900,000
	- river crossing	= \$100,000
	- well abandonment	= \$100,000
	Total estimated cost	= \$1,100,000
Goldcrest:	- 1 km of 200 mm dia pipe @ \$300/m	= \$300,000
	- well abandonment	= \$100,000
	Total estimated cost	= \$400,000

The Infrastructure Report shows a residual capacity in the Cookstown WPCP of 500 persons. The water supply does not have any residual capacity. The AAPP is 850 persons for both services and for both intensification levels. Therefore, there is a capacity gap of 350 persons (150 m^3/d) for wastewater and 1,050 persons (1,450 m^3/d) for water supply.

The existing groundwater wells in Cookstown cannot be expanded and the Town has already completed an Environmental Assessment that concluded that a watermain should be extended from Alcona to Cookstown. Based on a 10 km, 200 mm dia. Pipeline and estimated cost of \$1,750 m^3/d supply, the estimated capital cost is in the order of \$5,000,000.

The Town is currently expanding the Alcona Lakeshore Water Treatment to provide approximately 13,097 m³/d of which 7,100 m³/d is committed to Bradford. Table 67 presents the future gap analysis after this expansion is completed in February 2007.

TABLE 67 – TOWN OF INNISFIL - FUTURE WATER SUPPLY GAP ANALYSIS

Water Supply System	Future Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($800 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Alcona Lakeshore	19,700	14,550	14,550	3,750	3,750	No Gap

Following the expansion to the Alcona Lakeshore Water Treatment Plant, the systems will have sufficient capacity to service the approved growth. However, to accommodate the future commitments identified in the Innisfil/Bradford Water Supply Agreement of 5,900 m^3/day, which is beyond the currently commitment of 7,100 m^3/day another expansion of the Alcona Lakeshore Water treatment Plant will be required.

10.2.8 Town of Midland

Wastewater

Table 68 presents the wastewater treatment gap analysis for the Town of Midland.

TABLE 68 – TOWN OF MIDLAND - EXISTING WASTEWATER SUPPLY GAP ANALYSIS

Wastewater Treatment System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($2,200 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Town of Midland	8,500	8,900	12,950	-300	-3,100	$6,800,000

With respect to the wastewater treatment capacity, it is suggested that the gap of 3,100 m³ be serviced through an expansion to the existing facility. The estimated cost of the expansion, providing tertiary treatment, is $6,800,000.

Water Supply

The Town of Midland water supply is currently provided from 13 wells, Table 69 presents the existing water supply gap analysis.

TABLE 69 – TOWN OF MIDLAND - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($800 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Town of Midland	3,250	8,900	12,950	-5,900	-10,100	$8,000,000

It is suggested, for preliminary assessment purposes, that the additional capacity could be provided from an expansion to the existing groundwater supply source. The estimated cost of the suggested expansion is $8,000,000.

10.2.9 Town of New Tecumseth

Wastewater Treatment

The residual capacity at the Tottenham and Regional Wastewater Treatment Plants is currently zero due to operational difficulties. The only residual wastewater treatment capacity is at the Sir Frederick Banting Plant. Table 70 presents the existing gap analysis for these systems.

TABLE 70 – TOWN OF NEW TECUMSETH - EXISTING WASTEWATER SUPPLY GAP ANALYSIS

Wastewater Treatment System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($3,200 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Tottenham	0	6,850	11,350	-3,450	-5,700	$18,200,000
Alliston Sir Frederic Banting & Regional WWTP *	1,900	8,900	14,750	-7,300	-13,450	$43,000,000

* The existing residual capacities for the Regional and Sir Frederic Banting Plants are combined.

Assuming that all of the operational issues can be resolved, the existing gap analysis could be further reduced. Table 71 presents the future gap analysis assuming that all issues have bee addressed.

TABLE 71 – TOWN OF NEW TECUMSETH - FUTURE WASTEWATER SUPPLY GAP ANALYSIS

Wastewater Treatment System	Future Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($3,200 / m³/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m³/day)	with High Intensification (m³/day)	
Tottenham	3,150	6,850	11,350	-1,850	-4,100	$13,100,000
Alliston Sir Frederic Banting & Regional WWTP *	5,350	8,900	14,750	-3,700	-9,850	$31,500,000

* The existing residual capacities for the Regional and Sir Frederic Banting Plants are combined

The total wastewater treatment capacity deficiency, assuming that the existing operational issues can be resolved, is in the order of 14,000 m³/d. At an estimated rate of $3,200/m³ capacity (tertiary treatment), the estimated capital cost to provide additional wastewater treatment capacity is in the order of $44,600,000. The cost of addressing the current operational issues is not included in this estimate. That cost could be as high as the provision of a new plant and therefore, the rate of $3,200/m³ would be applicable.

Water Supply

Table 72 presents the existing Water Supply gap analysis for the Town of New Tecumseth.

TABLE 72 – TOWN OF NEW TECUMSETH - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($1,500 / m³/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m³/day)	with High Intensification (m³/day)	
Alliston / Beeton / Hillcrest	5,150	8,900	14,750	-4,850	-12,400	$18,500,000
Tottenham	2,650	6,850	11,350	-3,400	-7,050	$12,500,000 (1)

Note 1: Estimated cost includes a supply rate of $1,750 / m³, design and construction of booster stations and extension of the Regional Pipeline from Beeton to Tottenham.

With respect to water supply, it is suggested that the Tottenham groundwater supply capacity cannot be increased. Similarly, the Alliston groundwater supply has been developed to its maximum capacity. Therefore, all future water supply capacity will likely be provided from the Collingwood WFP through the regional pipeline. As noted in the Collingwood section of this

Report, the current Agreement to supply water to New Tecumseth allows for an ultimate demand of 23,500 m³/d. The Town of New Tecumseth currently takes 9,500 m³/d from the regional pipeline and therefore, the future supply is limited to 14,000m³/d. The total gap in the supply capacity for all of New Tecumseth has been estimated to be 19,450 m³/d (7,050 + 12,400 high intensification) and therefore the planned future supply from Collingwood is slightly insufficient to meet the future high intensification scenario. Based on the future demand the estimated capital cost is in the order of $31,000,000. Booster stations will be required along the route of the regional pipeline. It is suggested that an allowance of $5,000,000 be made for the design and construction of those booster stations. In addition, an extension of the regional pipeline will be required from Beeton to Tottenham.

10.2.10 City of Orillia

Wastewater Treatment

The existing residual capacities for the Orillia wastewater system is 13,650 persons. Table 73 presents the existing gap analysis for the system.

TABLE 73 – CITY OF ORILLIA - EXISTING WASTEWATER SUPPLY GAP ANALYSIS

Wastewater Treatment System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($3,200 / m³/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m³/day)	with High Intensification (m³/day)	
City of Orillia	13,650	19,750	35,050	-3,950	-13,900	$44,500,000

With respect to wastewater treatment, it is suggested that the existing plant could be expanded to provide an additional capacity of 13,900 m³/d. The estimated cost of the expansion would be in the order of $44,500,000.

Water Supply

Table 74 presents the existing water supply gap analysis.

TABLE 74 – CITY OF ORILLIA - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($1,500 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
City of Orillia	18,750	19,750	35,050	-800	-13,200	$19,800,000

It is suggested that the water supply deficiency could be provided from the surface water source (Lake Simcoe) and that the best available technology would be needed to treat the water. It is estimated that the total capital cost would be $19,800,000.

10.2.11 Township of Oro-Medonte

There are no municipal wastewater treatment facilities in Oro-Medonte. With respect to water supplies, Table 75 presents the existing gap analysis of the systems.

TABLE 75 – TOWNSHIP OF ORO-MEDONTE - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($800 / m^3)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Canterbury	150	0	0	200	200	No Gap
Craighurst	150	0	0	200	200	No Gap
Horseshoe Highlands	-250	2,800	2,800	-9,000	-9,000	$7,200,000 (1)
Maplewood	-0	0	0	0	0	No Gap
Robin Crest	150	550	550	-900	-900	$700,000 (2)
Sugarbush	1,200	1,400	1,400	-250	-250	$200,000 (3)
Cedarbrook	50	0	0	50	50	No Gap
Harbourwood	200	0	0	300	300	No Gap
Lake Simcoe Regional Airport	100	0	0	50	50	No Gap
Medonte Hills	0	50	50	-50	-50	$50,000 (4)
Shanty Bay	550	500	500	50	50	No Gap
Warminister	-50	650	650	-850	-850	$700,000 (5)

Note 1: Estimated Cost includes two wells (50 L/s each) and treatment facility.
Note 2: Estimated Cost includes two wells and expansion of the existing water supply facility.
Note 3: Estimated Cost includes one well and expansion of the existing water supply facility.
Note 4: Estimated Cost includes a larger well pump

The **Horseshoe Highlands** water supply is comprised of 2 groundwater wells, a treatment facility and a water tower. The current rated capacity is 3,370 m³/d. Therefore, the water supply would have to be increased significantly in order to meet the approved growth as defined by Township information. It is assumed that additional wells can be developed and that the treatment facility and water tower can be increased in capacity. The estimated capital cost is 7,200,000.

The **Robin Crest system** is comprised of 2 wells, a treatment facility and two reservoirs. The rated capacity is 850 m³/d. In order to increase the capacity by 900 m³/d, it is suggested that two new wells would be required along with an expansion of the treatment facility, reservoirs and high lift pump station at an estimated cost of $700,000.

The **Sugar Bush system** is comprised of two wells, two treatment facilities and an inground reservoir. In order to increase the capacity by 250 m^3/day, it is suggested that a new well would be required along with an expansion of the treatment facilities, reservoirs and high lift pump station at an estimated capital cost of $200,000.

The **Medonte Hills system** is comprised of two wells and a treatment facility. It is suggested that a larger well pump be installed in order to increase the capacity to meet the demand of the approved growth. The estimated capital cost is $50,000.

The **Warminster system** is comprised of 1 well, a treatment facility and an inground reservoir. The rated capacity is 600 m³/d. In order to increase the capacity by 850 m³/d, it is suggested that a new well would be required along with an expansion of the treatment facility, high lift pump station and inground reservoir at an estimated cost of $700,000.

10.2.12 Town of Penetanguishene

Wastewater Treatment

Table 76 presents the existing gap analysis for the Fox and Main Street Wastewater Treatment Plants.

TABLE 76 – TOWN OF PENETANGUISHENE - EXISTING WASTEWATER SUPPLY GAP ANALYSIS

Wastewater Treatment System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($2,200 / m³/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m³/day)	with High Intensification (m³/day)	
Fox Street	400	150	150	250	250	No Gap
Main Street	350	4,100	8,500	-3,300	-7,150	$15,700,000

The Fox Street Wastewater Treatment Plant has sufficient capacity to service the approved growth therefore no expansion is suggested.

With respect to the Main Street wastewater treatment Plant, the capacity gap of 7,150 m³/d could be provided by expanding the existing treatment facilities. The estimated cost, providing secondary treatment, would be $15,700,000.

Water Supply

Table 77 presents the existing gap analysis for the Payette and Lepage systems.

TABLE 77 – TOWN OF PENETANGUISHENE - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($1,100 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Payette	1,350	4,300	8,700	-4,050	-10,050	$11,000,000
Lepage	300	0	0	350	350	No Gap

It is suggested that the water supply capacity gap at the Payette system can be addressed by either increasing the groundwater supply capacity or by providing a new surface water supply. Assuming that a surface water supply is required, the estimated capital cost is on the order of $11,000,000. It is not known if a more reasonably priced groundwater supply is available.

10.2.13 Township of Ramara

Wastewater Treatment

There are two developments in Ramara Township that are currently fully serviced; Bayshore Village and Lagoon City. Table 78 presents the existing wastewater gap analysis for these systems.

TABLE 78 – TOWNSHIP OF RAMARA - EXISTING WASTEWATER SUPPLY GAP ANALYSIS

Wastewater Treatment System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($3,200 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Lagoon City	350	2,700	4,750	-1,500	-2,850	$9,100,000
Bayshore Village	150	250	250	-50	-50	$200,000

The capacity of the Lagoon City system could be increased if the third clarifier were to be built (the existing Certificate of Approval allows for a third clarifier). This would increase the plant capacity by 560 m^3/d which is still not enough to meet the future requirement of an additional 2,850 m^3/d of capacity. The shortfall is in the order of 2,300 m^3/d. Although the existing effluent is discharged to a wetland, it is assumed that the existing plant can be doubled to accommodate approved growth. The estimated cost of the doubling (assuming tertiary treatment) is $7,400,000 (2,300 m^3 x $3,200/$m^3$).

It is suggested that the Bayshore Village existing plant be expanded to provide tertiary treatment. The estimated capital cost is $200,000.

Water Supply

The Township of Ramara has five municipally owned water supply systems. Table 79 presents the existing gap analysis for these systems.

TABLE 79 – TOWNSHIP OF RAMARA - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($1,500 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Bayshore Village	50	250	250	-350	-350	$350,000 (1)
Park Lane	0	0	0	0	0	No Gap
Lagoon City/Brechin	1,300	2,750	4,800	-1,350	-3,250	$5,000,000
Davy Drive	50	0	0	50	50	No Gap
South Ramara	-0	100	100	-200	-200	$300,000
Val Harbour	0	50	50	-50	-50	$50,000 (2)

Note 1: Estimated Cost includes a supply increase rate of $1,000 / m^3.
Note 2: Estimated Cost includes a larger well pump.

The Bayshore Village water supply could be increased by 350 m³/d at an estimated cost of $350,000 based on a well supply source with an expanded treatment facility.

The Park Lane and Davy Drive water systems have no capacity gaps as there is no approved growth.

The Lagoon City water supply is from a surface water source and includes a treatment facility and elevated water storage tank. The rated capacity is 4,000 m³/d. In order to increase the rated capacity by 3,250 m³/d, it is suggested that an expansion of the existing treatment plant and water storage tank would be necessary. It is assumed that the existing lake water intake pipeline is adequately sized to handle the increased flow rate. Assuming that a surface water supply can be expanded the estimated capital cost is in the order of $ 5,000,000.

The South Ramara facility has a current rated capacity of 387 m³/d. The required increase of 200 m³/d can likely be provided through an expansion to the surface water plant. The estimated cost is in the order of $300,000.

The Val Harbour system has a capacity gap of 50 m^3/day. It is suggested that the gap be serviced by the addition of a larger well pump.

10.2.14 Township of Severn

Wastewater

Table 80 presents the existing gap analysis for the three municipally owned wastewater treatment plants in Severn.

TABLE 80 – TOWNSHIP OF SEVERN - EXISTING WASTEWATER SUPPLY GAP ANALYSIS

Wastewater Treatment System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($3,200 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Washago	400	0	0	150	150	No Gap
Coldwater	450	1,350	1,350	-300	-300	$1,000,000
West Shore	1,000	0	0	450	450	No Gap

The Washago system has no approved growth that would need to be serviced. Therefore, no capacity expansions are necessary.

The Coldwater system has a rated capacity of 545 m^3/d. It is suggested that the existing plant could be expanded to provide tertiary treatment. The estimated capital cost is in the order of $1,000,000.

The West Shore plant have just recently been put into operation. There are no identified capacity gaps at this time.

Water Supply

There are six municipally owned water systems in the Township of Severn. Table 81 presents the existing gap analysis of the systems.

TABLE 81 – TOWNSHIP OF SEVERN - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($800 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Severn Estates	50	0	0	50	50	No Gap
Bass Lake Woodland	100	100	100	0	0	No Gap
Sandcastle Estates	100	0	0	150	150	No Gap
Washago	350	0	0	250	250	No Gap
Coldwater	600	1,350	1,350	-800	-800	$650,000
West Shore	1,000	0	0	0	0	No Gap

There is no approved growth at the Severn Estates, Sandcastle Estates, Washago and West Shore water supply systems, therefore there is no capacity gap.

There is sufficient capacity at the Bass Lake Woodlands supply system to service the approved growth.

The Coldwater supply has a rated capacity of 2,138 m³/d. It is suggested that the existing groundwater supply wells could be increased in capacity to provide the additional 800 m³/d. The estimated cost of the water supply expansion is $650,000.

10.2.15 Township of Springwater

Wastewater Treatment

There is one municipally owned wastewater treatment plant in Springwater. Table 82 presents the existing gap analysis of the system.

TABLE 82 – TOWNSHIP OF SPRINGWATER - EXISTING WASTEWATER SUPPLY GAP ANALYSIS

Wastewater Treatment System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($3,200 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Elmvale	1,150	1,000	1,000	100	100	No Gap

There is sufficient capacity at the Elmvale waterwater treatment plant to service the approved growth. Therefore, no expansion is suggested.

Water Supply

There are eight municipally owned water supply systems in Springwater. Table 83 presents the existing gap analysis of these systems.

TABLE 83 – TOWNSHIP OF SPRINGWATER - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($800 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Anten Mills	900	100	100	1,000	1,000	No Gap
Del Trend	450	0	0	950	950	No Gap
Elmvale	2,200	1,000	1,000	1,200	1,200	No Gap
Hillsdale	-0	1,150	1,150	-1,300	-1,300	$1,000,000
Midhurst	2,700	150	150	3,150	3,150	No Gap
Minesing	-50	100	100	-200	-200	$200,000
Snow Valley	400	150	150	400	400	No Gap
Vespra Downs	0	0	0	0	0	No Gap

There is no approved growth at the Del Trend and Vespra Downs supplies therefore there is no capacity gap.

There is sufficient capacity at the existing Anten Mills, Elmvale, Midhurst and Snow Valley supplies to service the approved growth. Therefore, no expansions are suggested.

The Hillsdale system is deficient with respect to meeting both existing and future water demands. Based on very preliminary information, it is assumed that the existing groundwater supply wells could be increased in capacity to provide the additional 700 m³/d. The estimated cost of the water supply expansion is $1,000,000.

It is understood that the Minesing water supply system is currently being expanded such that the water supply gap of 200 m³/d (2.3 L/s) will be provided.

10.2.16 Township of Tay

Wastewater

The Port McNicoll/Victoria Harbour area is fully serviced. The wastewater treatment plant in Port McNicoll has a residual capacity of 50 persons. Insufficient data is available for the Victoria Harbour facility. Table 84 presents the combined existing gap analysis for the systems.

TABLE 84 – TOWNSHIP OF TAY - EXISTING WASTEWATER SUPPLY GAP ANALYSIS

Wastewater Treatment System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($3,200 / m³/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m³/day)	with High Intensification (m³/day)	
Port McNicoll / Village of Victoria Harbour	50	24,000	24,000	-10,800	-10,800	$34,600,000

The combined AAPP is estimated to be 24,000 persons. Therefore, in order for that amount of development to occur, a major expansion to the wastewater treatment capacity is required. At a rate of $3,200/m³ of capacity (tertiary treatment), the estimated capital cost is in the order of $34,600,000.

Water Supply

There are five municipally owned water supply systems in Tay. Table 85 presents the existing gap analysis of these systems.

TABLE 85 – TOWNSHIP OF TAY - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($1,500 / m³/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m³/day)	with High Intensification (m³/day)	
Victoria Harbour/Port McNicoll	2,900	24,000	24,000	-19,000	-19,000	$28,500,000
Rope	300	0	0	350	350	No Gap
Midland Bay Woods	0	0	0	0	0	No Gap
Bay Berry	200	0	0	250	250	No Gap
Waubaushene	-100	2,850	2,850	-3,300	-3,300	$5,000,000

The water supply to Port McNicoll and Victoria Harbour has a residual capacity of 2,900 persons. However, the AAPP is 24,000 persons (both intensification scenarios). Therefore, there is a major gap in water servicing capacity. The estimated cost to service the gap is $28,500,000.

There is no approved growth at the Rope, Midland Bay Woods and Bayberry supplies, therefore there is no capacity gap.

The Waubaushene system is a surface water supply with a rated capacity of 1,225 m³/d. An expansion would involve quadrupling the existing facility. The estimated capital cost is in the order of $5,000,000.

10.2.17 Township of Tiny

There are no municipal wastewater treatment facilities at any of the communities in Tiny Township. With respect to water supplies, Table 86 presents the existing water supply gap analysis of the 18 municipal systems.

TABLE 86 – TOWNSHIP OF TINY - EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($800 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Perkinsfield	500	200	200	450	450	No Gap
Bluewater	-100	450	450	-900	-900	$700,000
Georgian Bay Estates	200	350	350	-200	-200	$200,000
Georgian Sands	550	800	800	-350	-350	$300,000
LA Place	-0	150	150	-200	-200	$200,000
TeePee Points	-100	0	0	-100	-100	$50,000
Sand Castle Estates	250	200	200	50	50	No Gap
Vanier Woods	150	150	150	0	0	No Gap
Wyevale Central	50	300	300	-400	-400	$50,000 (1)
Cook's Lake	150	50	50	100	100	No Gap
Georgian Highlands	350	100	100	300	300	No Gap
Lefaive	150	100	100	50	50	No Gap
Pennorth	-50	0	0	-50	-50	$50,000 (2)
Rayko	50	50	50	0	0	No Gap
Sawlog Bay	50	100	100	-100	-100	$50,000 (3)
Thunder Bay	-0	50	50	-200	-200	$200,000
Whip-Poor-Will 2	-50	50	50	-350	-350	$300,000
Woodland Beach	-0	250	250	-1,100	-1,100	$900,000

Note 1, 2 & 3: Estimated Cost includes a larger well pump.

It is suggested that for the municipal water supply systems, excluding Wyeval Central, Sawlog Bay and Pennorth, that have insufficient capacity to service the approved growth, the existing groundwater well sources could be expanded. The respect estimated costs are listed in Table 86.

For the Wyevale Central, Sawlog Bay and Pennorth systems, it is suggested that a larger well pump be installed to service the approved growth.

10.2.18Town of Wasaga Beach

Wastewater Treatment

Table 87 presents the existing gap analysis for the Wasaga Beach wastewater treatment plant.

TABLE 87 – TOWN OF WASAGA BEACH - EXISTING WASTEWATER SUPPLY GAP ANALYSIS

Wastewater Treatment System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($3,200 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Town of Wasaga Beach	37,450	9,700	9,700	8,100	8,100	No Gap

The existing wastewater facility in Wasaga Beach has sufficient capacity to service the identified approved growth.

Water Supply

Table 88 presents the existing gap analysis of the Wasaga Beach water supply.

TABLE 88 – TOWN OF WASAGA BEACH EXISTING WATER SUPPLY GAP ANALYSIS

Water Supply System	Existing Residual Capacity (Persons)	Additional Approved Population Potential (Persons)		Existing Gap Analysis		Cost to Service Gap based on High Intensification ($800 / m^3/day)
		with Low Intensification (Persons)	with High Intensification (Persons)	with Low Intensification (m^3/day)	with High Intensification (m^3/day)	
Town of Wasaga Beach	8,400	9,700	9,700	-1,450	-1,450	$1,200,000

There is insufficient capacity at the existing water supply systems to service the approved growth. Therefore it is suggested that an additional groundwater well source be developed. at an estimated cost of $1,200,000.

10.3 TRANSPORTATION GAP ANALYSIS

For the provincial highway network, a number of key roadway capacity deficiencies were identified

In the URS study as noted above. The primary findings and recommendations were as follows:

- ***Highway 400:*** a deficiency of two freeway lanes per direction south of Barrie, and three lanes per direction within Barrie. The preferred alternative to address this deficiency was to extend Highway 427 as a four-lane freeway (potentially a tolled facility) northerly from Highway 7 to Highways 400 and 11 north and west of Crown Hill, and to widen Highway 400 from six to eight lanes from Highway 11 southerly.
- ***Highway 11:*** a deficiency of one freeway lane between Barrie and Gravenhurst. The preferred alternative was, wherever possible, to widen the existing highway and/or increase lane capacity by improving standards and restricting access, rather than constructing a new alignment to the north and west.
- ***Highway 26:*** a deficiency of one highway lane between Collingwood and Highway 27, to be addressed by the Highway 26 bypass under construction west of Wasaga Beach and by widening the existing highway east of Wasaga Beach from two to four lanes.

Other minor capacity deficiencies were identified but will either be addressed in the near future (i.e., the widening of Highway 12 north of Highway 48) or were deemed to be minor in nature (i.e., sections of Highways 10, 89, and 93).

It is noted that the capacity improvements are intended to address deficiencies related to summer weekend traffic, since recreational travel demand is higher and extends for longer periods of time than weekday commuter traffic demand. Hence, the identified improvements are considered to reflect worst-case traffic conditions and will meet or exceed projected AM or PM weekday peak hour traffic demand.

The City of Barrie road requirements to a 2021 horizon were addressed in the 1999 Barrie Transportation Study, and updated for the ten-year horizon in the 2003 Development Charges update. The road widenings identified were sufficient to meet projected 2021 demand; however, in the interim, more residential and employment growth has been projected for the 2021 horizon, representing an increase of approximately 20-25% in projected residential development and an increase of approximately 10-12% in projected employment compared to previous (1999) estimates. Given that residential growth within the existing Barrie urban boundary is expected to approach build-out by approximately 2011, much of the residential growth that will create travel demand pressure is assumed to occur just outside the current urban boundary. Further development between 2021 and 2031, comprising an increase of 20% for both residents and employment, will add additional demand to the City arterial network. Specific infrastructure needs to increase the currently planned road capacity in Barrie will depend on a number of factors, particularly the nature and location of additional future development, and the nature of the future provincial highway network (i.e., a new Barrie bypass would increase the need to widen roads leading west and north from the city to the new highway, whereas a widened Highway 400 would place additional pressure on arterials approaching Highway 400 from the west).

In its 10-year capital plan, Simcoe County has identified a number of road widening projects that will be required as the County develops further as noted above, largely extending south and west from Barrie and also including Innisfil Beach Road (County Road 21) and County Roads 88 and 4 near Bradford. The County's program is based primarily on addressing major existing roadway pressures, coupled with an understanding that pressure on the subject roadways will increase with further development and that at some point in time this development and general traffic growth will trigger additional capacity requirements. While a number of projects have been identified, a modeling exercise identifying future County Road needs to accommodate planned growth on a closer and more iterative level has not been conducted. A full transportation study is needed to determine the degree to which the additional road network capacity provided through the capital program addresses projected future growth. The study would also determine whether additional infrastructure is required to address gaps in capacity or if the capital program needs to be accelerated. County road widening needs will depend on factors such as the nature and location of additional future development, and the nature of the future provincial highway network.

APPENDIX A - WASTEWATER TREATMENT CAPACITY ASSESSMENT

Wastewater System	Certificate of Approval No. / Date	Classification	Rated Average Daily Flow	Rated Peak Flow Rate	Average Daily Flow	Peak Flow	Raw Water Characteristics (average)				BOD5 Concentration	Effluent Limits from C of A (average)								Final Effluent (average)				Historical ADF / Cap	Population Persons	Persons Per Unit	Population (Units)	Spare Capacity	Residual Capacity	Residual Capacity	Spare Hydraulic Capacity	Residual Capacity	Residual Capacity
																												Includes 10% buffer adder to Historical & Future					
																												Method 1			Method 2 (MOE)		
			m^3/day	m^3/day	m^3/day	m^3/day	BOD5 mg/L	Suspended Solids mg/L	Total Phosphorus mg/L	Nitrogen NH3 and NH4 mg/L	mg/L	BOD5 Loading kg/day	Suspended Solids Concentration mg/L	Suspended Solids Loading kg/day	Total Phosphorus Concentration mg/L	Total Phosphorus Loading kg/day	Nitrogen NH3 and NH4 Concentration mg/L	Nitrogen NH3 and NH4 Loading kg/day	BOD5 mg/L	Suspended Solids mg/L	Total Phosphorus mg/L	Nitrogen NH3 and NH4 mg/L	m^3/cap/day				m^3/day	Units	Persons	m^3/day	Units	Persons
Town of Bradford West Gwillimbury																																
Wastewater Treatment (2002)	0016-4GALGG / Feb 8/00	Class 3 WWT	8,870	24,187	5,503	12,470	133.83	272.92	4.39	24.44	10.00	111.50	10.00	111.50	0.14	1.56	4.5 / 2.0		2.60	3.30	0.09	0.46		17,000									
Wastewater Treatment (2003)	0016-4GALGG / Feb 8/00	Class 3 WWT	8,870	24,187	5,418	9,895	181.88	222.67	4.04	23.81	10.00	111.50	10.00	111.50	0.14	1.56	4.5 / 2.0		2.60	3.60	0.10	0.15		17,300									
Wastewater Treatment (2004)	4233-623HNH / Aug 25/04	Class 3 WWT	8,870	24,187	5,832	12,885	145.38	196.71	3.73	22.16	10.00	111.50	10.00	111.50	0.14	1.56	4.5 / 2.0		2.50	3.70	0.11	0.16		17,900									
Average					5,584	11,750																	0.321	17,400	3.10	5,613	2,727	2,492	7,725	1,040	746	2,311
City of Barrie																																
Wastewater Treatment (2002)	0465-5ZBLQ8 /June 10/04	Class 4 WWT	57,100	135,720	46,165	79,035	144.08	142.58	4.23	22.85	15.00	857.00	15.00	857.00	0.24	13.70	4.0 / 10.0	228 / 571	6.83	5.62	0.12	2.90		111,600									
Wastewater Treatment (2003)	0465-5ZBLQ8 /June 10/04	Class 4 WWT	57,100	135,720	46,313	69,627	162.27	260.00	4.83	25.53	15.00	857.00	15.00	857.00	0.24	13.70	4.0 / 10.0	228 / 571	9.29	4.31	0.12	1.243 / 6.733		116,200									
Wastewater Treatment (2004)	0465-5ZBLQ8 /June 10/04	Class 4 WWT	57,100	135,720	48,630	68,077	233.33	314.17	5.08	24.00	15.00	857.00	15.00	857.00	0.24	13.70	4.0 / 10.0	228 / 571	10.28	4.88	0.16	1.52 / 7.167		121,100									
Average					47,036	72,246																	0.404	116,300	2.70	43,074	5,361	4,463	12,050	4,765	3,922	10,589
Township of Clearview																																
Stayner Wastewater (2002)	4770-5Q7LW9 / Oct 8/03	Class 2 WWT	2,500	6,250	1,493		634.92	444.33	116.90	14.91	10.00	25.00	15.00	37.50	0.40	1.00	4.0 / 2.5 / 1.5	10 / 6.25 / 3.75	2.68	6.88	0.43	0.40										
Stayner Wastewater (2003)	4770-5Q7LW9 / Oct 8/03	Class 2 WWT	2,500	6,250	1,474	3,376	616.00	285.00	9.00		10.00	25.00	15.00	37.50	0.40	1.00	4.0 / 2.5 / 1.5	10 / 6.25 / 3.75	1.40	3.80	0.15											
Stayner Wastewater (2004)	4770-5Q7LW9 / Oct 8/03	Class 2 WWT	2,500	6,250	1,533	2,096	608.67	489.42	10.33		10.00	25.00	15.00	37.50	0.40	1.00	4.0 / 2.5 / 1.5	10 / 6.25 / 3.75	0.81	3.13	0.92	0.11		3,400									
Average					1,500	2,736																	0.441	3,400	2.80	1,214	850	625	1,751	970	770	2,156
Creemore Wastewater (2002)	3-0589-99-006 / Jul 23/99	Class 2 WWT	1,400		310	760	786.00	386.00	10.50	19.20	10.00	14.00	10.00	14.00	0.20	0.28	4.0 / 2.0	5.6 / 2.8	2.30	1.50	0.12	0.10										
Creemore Wastewater (2003)	3-0589-99-006 / Jul 23/99	Class 2 WWT	1,400		362	665	736.00	427.00	12.40	16.00	10.00	14.00	10.00	14.00	0.20	0.28	4.0 / 2.0	5.6 / 2.8	2.04	1.41	0.12	0.43										
Creemore Wastewater (2004)	3-0589-99-006 / Jul 23/99	Class 2 WWT	1,400		452	592	683.25	418.83	11.78	14.38	10.00	14.00	10.00	14.00	0.20	0.28	4.0 / 2.0	5.6 / 2.8	2.61	1.37	0.06	0.38		1,329									
Average					375	672																	0.282	1,329	2.80	475	988	1,138	3,187	802	636	1,782
Town of Collingwood																																
Wastewater Treatment (2002)	2639-5TLQB2 / Dec 17/03	Class 3 WWT	24,545	60,900	16,025	33,881	163.00	130.00	4.60		25.00	613.70	25.00	613.70	1.00	24.50			5.30	6.10	0.57			12,300									
Wastewater Treatment (2003)	2639-5TLQB2 / Dec 17/03	Class 3 WWT	24,545	60,900	16,257	40,405	144.00	172.00	5.10		25.00	613.70	25.00	613.70	1.00	24.50			2.60	4.80	0.53			16,318									
Wastewater Treatment (2004)	2639-5TLQB2 / Dec 17/03	Class 3 WWT	24,545	60,900	16,147	60,890	180.00	203.00	6.60	61.00	25.00	613.70	25.00	613.70	1.00	24.50			1.30	5.40	0.38	0.12		16,318									
Average					16,151	45,059																	1.078	14,979	2.40	6,241	6,779	2,381	5,715	17,804	16,486	39,565
Township of Essa																																
Angus Wastewater (2002)	4500-62PGYJ / Jan 6/05	Class 2 WWT	5,511	11,911	2,192	3,551	194.79	195.29	5.16	32.48	10.00	55.00	10.00	55.00	0.30	1.65	0.6 / 3.1	3.3 / 17	2.92	3.40	0.38	0.90		6,200									
Angus Wastewater (2003)	4500-62PGYJ / Jan 6/05	Class 2 WWT	5,511	11,911	2,086	3,685	221.71	201.86	5.83	41.21	10.00	55.00	10.00	55.00	0.30	1.65	0.6 / 3.1	3.3 / 17	4.26	4.26	0.42	2.31		6,200									
Angus Wastewater (2004)	4500-62PGYJ / Jan 6/05	Class 2 WWT	5,511	11,911	2,420	5,082	228.46	287.08	6.27	34.19	10.00	55.00	10.00	55.00	0.30	1.65	0.6 / 3.1	3.3 / 17	2.28	2.94	0.43	2.97		6,200									
Average					2,233	4,106																	0.360	6,200	3.00	2,067	3,055	2,570	7,711	2,721	2,016	6,047
Town of Innisfil																																
Alcona Lakeshore Wastewater (2002)	5901-54UK7U / May 2/02	Class 2 WWT	14,370	39,960	6,940	15,634	85.00	132.00	2.98	16.90	10.00	144.00	15.00	216.00	0.30	2.20	5.00	72.00	1.90	2.00	0.09	0.21		17,874									
Alcona Lakeshore Wastewater (2003)	5901-54UK7U / May 2/02	Class 2 WWT	14,370	39,960	7,133	13,758	110.00	161.00	2.75	15.20	10.00	144.00	15.00	216.00	0.30	2.20	5.00	72.00	2.00	2.00	0.09	0.65		19,368									
Alcona Lakeshore Wastewater (2004)	5901-54UK7U / May 2/02	Class 2 WWT	14,370	39,960	7,413	12,779	103.00	127.00	2.57	15.20	10.00	144.00	15.00	216.00	0.30	2.20	5.00	72.00	2.00	2.00	0.09	0.60		20,268									
Average					7,162	14,057																	0.374	19,170	3.00	6,390	6,492	5,265	15,796	5,744	4,254	12,763
Cookstown Wastewater (2002)	3-0804-80-846 / Oct 23/86	Class 1 WWT	825	2,634	594	1,309	142.00	223.00	5.60	40.10	25.00		25.00		1.00		4.00		4.00	3.00	0.21	0.50		1,524									
Cookstown Wastewater (2003)	3-0804-80-846 / Oct 23/86	Class 1 WWT	825	2,634	536	1,802	163.00	209.00	6.40	45.00	25.00		25.00		1.00		4.00		7.00	4.00	0.15	2.45		1,524									
Cookstown Wastewater (2004)	3-0804-80-846 / Oct 23/86	Class 1 WWT	825	2,634	570	2,077	165.00	232.00	5.29	40.50	25.00		25.00		1.00		4.00		3.00	3.00	0.15	0.20		1,524									
Average					567	1,729																	0.372	1,524	3.00	508	202	164	493	139	103	309
Town of Midland																																
Wastewater Treatment (2002)	3-1604-94-987 / Jan 7/98	Class 4 WWT	15,665	32,580	9,227	19,105					10.00		10.00		0.40	1716 kg/year	10 / 15																
Wastewater Treatment (2003)	3-1604-94-987 / Jan 7/98	Class 4 WWT	15,665	32,580	8,695	20,717	62.40	175.00	3.70		10.00		10.00		0.40	1716 kg/year	10 / 15		2.20	3.40	0.11											
Wastewater Treatment (2004)	3-1604-94-987 / Jan 7/98	Class 4 WWT	15,665	32,580	8,688	14,418	63.90	146.00	3.30	N/A	10.00		10.00		0.40	1716 kg/year	10 / 15		2.07	2.90	0.15	N/A		14,000									
Average					8,870	18,080																	0.634	14,000	2.70	5,185	5,908	3,140	8,477	9,365	7,708	20,811
Town of New Tecumseth																																
Tottenham Wastewater (2002)		Class 2 WWT			2,259	4,542	184.40	104.10	5.05										1.90	5.60	0.38	0.38										
Tottenham Wastewater (2003)	8405-5U9K4Y / Dec 22/03	Class 2 WWT	4,082	17,021	2,447	5,040	175.10	282.50	5.39		6.00	24.49	15.00	61.23	0.35 / 0.2 / 0.1	1.8 / 0.82 / 0.3	3.3 / 1.2 / 0.5		5.50	11.30	0.88 / 0.18 / 0.11	1.86										
Tottenham Wastewater (2004)	8405-5U9K4Y / Dec 22/03	Class 2 WWT	4,082	17,021	2,136	7,088	180.00	224.00	5.49		6.00	24.49	15.00	61.23	0.35 / 0.2 / 0.1	1.8 / 0.82 / 0.3	3.3 / 1.2 / 0.5		8.81	10.99	0.63 / 0.17 / 0.31	10.63 / 0.09 / 0.08		4,997									
Average	8405-5U9K4Y / Dec 22/03		4,082	17,021	2,281	5,557																	0.456	4,997	2.90	1,723	1,573	1,081	3,134	1,833	1,405	4,074
Sir Frederic Banting Wastewater (2002)	1-0860-88-006 / Jul 18/88	Class 2 WWT	5,681	14,203	3,279	6,008	172.32	104.46	4.18	16.83	15.00	31,200 kg/year	15.00	31,200 kg/year	0.50	1,040 kg / year	10 / 2		3.16	3.97	0.10	0.92										
Sir Frederic Banting Wastewater (2003)	1-0860-88-006 / Jul 18/88	Class 2 WWT	5,681	14,203	3,274	4,424	245.19	238.14	4.71	19.42	15.00	31,200 kg/year	15.00	31,200 kg/year	0.50	1,040 kg / year	10 / 2		2.69	5.46	0.04	0.19										
Sir Frederic Banting Wastewater (2004)	1-0860-88-006 / Jul 18/88	Class 2 WWT	5,681	14,203	3,528	5,959	252.99	343.17	5.33	20.08	15.00	31,200 kg/year	15.00	31,200 kg/year	0.50	1,040 kg / year	10 / 2		2.98	4.83	0.09	2.13		3,534									
Average	1-0860-88-006 / Jul 18/88		5,681	14,203	3,360	5,464																	0.951	3,534	2.90	1,219	1,985	654	1,897	4,091	3,135	9,090
New Tec Regional Wastewater (2002)	3-1058-96-977 / Mar 5/97	Class 2 WWT	5,063	13,664	3,395	6,096	232.60	496.40	8.93		15.00	75.90	15.00	75.90	0.15	0.80	3.3 / 0.5	16.7 / 2.5	16.20	6.00	0.21	2.77										
New Tec Regional Wastewater (2003)	3-1058-96-977 / Mar 5/97	Class 2 WWT	5,063	13,664	3,478	5,829	219.20	259.50	5.70		15.00	75.90	15.00	75.90	0.15	0.80	3.3 / 0.5	16.7 / 2.5	38.40	10.30	0.26	2.64										
New Tec Regional Wastewater (2004)	3-1058-96-977 / Mar 5/97	Class 2 WWT	5,063	13,664	3,625	8,764	191.00	347.40	5.67		15.00	75.90	15.00	75.90	0.15	0.80	3.3 / 0.5	16.7 / 2.5	21.10	9.60	0.22	1.02		10,885									
Average	3-1058-96-977 / Mar 5/97		5,063	13,664	3,499	6,896																	0.321	10,885	2.90	3,753	1,214	1,184	3,432	165	126	366
City of Orillia																																
Wastewater Treatment (2002)	0537-5JUR55 / Jan 5/06	Class 3 WWT	27,300	72,700	16,533	36,000	90.80	209.90	4.57		15.00		15.00		0.30	3,000 kg/year			1.50	6.10	0.21			27,000									
Wastewater Treatment (2003)	0537-5JUR55 / Jan 5/06	Class 3 WWT	27,300	72,700	16,361	44,000	89.00	225.40	4.42		15.00		15.00		0.30	3,000 kg/year			2.70	5.40	0.13			29,121									
Wastewater Treatment (2004)	0537-5JUR55 / Jan 5/06	Class 3 WWT	27,300	72,700	17,522	76,000	97.00	228.90	4.82	16.44	15.00		15.00		0.30	3,000 kg/year			2.10	4.70	0.15	0.32		29,121									
Average					16,768	52,000																	0.590	28,414	2.95	9,632	8,855	4,624	13,641	14,514	10,933	32,253
Town of Penetanguishene																																
Fox Street Wastewater (2002)	3-1234-93-006 / Nov 4/93	Class 4 WWT	1,500	4,500	1,024	1,204	290.75	329.67	6.37	23.37	15.00	23.00	15.00	23.00	0.15	83 kg/year			6.62	8.40	0.14	1.90										
Fox Street Wastewater (2003)	3-1234-93-006 / Nov 4/93	Class 4 WWT	1,500	4,500	1,127	1,661	126.08	264.67	3.88	16.33	15.00	23.00	15.00	23.00	0.15	83 kg/year			5.98	5.17	0.08	1.22										
Fox Street Wastewater (2004)	3-1234-93-006 / Nov 4/93	Class 4 WWT	1,500	4,500	922	1,121	177.04	340.25	5.77	20.07	15.00	23.00	15.00	23.00	0.15	83 kg/year			4.22	5.25	0.13	1.66		1,169									
Average					1,024	1,329																	0.876	1,169	2.80	418	373	138	387	974	773	2,164
Main Street Wastewater (2002)	3-1251-92-936 / Oct 20/94	Class 4 WWT	4,545	13,635	3,881	4,667	103.42	248.58	3.66	12.06	15.00	68.00	15.00	68.00	0.15	250 kg/year			2.76	7.04	0.10	0.73										
Main Street Wastewater (2003)	3-1251-92-936 / Oct 20/94	Class 4 WWT	4,545	13,635	3,719	4,712	115.50	298.92	3.61	11.06	15.00	68.00	15.00	68.00	0.15	250 kg/year			2.62	7.24	0.10	0.34										
Main Street Wastewater (2004)	3-1251-92-936 / Oct 20/94	Class 4 WWT	4,545	13,635	3,954	5,278	144.04	369.92	4.13	10.84	15.00	68.00	15.00	68.00	0.15	250 kg/year			2.95	7.68	0.10	0.52		4,831									
Average					3,851	4,886																	0.797	4,831	2.80	1,725	309	126	352	2,371	1,882	5,269
Township of Ramara																																
Lagoon City Wastewater (2002)	5589-5YUNM9 / June 1/04	Class 2 WWT	1,713	4,546	1,285	3,090	61.00	56.00	1.50	11.60	10.00		15.00		0.30	188 kg/year / 249 kg/year			5.00	7.60	0.12			2,300									
Lagoon City Wastewater (2003)	5589-5YUNM9 / June 1/04	Class 2 WWT	1,713	4,546	1,424		45.00	53.00	1.20	9.60	10.00		15.00		0.30	188 kg/year / 249 kg/year			3.70	4.60	0.10											
Lagoon City Wastewater (2004)	5589-5YUNM9 / June 1/04	Class 2 WWT	1,713	4,546	1,360	4,468	34.00	42.00	1.00	9.10	10.00		15.00		0.30	188 kg/year / 249 kg/year			3.10	4.20	0.10			2,325									
Average					1,356	3,779																	0.588	2,308	2.50	923	221	137	342	674	599	1,499
Bayshore Village Wastewater (2002)	3-1337-81-968 / Oct 4/96	Class 2 WWT	399		283	901	157.00	121.00	2.39	19.10									11.50	12.00	1.20	2.45		619		238						
Bayshore Village Wastewater (2003)	3-1337-81-968 / Oct 4/96	Class 2 WWT	399		294	859	106.00	104.00	2.19	12.70									5.50	3.00	1.10	3.90		663		255						
Bayshore Village Wastewater (2004)	3-1337-81-968 / Oct 4/96	Class 2 WWT	399		307	1,206	112.00	132.00	2.48	15.30									3.50	3.00	0.70	0.90		702		270						
Average					295	989																	0.446	661	2.50	264	75	61	152	102	90	226

APPENDIX A - WASTEWATER TREATMENT CAPACITY ASSESSMENT

Wastewater System	Certificate of Approval No. / Date	Classification	Rated Average Daily Flow	Rated Peak Flow Rate	Average Daily Flow	Peak Flow	Raw Water Characteristics (average)				BOD5 Concentration	Effluent Limits from C of A (average)							Final Effluent (average)				Historical ADF / Cap	Population Persons	Persons Per Unit	Population (Units)	Spare Capacity	Residual Capacity	Residual Capacity	Spare Hydraulic Capacity	Residual Capacity	Residual Capacity
																											Includes 10% buffer adder to Historical & Future						
																											Method 1			Method 2 (MOE)		
			m^3/day	m^3/day	m^3/day	m^3/day	BOD5 mg/L	Suspended Solids mg/L	Total Phosphorus mg/L	Nitrogen NH3 and NH4 mg/L	mg/L	BOD5 Loading kg/day	Suspended Solids Concentration mg/L	Suspended Solids Loading kg/day	Total Phosphorus Concentration mg/L	Total Phosphorus Loading kg/day	Nitrogen NH3 and NH4 Concentration mg/L	Nitrogen NH3 and NH4 Loading kg/day	BOD5 mg/L	Suspended Solids mg/L	Total Phosphorus mg/L	Nitrogen NH3 and NH4 mg/L	m^3/cap/day				m^3/day	Units	Persons	m^3/day	Units	Persons
Township of Severn																																
Washago Wastewater (2002)	3-1081-83-006 / Nov 18/83		228		83						25.00	1,024 kg/year	25.00	1,024 kg/year	1.00	41 kg/year			10.3 / 26.3	8.3 / 9.3	0.05 / 0.04			316		117							
Washago Wastewater (2003)	3-1081-83-006 / Nov 18/83		228		103						25.00	1,024 kg/year	25.00	1,024 kg/year	1.00	41 kg/year			2.3 / 8.7	3.3 / 3.7	0.16 / 0.06			316		117							
Washago Wastewater (2004)	3-1081-83-006 / Nov 18/83		228		91						25.00	1,024 kg/year	25.00	1,024 kg/year	1.00	41 kg/year			5.3 / 12	1.0 / 1.7	0.03 / 0.07			321		119							
Average					92	#DIV/0!																	0.291	318	2.70	118	126	146	394	85	70	188
Coldwater (2002)	1-0020-66-742236 / Jul 25/00	Class 2 WWT			396	910	164.82	276.69	5.53	22.92									0.00	8.83	0.34	0.23		1,312		486						
Coldwater (2003)	1-0020-66-742236 / Jul 25/00	Class 2 WWT			365	1,035	135.29	177.43	4.41	22.13									0.00	8.28	0.27	3.26		1,323		490						
Coldwater (2004)	1-0020-66-742236 / Jul 25/00	Class 2 WWT	545		353	1,291	124.68	175.08	5.78	23.12									2.64	8.71	0.32	3.92		1,334		494						
Average			545		371	1,079																	0.281	1,323	2.70	490	137	164	442	-50	-41	-112
Cumberland Beach Wastewater (2002)	6791-62EJW5 / June 29, 04										10.00	13.90	10.00	13.90	0.15	0.21	3.0 / 7.0	4.2 / 9.7														
Cumberland Beach Wastewater (2003)	6791-62EJW5 / June 29, 04										10.00	13.90	10.00	13.90	0.15	0.21	3.0 / 7.0	4.2 / 9.7														
Cumberland Beach Wastewater (2004)	6791-62EJW5 / June 29, 04										10.00	13.90	10.00	13.90	0.15	0.21	3.0 / 7.0	4.2 / 9.7						2,250								
Average			1,390	4,768	#DIV/0!	#DIV/0!																	#DIV/0!	2,250	2.70		NA		NA	0	0	0
Township of Springwater																																
Elmvale (2002)	4989-66ZRKT / Dec 6/04	Class 2 WWT	1,800	6,600	1,055	2,985	164.69	131.92	2.98	18.11	10.00	18.00	5.00	9.00	0.17	0.30			4.71	5.13	0.12	3.38		2,289								
Elmvale (2003)	4989-66ZRKT / Dec 6/04	Class 2 WWT	1,800	6,600	1,107	3,355	134.83	274.83	3.63	27.16	10.00	18.00	5.00	9.00	0.17	0.30			4.00	6.14	0.09	6.80		2,289								
Elmvale (2004)	4989-66ZRKT / Dec 6/04	Class 2 WWT	1,800	6,600	1,118	6,834	111.75	128.58	3.04	16.03	10.00	18.00	5.00	9.00	0.17	0.30			4.00	4.75	0.10	1.14		2,289								
Average					1,094	4,391																	0.478	2,289	3.00	763	597	379	1,136	770	570	1,711
Township of Tay																																
Port McNicoll Wastewater (2002)	2382-5J2RTB / Jan 28/03		1,918	3,836							15.00	28.77	15.00	28.77	0.25	0.48	5.0 / 15	9.59 / 28.77														
Port McNicoll Wastewater (2003)	2382-5J2RTB / Jan 28/03		1,918	3,836	1,185		114.00	145.00	3.07	15.20	15.00	28.77	15.00	28.77	0.25	0.48	5.0 / 15	9.59 / 28.77	2.00	2.05	0.06	0.60		4,222								
Port McNicoll Wastewater (2004)	2382-5J2RTB / Jan 28/03		1,918	3,836	1,175		91.00	95.00	2.29	14.10	15.00	28.77	15.00	28.77	0.25	0.48	5.0 / 15	9.59 / 28.77	1.30	2.14	0.07	0.60		4,222								
Average					1,180																		0.279	4,222	2.80	1,508	620	720	2,017	18	14	40
Village of Victoria Harbour Wastewater (2002)	1-797-82-006 / Sept 10/82		2,364	6,600			112.00	127.00	1.72	17 (ammonium)					0.50	1.18			2.35	2.42	0.07											
Village of Victoria Harbour Wastewater (2003)	1-797-82-006 / Sept 10/82		2,364	6,600	1,798										0.50	1.18			3.06	2.31	0.13											
Village of Victoria Harbour Wastewater (2004)	1-797-82-006 / Sept 10/82		2,364	6,600	1,882										0.50	1.18			3.05	2.06	0.07											
Average					1,840																		#VALUE!	?	2.80		340			0		
Town of Wasaga Beach																																
Wastewater Treatment (2002)	3-0314-96-006 / Apr 12/96	Class 3 WWT	15,433	38,210	3,682	7,789	390.50	415.00	3.60	20.65	10.00	154.00	10.00	154.00	0.20	3.09	1.1 / 5.0	17 / 77.2	2.00	3.50	0.05	0.10		15,433								
Wastewater Treatment (2003)	3-0314-96-006 / Apr 12/96	Class 3 WWT	15,433	38,210	3,960	7,691	48.00	167.00	2.88	19.60	10.00	154.00	10.00	154.00	0.20	3.09	1.1 / 5.0	17 / 77.2	3.00	4.00	0.07	0.11		15,433								
Wastewater Treatment (2004)	3-0314-96-006 / Apr 12/96	Class 3 WWT	15,433	38,210	4,638	13,696	147.00	180.00	3.54	17.85	10.00	154.00	10.00	154.00	0.20	3.09	1.1 / 5.0	17 / 77.2	4.00	3.00	0.11	0.10		15,433								
Average					4,093	9,725																	0.265	15,433	2.10	7,349	10,930	17,839	37,463	8,488	8,982	18,863

Ainley GROUP CONSULTING ENGINEERS PLANNERS

MINUTES

Ainley & Associates Limited
550 Welham Road, Barrie, ON, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

MINUTES FOR MEETING

PROJECT: **IGAP**
Infrastructure Assessment Report
Residual Capacity Calculations
Ainley Project No. 205037

DATE & TIME: December 20, 2005 @ 9:00 am

LOCATION: MMAH Office, 777 Bay Street, Toronto

PRESENT:

Bruce Singbush	MMAH
Tim Haldenby	MMAH
Bill Armstrong	MOE (London)
Michael Parker	MOE (London)
Frederick Lam	MOE (EAAB)
Joe Mullan	Ainley Group
Reid Mitchell	Ainley Group

J. Mullan and R. Mitchell attended a meeting at 777 Bay Street in Toronto for the purpose of discussing the methods used to calculate residual capacity for the IGAP Study. This was in response to an email from MMAH dated December 12, 2005.

The MOE expressed concern that the Residual Capacity figures that will eventually be published in the IGAP Report, will lead some municipalities to false expectations on growth. It was agreed that Ainley would revise the Report to comment on a number of factors.

1. Residual capacities must be confirmed by future detailed assessment using Procedure D-5-1, resulting in agreement with MOE. At the current time, only Barrie and Orillia have prepared such detailed assessments and have agreements in place. Ainley borrowed those reports from B. Armstrong for review purposes.

2. Municipalities must be made aware of the fact that there is no guarantee that the figures developed by IGAP will be approved by the MOE without a detailed assessment

3. The MOE considers that 80% usage in a water supply or wastewater treatment is the point where a municipality should begin to plan for future expansion (Master Plan leading to Class EA and final design and construction). The MOE may not approve development beyond the 80% point without a commitment to such planning.

4. The IGAP range of residual capacities is to be explained and qualified in the Report. Municipalities will be told that the range presented in the IGAP Report is for preliminary planning purposes. Any

municipality will be required to do its own due diligence with respect to obtaining approval of residual capacity. The scale is to be qualified in the Report. It is not crucial that the residual capacities be exact for IGAP purposes. IGAP is simply trying to establish where growth should occur, based on a number of factors, residual capacity being but one factor.

The MOE indicated (in the Dec 12 E-mail) that certain important factors must be taken into account when calculating uncommitted reserve capacity. It was noted that, to date, Ainley has simply tried to determine "hydraulic reserve capacity" as defined in Procedure D-5-1. However, the important factors were discussed as follows;

1. *capacity and condition of the infrastructure* – it was noted that the condition of the infrastructure (pipes) is not part of the IGAP assessment in that it is considered that pipes can be easily replaced or upsized if need be.

2. *types of land use which may create high seasonal fluctuation or diurnal variations, sewage characteristics etc.* – it was suggested that the historical data will reflect seasonal variations and land use and that these factors should be considered in the future when each municipality undertakes its own assessment.

3. *maximum development potential of lands* – It was noted that this is not a factor when calculating CR.

4. *condition and performance characteristics of plant* – It was noted that each municipality was asked to comment on operating conditions with respect to Provincial Orders, ability to meet the conditions of the C. of As and any other operator concerns. These notes are included a footnotes in the IGAP Report. The MOE advised that they have not yet received the full Report.

After some discussion, it was agreed by all parties that the mathematical method used to determine CR in the formula outlined in MOE Procedure D-5-1, is acceptable and the MOE will support the calculations. However, F. Lam asked that Ainley confirm that the historical information used for existing serviced populations be an average of at least 3 years of information. It was noted that for all systems (water and wastewater), at least 3 years of historical data was used in the calculations (ADF for wastewater and MDD for water). However, with respect to populations, 3 years of data may not be applicable. That is, for some systems, there has not been any growth. Ainley will concentrate on the major municipalities and will comment on that aspect of the calculations in each section of the Report. That is, if insufficient population information is available for a major municipality, the historical end of the range should not be used.

It will also be noted that although the historical assessment may indicate that there is ample residual capacity for growth, if the Official Plan has not been updated, then the residual capacity will be restricted to the current OP figures.

In summary, the MOE's acceptance of the residual capacities (identified as CR in MOE Procedure D-5-1) which have been calculated through the IGAP Study, is not within the scope of the Study. That is, many other factors need to be considered before the MOE will accept residual capacity for actual development purposes. The factors that need to be considered in the future by any municipality, are as noted previously. Ainley will revise the Report to stress the MOE's position and to, hopefully, improve the level of understanding (reduce expectations) for the municipalities.

Please report any errors and/or omissions to the undersigned as soon as possible. Otherwise, these minutes shall be deemed to be an accurate account of the meeting discussions.

Minutes prepared by Reid Mitchell and distributed by:

J. A. Mullan, P.Eng.
Vice-President & Branch Manager
Ainley Group

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APPENDIX C- WATER SUPPLY CAPACITY ASSESSMENT

System	Certificate of Approval No. / Date	Rated Supply Capacity m3/day	Permit To Take Water No. / Expiry Date	Permitted Water Taking Capacity m3/day	System Classification	Historical MDD m3/day					Serviced Population No. of persons					Serviced Population No. of Units	MDD/Cap.	Spare Supply Capacity	Spare Water Capacity	Residual Capacity Includes 10% buffer adder to Historical & Future Method 1		Spare Supply Capacity	Residual Capacity MOE Method 2 (MOE)		Persons Per Unit
						2002	2003	2004	2005	Maximum	2002	2003	2004	2005	Maximum	Average	m3/cap*d	m^3/day	m^3/day	No. of Units	No. of People	m^3/day	No. of Units	No. of People	
Township of Adjala-Tosorontio																									
Everett	6756-65FKKY / March 16, 2005	3,916.8	93-P-3011 / January 15, 2013	3,920.0	large	1,182.6	1,244.4	1,253.4		1,253.4	1,638	1,752	1,902		1,902	614	0.659	2,538	3	1,129	3,501	1,777	510	1,580	3.1
Colgan	0480-666HCF / Nov 2, 2004	286.6	5308-64MSDN / Sept 30, 2009	157.2	small	161.7	181.5	176.0		181.5			213		213	69	0.852	-42	-129	-15	-45	-106	-28	-86	3.1
Lisle	3205-68LR5P / March 21, 2005	656.6	0583-692PFX / Dec 15, 2010	1,313.3	small	86.1	114.3	119.1		119.1			168		168	54	0.709	526	657	217	674	449	117	363	3.1
Loretto Heights	6420-68YJB9 / March 21, 2005	136.8	01/P-1055 / May 31, 2011	163.8	small	65.7	69.6	64.5		69.6			78		78	25	0.892	60	27	20	61	40	10	33	3.1
Rosemont	5945-68LR4L / March 21, 2005	73.4	95-P-5067 / March 31, 2006	130.9	small		53.0	61.0		61.0			141		141	45	0.433	6	57	4	13	-101	-26	-82	3.1
Weca	2754-6ARLGX / June 1, 2005	915.8	01-P-1053 / June 15, 2011	915.8	small	289.8	232.5	284.7		289.8			246		246	79	1.178	597	0	149	461	611	159	494	3.1
Hockley	8053-5VDLEY / March 3, 2004	90.0	00-P-1357 / January 31, 2011	90.0	small	62.1	47.1	52.0		62.1			42		42	14	1.479	22	0	4	13	38	10	31	3.1
Total															2,790						4,679			2,332	
City of Barrie																									
Water Supply	0569-65FPQY / Oct 27, 2004	92,490.0	1345-6DSNKC / 2015/07/20	106,436.8	large	73,366.0	65,576.0	66,228.0	78,159.0	78,159.0	111,600	116,200	121,100	126,000	126,000	46,667	0.620	6,515	13,947	3,536	9,548	-1,065	-531	-1,434	2.7
Town of Bradford West Gwillimbury																									
Water Supply	1242-6CAK5U / June 23, 2005	13,986.4	02-P3037 / Dec 31, 2005	13,226.4	large	11,180.0	11,749.0	11,302.0		11,749.0	17,300	17,700	18,400		18,400	5,935	0.639	2,237	0	1,130	3,504	-918	-365	-1,133	3.1
Township of Clearview																									
New Lowell	7007-68CQ3R / Jan 5, 2005	1,166.4	91-P-3077 / March 31, 2011	746.5	large	568.0	493.0	581.0		581.0			672		672	240	0.865	107	-420	40	113	-85	-25	-69	2.8
Stayner	6099-65AKES / Oct 14, 2004	6,540.5	92-P-3011 / July 15, 2012	6,544.8	large	5,334.0	5,430.0	5,146.0		5,430.0			4,166		4,166	1,488	1.303	567	4	141	396	2,791	1,107	3,101	2.8
Creemore	1569-5CYQEZ / Aug 16, 2002	2,688.0	3762-5Y9MZ5 / May 15, 2011	2,688.0	large	1,747.0	2,317.0	1,522.0		2,317.0			1,543		1,543	551	1.502	139	0	30	84	952	302	847	2.8
McKean Subdivision	9576-5SYS37 / Nov 12, 2003	1,055.0	3237-6CQPT8 / May 31, 2010	1,055.0	large	436.0	482.0	503.0		503.0			392		392	140	1.283	502	0	127	355	570	164	461	2.8
Colling-Woodlands Subdivision	1843-5V7LD8 / Feb 4, 2004	270.0	00-P-1069 / Aug 31, 2010	270.0	small	190.0	148.6	129.0		190.0			188		188	67	1.013	61	0	20	55	38	11	31	2.8
Buckingham Woods	6003-5RYH9F / Oct 10, 2003	131.0	2845-64PNQM / Aug 31, 2014	76.4	small		58.5	53.6		58.5			48		48	17	1.229	12	-55	3	9	17	5	14	2.8
Total															7,008						1,012			4,384	
Town of Collingwood																									
Water Supply	3108-6JEKVG / Dec 9, 2005	20,640.0	91-P-3037 / Jan 31, 2011	168,350.0	large	17,877.0	17,069.0	15,567.0		17,877.0	16,526	17,035	17,551		17,551	7,313	1.019	975	147,710	363	870	5,634	2,745	6,589	2.4
Township of Essa																									
Angus	2050-635HB3 / July 26, 2004	6,557.8	Mill: 90-P-0012 / July 31, 2011 McGeorge: 92-P-3119 / Nov 30, 2011	6,553.7	large	3,094.0	2,553.0	2,650.0		3,094.0	4,218		6,210		6,210	2,070	0.498	3,150	-4	1,916	5,748	965	357	1,072	3.0
Thornton-Glen	7019-5V8S8S / Jan 19, 2004	1,540.0	03-P-1151 / Oct 15, 2005	1,866.2	large	513.0	523.0	658.0		658.0			750		750	250	0.877	816	326	282	846	612	165	494	3.0
Baxter	6844-5W5HHB / March 19, 2004	225.0	5080-5ZCHCZ / Aug 31, 2008	255.0	small	132.0	118.0	102.4		132.0			156		156	52	0.846	80	30	29	86	32	9	26	3.0
Total															7,116						6,680			1,592	
Town of Innisfil																									
Innisfil Heights	2089-5TES8G / Nov 21, 2003	2,799.0	1007-63JP54 / June 30, 2008	3,110.0	large	787.5	882.0	784.0		882.0			1,080		1,080	338	0.817	1,829	311	636	2,036	1,584	440	1,408	3.2
Crossroads	1791-5W5QXB / Feb 13, 2004	2,030.0	1732-5YHR7D / April 30, 2009	2,030.0	large	900.0	830.0	770.0		900.0	1,715		1,715		1,715	536	0.525	1,040	0	563	1,802	101	28	89	3.2
Stroud	6464-6E4RFC / July 20,2005	2,097.6	00-P-1368 / Feb 15, 2011	2,711.9	large	1,700.0	1,418.0	1,459.0		1,700.0			1,872		1,872	585	0.908	228	614	71	228	-8	-2	-7	3.2
Churchill	0718-62LJT4 / July 12, 2004	1,722.0	93-P-3019 / July 15, 2008	743.0	large	136.0	614.0	394.0		614.0	520		520		520	163	1.181	68	-979	16	52	100	25	80	3.2
Golf Haven	0937-6FCSD9 / Aug 31, 2005	378.0	91-P-3006 / March 31, 2011	459.0	large	378.0	331.0	243.0		378.0			535		535	167	0.707	-38	81	-15	-49	-284	-72	-230	3.2
Gold Crest	1894-62LNHL / July 12, 2004	324.0	00-P-1381 / Jan 15, 2011	648.0	large	196.0	245.0	133.0		245.0	195		195		195	61	1.256	55	324	12	39	83	21	67	3.2
Cookstown	4916-5Z3PCN / June 4, 2004	851.0	96-P-1064 / Oct 20, 2009	1,571.0	large	921.0	863.0	814.0		921.0	1,390		1,390		1,390	434	0.663	-162	720	-70	-222	-713	-198	-634	3.2
Alcona Lakeshore	7283-5GQL2F / Dec 11, 2002	12,700.0	4713-62UJAP / July 31, 2009	28,377.0	large	6,111.0	6,829.0	5,834.0		6,829.0	11,178	11,872	12,560		12,560	3,925	0.544	5,188	15,677	2,711	8,675	1,961	717	2,294	3.2
Total															19,867						12,560			3,068	
Town of Midland																									
Water Supply	7076-63CRJM / Aug 24, 2004	21,877.0	97-P-1002 / April 24, 2007	20,775.7	large	15,811.0	13,221.0	11,507.0		15,811.0	16,430	16,430	16,700		16,700	6,185	0.947	3,384	-1,101	1,203	3,249	6,497	2,814	7,599	2.7
Town of New Tecumseth																									
Alliston / Beeton / Hillcrest	8185-67FPTT / March 21, 2005	23,886.0	8607-62VKNL / Aug 30, 2014	15,205.0	large	15,666.8	14,872.6	13,455.2		15,666.8		13,355	13,355		13,355	4,605	1.173	6,652	-8,681	1,778	5,155	12,468	5,028	14,582	2.9
Tottenham	3718-69UKMY / April 26, 2005	6,566.4	2535-5ZYLJF / July 7, 2004	6,000.0	large	3,506.1	3,002.9	3,105.0		3,506.1		4,750	4,750		4,750	1,638	0.738	2,143	-566	910	2,640	1,725	661	1,916	2.9
Total															18,105						7,795			16,499	
City of Orillia																									
Water Supply	4059-6DSKXX / July 20, 2005	39,502.0	91-P-3036 / May 31, 2011	42,050.5	large	19,743.0	21,086.0	17,328.0		21,086.0	29,372	29,626	30,039		30,039	10,183	0.702	16,307	2,549	7,159	21,119	15,170	6,349	18,729	2.95
Township of Oro-Medonte																									
Canterbury	8538-68YQ72 / Apr 18, 2005	209.1	92-P-3028 / Dec 15, 2011	209.1	small	48.0	50.0	46.0		50.0			46		46	16	1.087	154	0	46	129	152	44	123	2.8
Craighurst	7367-5E9RLK / Oct 8, 2002	457.9	92-P-3120 / Dec 15, 2011	457.9	small	184.0	150.0	169.0		184.0			138		138	49	1.333	256	0	62	174	287	83	232	2.8
Horseshoe Highlands	3693-5YBP9A / Apr 23, 2004	3,369.6	0404-5UHQDN / Dec 31, 2013	3,370.0	large	3,706.0	1,640.0	1,375.0		3,706.0			1,380		1,380	493	2.686	-707	0	-85	-239	1,817	577	1,615	2.8
Maplewood	1546-5E4L9F / Sept 23, 2002	163.7	02-P-1314 / Oct 31, 2012	163.7	small	106.0	137.0	150.0		150.0			127		127	45	1.181	-1	0	0	-1	6	2	5	2.8
Robin Crest	1895-5C6QT5 / July 19, 2002	850.0	77-P-3033 / Sept 15, 2010	850.0	large	503.0	408.0	402.0		503.0			243		243	87	2.070	297	0	47	130	549	159	444	2.8
Sugarbush	0724-6CBJ77 / May 20, 2005	2,485.4	1483-5MYQ36 / May 31, 2013	4,122.7	large	956.0	415.0	636.0		956.0			869		869	310	1.100	1,434	1,637	423	1,185	1,410	407	1,139	2.8
Cedarbrook	5391-645KPK / Aug 24, 2004	196.1	95-P-5036 / March 31, 2006	392.3	small	69.0	86.0	37.0		86.0			65		65	23	1.323	102	196	25	70	116	33	93	2.8
Harbourwood	0500-5DVHLZ / Sept 19, 2002	921.6	2334-5VKS38 / Jan 31, 2014	921.6	large	517.0	441.0	312.0		517.0			354		354	126	1.460	353	0	78	220	484	140	391	2.8
Lake Simcoe Regional Airport	0644-5T6RGB / Nov 12, 2003	73.0	7458-5VKLNL / Jan 31, 2014		large	21.0	19.0	15.0		21.0			53		53	19	0.396	50	-73	41	114	7	2	6	2.8
Medonte Hills	9463-5F5N9K / Oct 23, 2002	393.0	92-P-3029 / December 15, 2011	720.0	large	346.0	211.0	232.0		346.0			367		367	131	0.943	12	327	4	12	-61	-18	-49	2.8
Shanty Bay	7073-68UR9A / Apr 18, 2005	1,278.7	6151-6BPL7V / Apr 30, 2015	1,220.0	large	391.0	390.0	357.0		391.0			302		302	108	1.295	790	-59	198	555	846	244	684	2.8
Warminister	4895-6CBPWV / May 20, 2005	985.0	92-P-3071 / March 15, 2012	600.0	large	529.0	605.0	535.0		605.0			540		540	193	1.120	-66	-385	-19	-53	-68	-20	-55	2.8
Total															4,484						2,295			4,628	

System	Certificate of Approval No. / Date	Rated Supply Capacity	Permit To Take Water No. / Expiry Date	Permitted Water Taking Capacity	System Classification	Historical MDD m3/day					Serviced Population No. of persons					Serviced Population No. of Units	MDD/Cap.	Spare Supply Capacity Includes 10% buffer adder to Historical & Future	Spare Water Capacity	Residual Capacity Method 1		Spare Supply Capacity	Residual Capacity MOE Method 2 (MOE)		Persons Per Unit
		m3/day		m3/day		2002	2003	2004	2005	Maximum	2002	2003	2004	2005	Maximum	Average	m3/cap*d	m^3/day	m^3/day	No. of Units	No. of People	m^3/day	No. of Units	No. of People	
Town of Penetanguishene																									
Payette	5575-66DRP4 / Nov 3, 2004	11,836.8	5371-6BEK5K / Sept 30, 2014	11,000.0	large	8,266.0	8,316.0	7,901.0		8,316.0			6,700		6,700	2,393	1.241	1,852	-837	485	1,357	4,970	1,972	5,522	2.8
Lepage	3364-66DKB5 / Nov 3, 2004	466.6	91-P-3062 / March 15, 2011	432.0	small			52.7		52.7			64		64	23	0.823	374	-35	147	413	353	102	285	2.8
Total															6,764						1,770			5,807	
Township of Ramara																									
Bayshore Village	7672-5W2SMC / Feb 23, 2004	1,243.8	4512-66JSJZ / Nov 1, 2014	1,243.8	large	1,062.3	672.0	514.9		1,062.3	595	638	675		675	270	1.574	75	0	17	43	408	132	330	2.5
Park Lane	1218-5S5RTP / Nov 21, 2003	50.0			small	28.2	41.2	44.0		44.0	40	43	43		43	17	1.035	2	-50	1	1	-3	-1	-2	2.5
Lagoon City/Brechin	5211-5QBLCG / Sept 22, 2003	4,000.0	76-P-3057	3,993.0	large	2,548.0	2,418.0	1,928.0		2,548.0	2,325	3,000	2,863		3,000	1,200	0.849	1,197	-7	513	1,281	956	380	951	2.5
Davy Drive	8483-5W4JBX / March 3, 2004	75.7	7770-5QDQ5C / Aug 30, 2013	75.7	small	26.1	38.0	37.2		38.0	73	78	80		80	32	0.475	34	0	26	65	-23	-8	-19	2.5
South Ramara	6028-5XSP5X / June 29, 2004	387.1	2683-5YWNWN / May 31, 2014	542.9	large	364.5	287.3	200.0		364.5	193	193	213		213	85	1.715	-14	156	-3	-7	124	40	100	2.5
Val Harbour	8283-5VTMNH / March 3, 2004	207.4	94-P-3026 / Nov 30, 2011	207.4	small	151.0	172.4	84.5		172.4	98	113	140		140	56	1.231	18	0	5	13	34	11	28	2.5
Total															4,150						1,397			1,388	
Township of Severn																									
Severn Estates	3942-63KJCU / Sept 1, 2004	108.9	5223-5W3S4A / Dec 31, 2009	185.0	small	47.0	43.0	37.0		47.0	62	62	62		62	23	0.757	57	76	25	69	108	10	26	2.7
Bass Lake Woodlands	5215-5W9JME / March 29, 2004	818.0	87-P-3051 / Feb 28, 2014	1,211.2	large	548.0	448.0	331.0		548.0	319	324	321		324	120	1.691	215	393	43	116	417	125	337	2.7
Sandcastle Estates	6974-66BLCH / Nov 22, 2004	388.8	03-P-1036 / May 31, 2008	388.8	small	236.1	130.8	111.0		236.1	167	167	167		167	62	1.410	129	0	31	83	182	54	147	2.7
Washago	1161-5HKRK7 / Jan 8, 2003	544.3	1481-62LKLT / Oct 31, 2008	544.3	large	227.3	252.0	206.0		252.0	316	316	365		365	135	0.691	267	0	130	351	93	28	75	2.7
Coldwater	6242-63ZQHG / Sept 10, 2004	2,138.0	93-P-3071 / July 31, 2013	4,105.7	large	1,377.0	1,070.0	904.0		1,377.0	1,366	1,377	1,431		1,431	530	0.962	623	1,968	218	589	528	174	469	2.7
West Shore	6526-5SDHEX / Oct 21, 03	2,780.0	4612-6E9PSB / Mar 31, 2015	3,041.3	large		N/A					N/A	2,250												
Total															2,349						1,208			1,054	
Township of Springwater																									
Anten Mills	7938-5YFPCA / Aug 16, 2004	2,086.6	7511-5MLRGP / May 16, 2013	1,557.6	large	346.0	363.0	360.0		363.0			348		348	116	1.043	1,158	-529	336	1,009	1,127	304	911	3.0
Del Trend	8518-66LK6Y / Dec 16, 2004	1,840.3	92-P-3106 / Feb 28, 2012	1,618.4	large	597.0	579.0	501.0		597.0		318			318	106	1.877	962	-222	155	466	1,225	330	990	3.0
Elmvale	2129-5TGMBU / Nov 21, 2003	4,546.0	91-P-3104 / Apr 15, 2011	4,546.0	large	1,363.0	2,038.0	1,341.0		2,038.0			2,289		2,289	763	0.890	2,304	0	784	2,353	2,228	734	2,201	3.0
Hillsdale	3382-5Y4HW2 / June 7, 2004	1,185.0	4031-5YEMY2 / Apr 30, 2014	1,434.0	large	436.0	524.0	601.0		601.0			1,068		1,068	356	0.563	524	249	282	846	-17	-5	-15	3.0
Midhurst	5775-6BNJ24 / April 22, 2005	7,102.0	92-P-3026 / Feb 28, 2011	6,850.0	large		3,241.0	2,969.0	3,233.0	3,241.0			2,904		2,904	968	1.116	3,285	-252	892	2,676	3,910	1,287	3,861	3.0
Minesing	5492-5F4N2Y / Oct 25, 2002	740.0	5385-69GMBJ / May 31, 2013	740.0	large	742.0	533.0	408.0		742.0		639	597		639	213	1.161	-76	0	-20	-60	-51	-14	-41	3.0
Snow Valley	7123-5YEL2Z / July 16, 2004	1,503.0	2328-69GKET / March 31, 2011	1,400.0	large	713.0	652.0	525.0		713.0			507		507	169	1.406	616	-103	133	398	773	208	624	3.0
Vespra Downs	5754-66ES7P / Nov 8, 2004	449.3	0621-62MR3A / Aug 31, 2014	168.9	small	86.0	112.0	127.0		127.0		69			69	23	1.841	29	-280	5	14	84	22	67	3.0
Total															8,142						7,703			8,599	
Township of Tay																									
Victoria Harbour/Port McNicoll	5358-645JVN / Oct 6, 2004	7,845.1	7621-606HNV / June 15, 2015	7,845.1	large		7,620.0	4,341.0		7,620.0		5,800	5,800		5,800	2,071	1.314	-537	0	-133	-371	2,625	1,042	2,917	2.8
Rope	8583-659NEA / Dec 8, 2004	432.0	92-P-3074 / March 15, 2012		small		111.0	99.0		111.0		60	60		60	21	1.850	310	-432	54	152	358	103	289	2.8
Midland Bay Woods	2592-697MNY / Apr 22, 2005	328.0	91-P-3102 / Apr 15, 2011	301.0	large		267.0	219.0		267.0		230	230		230	82	1.161	7	-27	2	6	16	5	13	2.8
Bay Berry	2256-69ULXS / Apr 18, 2005	392.3	91-P-3103 / Apr 30, 2011	392.8	small		46.0	68.0		68.0		100	100		100	36	0.680	318	1	152	424	269	78	217	2.8
Waubaushene	2173-69ERJG / Mar 21, 2005	1,227.0	91-P-3106 / Apr 15, 2011	1,225.0	large		760.0	673.0		760.0		1,200	1,200		1,200	429	0.633	389	-2	199	558	-125	-40	-111	2.8
Total															7,390						769			3,325	
Township of Tiny																									
Perkinsfield	3459-6AGQSA / Apr 15, 2005	1,482.0	4238-5YXKRA / Aug 31, 2009	1,382.0	large		601.0	466.0	588.0	601.0		437	437		437	168	1.376	721	-100	183	476	841	262	680	2.6
Bluewater	5101-5UZRWX / Feb 11, 2004	835.9	91-P-3065 / Apr 15, 2011	989.7	large		792.0	823.0	936.0	936.0		601	614		614	236	1.525	-194	154	-44	-115	77	24	62	2.6
Georgian Bay Estates	8765-699PYP / March 16, 2005	949.2	91-P-3063 / April 15, 2011	949.2	large		409.0	505.0	647.0	647.0		549	559		559	215	1.157	238	0	72	187	257	80	208	2.6
Georgian Sands	7408-5YYPLE / June 4, 2004	3,145.0	91-P-3022 / Apr 15, 2011	3,261.2	large		1,353.0	1,877.0	2,139.0	2,139.0		1,578	1,591		1,591	612	1.344	792	116	206	536	1,355	463	1,204	2.6
LA Place	5292-6BWHLM / May 19, 2005	648.0	1276-66LJGU / Aug 31, 2009	198.1	small		139.0	149.0	195.0	195.0		140	148		148	57	1.316	-16	-450	-4	-11	15	5	12	2.6
TeePee Points	7533-5Y2MY2 / May 12, 2004	288.0	91-P-3061 / April 15, 2011	122.8	small		165.0	117.0	165.0	165.0		237	237		237	91	0.697	-59	-165	-29	-77	-170	-53	-137	2.6
Sand Castle Estates	8782-5SJHJU / Oct 21, 2003	490.0	92-P-3096 / Aug 15, 2012	491.0	small		57.0	71.0	112.0	112.0		75	83		83	32	1.346	367	1	95	248	387	120	313	2.6
Vanier Woods	3163-5UYQP3 / Jan 26, 2003	360.0	92-P-3088 / Aug 15, 2012	360.0	small		74.0	115.0	123.0	123.0		96	104		104	40	1.183	225	0	66	173	231	72	187	2.6
Wyevale Central	8301-6A9J8B / June 3, 2005	1,182.0	92-P-3080 / Aug 15, 2012	920.2	large		586.0	527.0	732.0	732.0		468	515		515	198	1.422	115	-262	28	73	283	88	229	2.6
Cook's Lake	4642-6C5FU7 / May 13, 2005	655.0	91-P-3064 / April 15, 2011	400.0	small		174.0	174.0	207.0	207.0		224	224		224	86	0.926	172	-255	65	169	123	38	100	2.6
Georgian Highlands	3187-62LQFA / July 27, 2004	751.7	01-P-1073 /	961.9	small		198.9	238.0	247.0	247.0		208	211		211	81	1.173	480	210	143	372	491	153	397	2.6
Lefaive	6298-5SLR4M / Jan 26, 2004	308.7	92-P-3047 / Aug 15, 2012	607.7	small		122.0	121.0	161.0	161.0		172	172		172	66	0.938	132	299	49	128	96	30	78	2.6
Pennorth	8055-5SQPJP / Jan 26, 2004	61.4	91-P-3060 / April 15, 2011	61.4	small		48.9	84.7	95.0	95.0		83	83		83	32	1.142	-43	0	-13	-34	-42	-13	-34	2.6
Rayko	3291-69EK69 / Mar 31, 2005	194.4	02-P-1372 / Feb 15, 2013	194.4	small		73.8	122.7	111.0	122.7		83	83		83	32	1.475	59	0	14	37	91	28	74	2.6
Sawlog Bay	6554-5UYP6C / Jan 26, 2004	261.0	3203-5ZQPTB / June 30, 2009	189.0	small		131.0	82.0	108.0	131.0		88	91		91	35	1.440	45	-72	11	28	76	24	62	2.6
Thunder Bay	9908-5SQQ8Z / Jan 30, 2014	200.0	0024-62TPFM / June 30, 2014	202.9	small		97.3	101.0	183.0	183.0		47	47		47	18	3.910	-1	3	0	0	142	44	115	2.6
Whip-Poor-Will 2	0609-5UYHQ6 / Jan 26, 2004	360.0	02-P-1319 / Nov 30, 2007	720.0	small		372.0	277.0	464.0	464.0		148	151		151	58	3.077	-150	360	-17	-44	173	54	140	2.6
Woodland Beach	6237-5UYQ9J / Jan 26, 2004	170.0	92-P-3061 / July 31, 2012	170.0	small		133.0	123.0	196.0	196.0		47	49		49	19	3.968	-46	0	-4	-10	109	34	88	2.6
Total															5,398						2,133			3,776	
Town of Wasaga Beach																									
Water Supply	8280-6AGKH8 / May 11, 2005	31,415.0	7854-6CGR5H / May 31, 2015	31,415.0	large	19,990.0	19,970.0	18,870.0		19,990.0	16,115	17,432	19,549		19,549	9,309	1.023	9,426	0	3,990	8,380	14,701	8,188	17,194	2.1

Appendix T - Wastewater Treatment GAP Analysis

(Based on Existing Infrastructure)

System	**Existing Residual Capacity** (Number of Persons)	**Additional Approved Population Potential** (Number of Persons)		**Gap Analysis** (Number of Persons)		**Gap Analysis** (m^3/day)	
		with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)
Town of Bradford West Gwillimbury							
Total	**2,300**	**22,150**	**27,250**	**-19,850**	**-24,950**	**-8,950**	**-11,250**
City of Barrie							
Total	**12,050**	**23,600**	**38,050**	**-38,000**	**-45,850**	**-16,900**	**-20,400**
Equivalent future IC Allowance (See Notes 1 & 2)		**26,450**	**19,850**				
Township of Clearview							
Stayner	1,750	21,150	27,300	-19,400	-25,550	-9,400	-12,400
Creemore	3,200	3,950	5,850	-750	-2,650	-250	-800
Total	**4,950**	**25,100**	**33,150**	**-20,150**	**-28,200**	**-9,650**	**-13,200**
Town of Collingwood							
Total	**5,700**	**31,300**	**51,400**	**-25,600**	**-45,700**	**-30,350**	**-54,200**
Township of Essa							
Angus	7,700	7,400	7,400	300	300	100	100
Total	**7,700**	**7,400**	**7,400**	**300**	**300**	**100**	**100**
Town of Innisfil							
Alcona Lakeshore	15,800	15,750	15,750	50	50	0	0
Cookstown	500	850	850	-350	-350	-150	-150
Total	**16,300**	**16,600**	**16,600**	**-300**	**-300**	**-150**	**-150**
Town of Midland							
Total	**8,500**	**8,900**	**12,950**	**-400**	**-4,450**	**-300**	**-3,100**
Town of New Tecumseth							
Tottenham	0	6,850	11,350	-6,850	-11,350	-3,450	-5,700
Alliston Sir Frederic Banting & Regional WWTP	1,900	8,900	14,750	-7,000	-12,850	-7,300	-13,450
Total	**1,900**	**15,750**	**26,100**	**-13,850**	**-24,200**	**-10,750**	**-19,150**
City of Orillia							
Total	**13,650**	**19,750**	**35,050**	**-6,100**	**-21,400**	**-3,950**	**-13,900**
Town of Penetanguishene							
Fox Street	400	150	150	250	250	250	250
Main Street	350	4,100	8,500	-3,750	-8,150	-3,300	-7,150
Total	**750**	**4,250**	**8,650**	**-3,500**	**-7,900**	**-3,050**	**-6,900**
Township of Ramara							
Lagoon City	350	2,700	4,750	-2,350	-4,400	-1,500	-2,850
Bayshore Village	150	250	250	-100	-100	-50	-50
Total	**500**	**2,950**	**5,000**	**-2,450**	**-4,500**	**-1,550**	**-2,900**
Township of Severn							
Washago	400	0	0	400	400	150	150
Coldwater	450	1,350	1,350	-900	-900	-300	-300
West Shore	1,000	0	0	1,000	1,000	450	450
Total	**1,850**	**1,350**	**1,350**	**500**	**500**	**300**	**300**
Township of Springwater							
Elmvale	1,150	1,000	1,000	150	150	100	100
Total	**1,150**	**1,000**	**1,000**	**150**	**150**	**100**	**100**
Township of Tay							
Port McNicoll / Village of Victoria Harbour	50	24,000	24,000	-23,950	-23,950	-10,800	-10,800
Total	**50**	**24,000**	**24,000**	**-23,950**	**-23,950**	**-10,800**	**-10,800**
Town of Wasaga Beach							
Total	**37,450**	**9,700**	**9,700**	**27,750**	**27,750**	**8,100**	**8,100**
Study Area Total (See Note 3)	**114,800**	**213,800**	**297,650**	**-125,450**	**-202,700**	**-87,800**	**-147,350**

Note 1: Equivalent population allowance, with No Intensification, for 10,702 m^3/day ADF of future Industrial/Commercial (IC) development after Residential build out in 2011.

Note 2: Equivalent population allowance, with High Intensification, for 8,027 m^3/day ADF of future Industrial/Commercial (IC) development after Residential build out in 2012.

Note 3: Excludes equivalent population allowance for Barrie's future IC development after Residential build out in 2011/2012.

Appendix U - Wastewater Treatment GAP Analysis

(Based on Existing + EA Approved Infrastructure)

System	Existing Residual Capacity (Number of Persons)	Committed Capacity Increases (as Identified by Class EA's and Design Briefs) (Number of Persons)	Additional Approved Population Potential (Number of Persons)		Gap Analysis (Number of Persons)		Gap Analysis (m^3/day)	
			with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)
Town of Bradford West Gwillimbury								
Total (see note 1)	**2,300**	**59,650**	**22,150**	**27,250**	**39,800**	**34,700**	**17,900**	**15,600**
City of Barrie								
Total	**12,050**	**46,750**	**23,600**	**38,050**	**8,750**	**900**	**3,900**	**400**
Equivalent future IC Allowance (See Note 2 & 3)			**26,450**	**19,850**				
Township of Clearview								
Stayner	1,750	0	21,150	27,300	-19,400	-25,550	-9,400	-12,400
Creemore	3,200	0	3,950	5,850	-750	-2,650	-250	-800
Total	**4,950**	**0**	**25,100**	**33,150**	**-20,150**	**-28,200**	**-9,650**	**-13,200**
Town of Collingwood								
Total	**5,700**	**0**	**31,300**	**51,400**	**-25,600**	**-45,700**	**-30,350**	**-54,200**
Township of Essa								
Angus	7,700		7,400	7,400	300	300	100	100
Total	**7,700**	**0**	**7,400**	**7,400**	**300**	**300**	**100**	**100**
Town of Innisfil								
Alcona Lakeshore	15,800	0	15,750	15,750	50	50	0	0
Cookstown	500	0	850	850	-350	-350	-150	-150
Total	**16,300**	**0**	**16,600**	**16,600**	**-300**	**-300**	**-150**	**-150**
Town of Midland								
Total	**8,500**	**0**	**8,900**	**12,950**	**-400**	**-4,450**	**-300**	**-3,100**
Town of New Tecumseth								
Tottenham (see note 4)	0	3,150	6,850	11,350	-3,700	-8,200	-1,850	-4,100
Alliston Sir Frederic Banting & Regional WWTP (see note 5)	1,900	3,450	8,900	14,750	-3,550	-9,400	-3,700	-9,850
Total	**1,900**	**6,600**	**15,750**	**26,100**	**-7,250**	**-17,600**	**-5,550**	**-13,950**
City of Orillia								
Total	**13,650**	**0**	**19,750**	**35,050**	**-6,100**	**-21,400**	**-3,950**	**-13,900**
Town of Penetanguishene								
Fox Street	400	0	150	150	250	250	250	250
Main Street	350	0	4,100	8,500	-3,750	-8,150	-3,300	-7,150
Total	**750**	**0**	**4,250**	**8,650**	**-3,500**	**-7,900**	**-3,050**	**-6,900**
Township of Ramara								
Lagoon City	350	0	2,700	4,750	-2,350	-4,400	-1,500	-2,850
Bayshore Village	150	0	250	250	-100	-100	-50	-50
Total	**500**	**0**	**2,950**	**5,000**	**-2,450**	**-4,500**	**-1,550**	**-2,900**
Township of Severn								
Washago	400	0	0	0	400	400	150	150
Coldwater	450	0	1,350	1,350	-900	-900	-300	-300
West Shore	1,000	0	0	0	1,000	1,000	450	450
Total	**1,850**	**0**	**1,350**	**1,350**	**500**	**500**	**300**	**300**
Township of Springwater								
Elmvale	1,150	0	1,000	1,000	150	150	100	100
Total	**1,150**	**0**	**1,000**	**1,000**	**150**	**150**	**100**	**100**
Township of Tay								
Port McNicoll / Village of Victoria Harbour	50	0	24,000	24,000	-23,950	-23,950	-10,800	-10,800
Total	**50**	**0**	**24,000**	**24,000**	**-23,950**	**-23,950**	**-10,800**	**-10,800**
Town of Wasaga Beach								
Total	**37,450**	**0**	**9,700**	**9,700**	**27,750**	**27,750**	**8,100**	**8,100**
Study Area Total (See Note 6)	**114,800**	**113,000**	**213,800**	**297,650**	**-12,450**	**-89,700**	**-34,950**	**-94,500**

Note 1: Includes additional capacity increase of 17,400 m^3/day from expansion and the Historical Residual Capacity (assuming that problems with the influent flow meter have been resolved) minus the MOE Residual Capacity.

Note 2: Equivalent population allowance for 10,702 m^3/day ADF of future Industrial/Commercial (IC) development after Residential build out in 2011.

Note 3: Equivalent population allowance, with High Intensification, for 8,027 m^3/day ADF of future Industrial/Commercial (IC) development after Residential build out in 2012.

Note 4: Historical Residual Capacity assuming that issues related to Provincial Orders have been addressed.

Note 5: Historical Residual Capacity of the Regional WWTP assuming that issues related to Provincial Orders have been addressed.

Note 6: Excludes equivalent population allowance for Barrie's future IC development after Residential build out in 2011.

Appendix V - Water Capacity GAP Analysis
(Based on Existing Infrastructure)

System	Existing Residual Capacity (Number of Persons)	Additional Approved Population Potential (Number of Persons)		Gap Analysis (Number of Persons)		Gap Analysis (m^3/day))	
		with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)
Township of Adjala-Tosorontio							
Everett	3,500	1,300	1,300	2,200	2,200	1,600	1,600
Colgan	-50	50	50	-100	-100	-100	-100
Lisle	650	100	100	550	550	450	450
Loretto Heights	50	250	250	-200	-200	-200	-200
Rosemont	0	0	0	0	0	0	0
Weca	450	0	0	450	450	600	600
Hockley	0	100	100	-100	-100	-150	-150
Total	**4,600**	**1,800**	**1,800**	**2,800**	**2,800**	**2,200**	**2,200**
City of Barrie							
Water Supply	**9,550**	**23,600**	**38,050**	**-55,750**	**-70,200**	**-38,050**	**-47,900**
Equivalent future IC Allowance (See Note 1)		**41,700**	**41,700**				
Town of Bradford West Gwillimbury							
Water Supply	**3,500**	**22,150**	**27,250**	**-18,650**	**-23,750**	**-13,100**	**-16,700**
Township of Clearview							
New Lowell	100	12,200	12,200	-12,100	-12,100	-11,500	-11,500
Stayner	400	21,150	27,300	-20,750	-26,900	-29,750	-38,550
Creemore	100	3,950	5,850	-3,850	-5,750	-6,350	-9,500
McKean Subdivision	350	0	0	350	350	500	500
Colling-Woodlands Subdivision	50	0	0	50	50	50	50
Buckingham Woods	0	0	0	0	0	0	0
Total	**1,000**	**37,300**	**45,350**	**-36,300**	**-44,350**	**-47,050**	**-59,000**
Town of Collingwood							
Water Supply	**850**	**31,300**	**51,400**	**-30,450**	**-50,550**	**-34,100**	**-56,650**
Township of Essa							
Angus	5,750	7,400	7,400	-1,650	-1,650	-900	-900
Thornton-Glen	850	200	200	650	650	650	650
Baxter	100	600	600	-500	-500	-450	-450
Total	**6,700**	**8,200**	**8,200**	**-1,500**	**-1,500**	**-700**	**-700**
Town of Innisfil							
Innisfil Heights	2,050	0	0	2,050	2,050	1,850	1,850
Crossroads	1,800	0	0	1,800	1,800	1,050	1,050
Stroud	250	400	400	-150	-150	-150	-150
Churchill	50	250	250	-200	-200	-250	-250
Goldcrest (Golf Haven and Gold Crest)	-0	250	250	-250	-250	-200	-200
Cookstown	-200	850	850	-1,050	-1,050	-1,450	-1,450
Alcona Lakeshore	8,650	14,550	14,550	-5,900	-5,900	-4,300	-4,300
Total	**12,600**	**16,300**	**16,300**	**-3,700**	**-3,700**	**-3,450**	**-3,450**
Town of Midland							
Water Supply	**3,250**	**8,900**	**12,950**	**-5,650**	**-9,700**	**-5,900**	**-10,100**
Town of New Tecumseth							
Alliston / Beeton / Hillcrest	5,150	8,900	14,750	-3,750	-9,600	-4,850	-12,400
Tottenham	2,650	6,850	11,350	-4,200	-8,700	-3,400	-7,050
Total	**7,800**	**15,750**	**26,100**	**-7,950**	**-18,300**	**-8,250**	**-19,450**
City of Orillia							
Water Supply	**18,750**	**19,750**	**35,050**	**-1,000**	**-16,300**	**-800**	**-13,200**
Township of Oro-Medonte							
Canterbury	150	0	0	150	150	200	200
Craighurst	150	0	0	150	150	200	200
Horseshoe Highlands	-250	2,800	2,800	-3,050	-3,050	-9,000	-9,000
Maplewood	-0	0	0	-0	-0	0	0
Robin Crest	150	550	550	-400	-400	-900	-900
Sugarbush	1,200	1,400	1,400	-200	-200	-250	-250
Cedarbrook	50	0	0	50	50	50	50
Harbourwood	200	0	0	200	200	300	300
Lake Simcoe Regional Airport	100	0	0	100	100	50	50
Medonte Hills	0	50	50	-50	-50	-50	-50
Shanty Bay	550	500	500	50	50	50	50
Warminister	-50	650	650	-700	-700	-850	-850
Total	**2,250**	**5,950**	**5,950**	**-3,700**	**-3,700**	**-10,200**	**-10,200**
Town of Penetanguishene							
Payette	1,350	4,300	8,700	-2,950	-7,350	-4,050	-10,050
Lepage	300	0	0	300	300	350	350
Total	**1,650**	**4,300**	**8,700**	**-2,650**	**-7,050**	**-3,700**	**-9,700**
Township of Ramara							
Bayshore Village	50	250	250	-200	-200	-350	-350
Park Lane	0	0	0	0	0	0	0
Lagoon City/Brechin	1,300	2,750	4,800	-1,450	-3,500	-1,350	-3,250
Davy Drive	50	0	0	50	50	50	50
South Ramara	-0	100	100	-100	-100	-200	-200
Val Harbour	0	50	50	-50	-50	-50	-50
Total	**1,400**	**3,150**	**5,200**	**-1,750**	**-3,800**	**-1,900**	**-3,800**

Appendix V - Water Capacity GAP Analysis
(Based on Existing Infrastructure)

System	Existing Residual Capacity (Number of Persons)	Additional Approved Population Potential (Number of Persons)		Gap Analysis (Number of Persons)		Gap Analysis (m^3/day))	
		with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)
Township of Severn							
Severn Estates	50	0	0	50	50	50	50
Bass Lake Woodlands	100	100	100	0	0	0	0
Sandcastle Estates	100	0	0	100	100	150	150
Washago	350	0	0	350	350	250	250
Coldwater	600	1,350	1,350	-750	-750	-800	-800
West Shore	1,000	0	0	1,000	1,000	0	0
Total	**2,200**	**1,450**	**1,450**	**750**	**750**	**-350**	**-350**
Township of Springwater							
Anten Mills	900	100	100	800	800	1,000	1,000
Del Trend	450	0	0	450	450	950	950
Elmvale	2,200	1,000	1,000	1,200	1,200	1,200	1,200
Hillsdale	-0	1,150	1,150	-1,150	-1,150	-1,300	-1,300
Midhurst	2,700	150	150	2,550	2,550	3,150	3,150
Minesing	-50	100	100	-150	-150	-200	-200
Snow Valley	400	150	150	250	250	400	400
Vespra Downs	0	0	0	0	0	0	0
Total	**6,600**	**2,650**	**2,650**	**3,950**	**3,950**	**5,200**	**5,200**
Township of Tay							
Victoria Harbour/Port McNicoll	2,900	24,000	24,000	-21,100	-21,100	-19,000	-19,000
Rope	300	0	0	300	300	350	350
Midland Bay Woods	0	0	0	0	0	0	0
Bay Berry	200	0	0	200	200	250	250
Waubaushene	-100	2,850	2,850	-2,950	-2,950	-3,300	-3,300
Total	**3,300**	**26,850**	**26,850**	**-23,550**	**-23,550**	**-21,700**	**-21,700**
Township of Tiny							
Perkinsfield	500	200	200	300	300	450	450
Bluewater	-100	450	450	-550	-550	-900	-900
Georgian Bay Estates	200	350	350	-150	-150	-200	-200
Georgian Sands	550	800	800	-250	-250	-350	-350
LA Place	-0	150	150	-150	-150	-200	-200
TeePee Points	-100	0	0	-100	-100	-100	-100
Sand Castle Estates	250	200	200	50	50	50	50
Vanier Woods	150	150	150	0	0	0	0
Wyevale Central	50	300	300	-250	-250	-400	-400
Cook's Lake	150	50	50	100	100	100	100
Georgian Highlands	350	100	100	250	250	300	300
Lefaive	150	100	100	50	50	50	50
Pennorth	-50	0	0	-50	-50	-50	-50
Rayko	50	50	50	0	0	0	0
Sawlog Bay	50	100	100	-50	-50	-100	-100
Thunder Bay	-0	50	50	-50	-50	-200	-200
Whip-Poor-Will 2	-50	50	50	-100	-100	-350	-350
Woodland Beach	-0	250	250	-250	-250	-1,100	-1,100
Total	**2,150**	**3,350**	**3,350**	**-1,200**	**-1,200**	**-3,000**	**-3,000**
Town of Wasaga Beach							
Water Supply	**8,400**	**9,700**	**9,700**	**-1,300**	**-1,300**	**-1,450**	**-1,450**
Study Area Total (See Note 2)	**96,550**	**242,450**	**326,300**	**-187,600**	**-271,450**	**-186,300**	**-269,950**

Note 1: Equivalent population allowance for 25,875 m^3/day MDD (12,263 x 2.11) of future Industrial/Commercial (IC) development after Residential build out in 2011.

Note 2: Excludes equivalent population allowance for Barrie's future IC development after Residential build out in 2011.

Appendix W - Water Capacity GAP Analysis

(Based on Existing + EA Approved Infrastructure)

System	Existing Residual Capacity (Number of Persons)	Committed Capacity Increases (as Identified by Class EA's and Design Briefs) (Number of Persons)	Additional Approved Population Potential (Number of Persons)		Gap Analysis (Number of Persons)		Gap Analysis (m^3/day))	
			with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)
Township of Adjala-Tosorontio								
Everett	3,500	0	1,300	1,300	2,200	2,200	1,600	1,600
Colgan	-50	0	50	50	-100	-100	-100	-100
Lisle	650	0	100	100	550	550	450	450
Loretto Heights	50	0	250	250	-200	-200	-200	-200
Rosemont	0	0	0	0	0	0	0	0
Weca	450	0	0	0	450	450	600	600
Hockley	0	0	100	100	-100	-100	-150	-150
Total	**4,600**	**0**	**1,800**	**1,800**	**2,800**	**2,800**	**2,200**	**2,200**
City of Barrie								
Water Supply	**9,550**	**96,750**	**23,600**	**38,050**	**41,000**	**26,550**	**28,000**	**18,100**
Equivalent future IC Allowance (See Note 1)			**41,700**	**41,700**				
Town of Bradford West Gwillimbury								
Water Supply (see note 2)	**3,500**	**9,950**	**22,150**	**27,250**	**-8,700**	**-13,800**	**-6,100**	**-9,700**
Township of Clearview								
New Lowell	100	0	12,200	12,200	-12,100	-12,100	-11,500	-11,500
Stayner	400	0	21,150	27,300	-20,750	-26,900	-29,750	-38,550
Creemore	100	0	3,950	5,850	-3,850	-5,750	-6,350	-9,500
McKean Subdivision	350	0	0	0	350	350	500	500
Colling-Woodlands Subdivision	50	0	0	0	50	50	50	50
Buckingham Woods	0	0	0	0	0	0	0	0
Total	**1,000**	**0**	**37,300**	**45,350**	**-36,300**	**-44,350**	**-47,050**	**-59,000**
Town of Collingwood								
Water Supply	**850**	**15,700**	**31,300**	**51,400**	**-14,750**	**-34,850**	**-16,550**	**-39,050**
Township of Essa								
Angus	5,750	0	7,400	7,400	-1,650	-1,650	-900	-900
Thornton-Glen	850	0	200	200	650	650	650	650
Baxter	100	0	600	600	-500	-500	-450	-450
Total	**6,700**	**0**	**8,200**	**8,200**	**-1,500**	**-1,500**	**-700**	**-700**
Town of Innisfil								
Innisfil Heights	2,050	0	0	0	2,050	2,050	1,850	1,850
Crossroads	1,800	0	0	0	1,800	1,800	1,050	1,050
Stroud	250	0	400	400	-150	-150	-150	-150
Churchill	50	0	250	250	-200	-200	-250	-250
Goldcrest (Golf Haven and Gold Crest)	-0	0	250	250	-250	-250	-200	-200
Cookstown	-200	0	850	850	-1,050	-1,050	-1,450	-1,450
Alcona Lakeshore (see note 3)	8,650	11,050	14,550	14,550	5,150	5,150	3,750	3,750
Total	**12,600**	**11,050**	**16,300**	**16,300**	**7,350**	**7,350**	**4,600**	**4,600**
Town of Midland								
Water Supply	**3,250**	**0**	**8,900**	**12,950**	**-5,650**	**-9,700**	**-5,900**	**-10,100**
Town of New Tecumseth								
Alliston / Beeton / Hillcrest	5,150	0	8,900	14,750	-3,750	-9,600	-4,850	-12,400
Tottenham	2,650	0	6,850	11,350	-4,200	-8,700	-3,400	-7,050
Total	**7,800**	**0**	**15,750**	**26,100**	**-7,950**	**-18,300**	**-8,250**	**-19,450**
City of Orillia								
Water Supply	**18,750**	**0**	**19,750**	**35,050**	**-1,000**	**-16,300**	**-800**	**-13,200**
Township of Oro-Medonte								
Canterbury	150	0	0	0	150	150	200	200
Craighurst	150	0	0	0	150	150	200	200
Horseshoe Highlands	-250	0	2,800	2,800	-3,050	-3,050	-9,000	-9,000
Maplewood	-0	0	0	0	0	0	0	0
Robin Crest	150	0	550	550	-400	-400	-900	-900
Sugarbush	1,200	0	1,400	1,400	-200	-200	-250	-250
Cedarbrook	50	0	0	0	50	50	50	50
Harbourwood	200	0	0	0	200	200	300	300
Lake Simcoe Regional Airport	100	0	0	0	100	100	50	50
Medonte Hills	0	0	50	50	-50	-50	-50	-50
Shanty Bay	550	0	500	500	50	50	50	50
Warminister	-50	0	650	650	-700	-700	-850	-850
Total	**2,250**	**0**	**5,950**	**5,950**	**-3,700**	**-3,700**	**-10,200**	**-10,200**
Town of Penetanguishene								
Payette	1,350	0	4,300	8,700	-2,950	-7,350	-4,050	-10,050
Lepage	300	0	0	0	300	300	350	350
Total	**1,650**	**0**	**4,300**	**8,700**	**-2,650**	**-7,050**	**-3,700**	**-9,700**
Township of Ramara								
Bayshore Village	50		250	250	-200	-200	-350	-350
Park Lane	0	0	0	0	0	0	0	0
Lagoon City/Brechin	1,300	0	2,750	4,800	-1,450	-3,500	-1,350	-3,250
Davy Drive	50	0	0	0	50	50	50	50
South Ramara	-0	0	100	100	-100	-100	-200	-200
Val Harbour	0	0	50	50	-50	-50	-50	-50
Total	**1,400**	**0**	**3,150**	**5,200**	**-1,750**	**-3,800**	**-1,900**	**-3,800**

Appendix W - Water Capacity GAP Analysis

(Based on Existing + EA Approved Infrastructure)

System	Existing Residual Capacity (Number of Persons)	Committed Capacity Increases (as Identified by Class EA's and Design Briefs) (Number of Persons)	Additional Approved Population Potential (Number of Persons)		Gap Analysis (Number of Persons)		Gap Analysis (m^3/day))	
			with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)
Township of Severn								
Severn Estates	50		0	0	50	50	50	50
Bass Lake Woodlands	100	0	100	100	0	0	0	0
Sandcastle Estates	100	0	0	0	100	100	150	150
Washago	350	0	0	0	350	350	250	250
Coldwater	600	0	1,350	1,350	-750	-750	-800	-800
West Shore	1,000	0	0	0	1,000	1,000	0	0
Total	**2,200**	**0**	**1,450**	**1,450**	**750**	**750**	**-350**	**-350**
Township of Springwater								
Anten Mills	900		100	100	800	800	1,000	1,000
Del Trend	450	0	0	0	450	450	950	950
Elmvale	2,200	0	1,000	1,000	1,200	1,200	1,200	1,200
Hillsdale	-0	0	1,150	1,150	-1,150	-1,150	-1,300	-1,300
Midhurst	2,700	0	150	150	2,550	2,550	3,150	3,150
Minesing	-50	0	100	100	-150	-150	-200	-200
Snow Valley	400	0	150	150	250	250	400	400
Vespra Downs	0	0	0	0	0	0	0	0
Total	**6,600**	**0**	**2,650**	**2,650**	**3,950**	**3,950**	**5,200**	**5,200**
Township of Tay								
Victoria Harbour/Port McNicoll	2,900	0	24,000	24,000	-21,100	-21,100	-19,000	-19,000
Rope	300	0	0	0	300	300	350	350
Midland Bay Woods	0	0	0	0	0	0	0	0
Bay Berry	200	0	0	0	200	200	250	250
Waubaushene	-100	0	2,850	2,850	-2,950	-2,950	-3,300	-3,300
Total	**3,300**	**0**	**26,850**	**26,850**	**-23,550**	**-23,550**	**-21,700**	**-21,700**
Township of Tiny								
Perkinsfield	500	0	200	200	300	300	450	450
Bluewater	-100	0	450	450	-550	-550	-900	-900
Georgian Bay Estates	200	0	350	350	-150	-150	-200	-200
Georgian Sands	550	0	800	800	-250	-250	-350	-350
LA Place	-0	0	150	150	-150	-150	-200	-200
TeePee Points	-100	0	0	0	-100	-100	-100	-100
Sand Castle Estates	250	0	200	200	50	50	50	50
Vanier Woods	150	0	150	150	0	0	0	0
Wyevale Central	50	0	300	300	-250	-250	-400	-400
Cook's Lake	150	0	50	50	100	100	100	100
Georgian Highlands	350	0	100	100	250	250	300	300
Lefaive	150	0	100	100	50	50	50	50
Pennorth	-50	0	0	0	-50	-50	-50	-50
Rayko	50	0	50	50	0	0	0	0
Sawlog Bay	50	0	100	100	-50	-50	-100	-100
Thunder Bay	-0	0	50	50	-50	-50	-200	-200
Whip-Poor-Will 2	-50	0	50	50	-100	-100	-350	-350
Woodland Beach	-0	0	250	250	-250	-250	-1,100	-1,100
Total	**2,150**	**0**	**3,350**	**3,350**	**-1,200**	**-1,200**	**-3,000**	**-3,000**
Town of Wasaga Beach								
Water Supply	**8,400**	**0**	**9,700**	**9,700**	**-1,300**	**-1,300**	**-1,450**	**-1,450**
Study Area Total (See Note 4)	**96,550**	**133,450**	**242,450**	**326,300**	**-54,150**	**-138,000**	**-87,650**	**-171,300**

Note 1: Equivalent population allowance for 25,875 m^3/day MDD (12,263 x 2.11) of future Industrial/Commercial (IC) development after Residential build out in 2011. Committed Capacity increase includes new Surface Water Treatment Plant Capacity of 60,000 m^3/day.

Note 2: Includes 7,100 m^3/day capacity increase from Innisfil after the Alcona Lakeshore Water Treatment Plant Expansion in Feb 2007 minus the imminent 750 m^3/day supply allocated to the existing BWG supply.

Note 3: Includes the expansion to the Alcona Lakeshore WFP capacity increase of 13,097 m^3/day minus the 7,100 m^3/day allocated to BWG.

Note 4: Excludes equivalent population allowance for Barrie's future IC development after Residential build out in 2011.

Appendix Z - Suggested Alternatives to Overcome the Wastewater Treatment Gap

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity (m^3/day)		Additional Capacity Required (m^3/day)		Alternatives to Close Gap	Evaluation Criteria			Suggested Course of Action
				with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)		Environmental	Estimated Costs	Other Issues	
Town of Bradford West Gwillimbury		8,870	19,087	17,798	20,093	-8,950	-11,250	Expand Wastewater Plant in accordance with Approved Environmental Assessment	Low (Due to approved EA)	$36,000,000	Review Impacts on Lake Simcoe via ACS Model	Expand Existing Wastewater Plant
City of Barrie		57,100	18,900	74,005	77,498	-16,900	-20,400	Expand Wastewater Plant in accordance with Approved Environmental Assessment	Low (Due to approved EA)	$51,000,000	Review Impacts on Lake Simcoe via ACS Model	Expand Existing Wastewater Plant
Township of Clearview	Stayner	2,500	0	11,915	14,899	-9,400	-12,400	Existing WPCP cannot be expanded due to limits on receiving Lamont Creek	Extremely High	$49,700,000	N/A	Pump raw sewage to Wasaga Beach and/or Collingwood. However in addition the potential growth should be re-evaluated
								Raw wastewater could be pumped to either Collingwood or Wasaga Beach	Medium or High		Cross Boundary Servicing Agreements Required	
								Treated effluent could be pumped to another discharge point	High		Cross Boundary Servicing Agreements Required	
	Creemore	1,400	0	1,636	2,225	-250	-800	Expanding the WPCP may have constraints from the receiving stream (Mad River)	High	$2,600,000	Review Impacts on Stream via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
								Raw wastewater could be pumped to either Collingwood or Wasaga Beach	High		Cross Boundary Servicing Agreements Required	
								Treated effluent could be pumped to another discharge point	High		Cross Boundary Servicing Agreements Required	
Town of Collingwood		24,545	0	54,890	78,730	-30,350	-54,200	Expand the Existing WPCP	High	$151,800,000	Review Impacts of new outfall on Georgian Bay via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is also suggested that an intensive program to eliminate I/I be implemented to reduce flows. Subsequently Expand Existing Wastewater Treatment Plant.
Township of Essa - Angus		5,511	0	5,388	5,388	100	100	No Gap	N/A	N/A	N/A	No Expansion Necessary
Town of Innisfil	Alcona Lakeshore	14,370	0	14,351	14,351	0	0	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Cookstown	825	0	971	971	-150	-150	Expand existing WPCP using existing discharge stream	Extremely High	$1,000,000	Review Impacts on receiving stream via ACS Model	Reduce Historical per capita flow and eliminate Inflow/Infiltration (I/I).
								Pump Wastewater to another facility (Alliston or Alcona)	High	$8,500,000	Possibly Cross Boundary Servicing Agreements Required	
								Expand existing WPCP and discharge effluent elsewhere	High	$8,500,000	Possibly Cross Boundary Servicing Agreements Required	
								Reduce I/I and Per Capita Flows	Low	$500,000	N/A	
Town of Midland		15,665	0	15,960	18,782	-300	-3,100	Expand existing WPCP	High	$6,800,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Town of New Tecumseth	Tottenham (See Note 1)	2,509	1,575	5,948	8,207	-3,450	-5,700	Expand existing WPCP using existing discharge stream	High	$18,200,000	Review Impacts on receiving stream via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
								Divert Wastewater and associated loadings to Alliston Regional Plant	High	22,740,000	Review Impacts on receiving stream via ACS Model	
	Alliston Sir Frederic Banting & Regional WWTP	9,530	1,215	16,855	22,973	-7,300	-13,450	Retrofit Existing & Expand WPCP using existing discharge stream	High	$43,000,000	Review Impacts on receiving stream via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
City of Orillia		27,300	0	31,265	41,197	-3,950	-13,900	Expand existing WPCP	High	$44,500,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Town of Penetanguishene	Fox Street	1,500	0	1,271	1,271	250	250	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Main Street	4,545	0	7,832	11,690	-3,300	-7,150	Expand the Existing WPCP	High	$15,700,000	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Township of Ramara	Lagoon City	1,713	0	3,238	4,563	-1,500	-2,850	Expand the Existing WPCP	High	$9,100,000	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	Bayshore Village	399	0	447	447	-50	-50	Reduce Per Capita Flows to the Existing Wastewater Plant	High	$200,000	Review Impacts of new outfall on Georgian Bay	Complete an intensive program to eliminate Inflow & Infiltration to reduce flows.
Township of Severn	Washago	228	0	102	102	150	150	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Coldwater	545	0	825	825	-300	-300	Expand existing WPCP	High	$1,000,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	West Shore	1,390	0	940	940	450	450	No Gap	N/A	N/A	N/A	No Expansion Necessary
Township of Springwater - Elmvale		1,800	0	1,728	1,728	100	100	No Gap	N/A	N/A	N/A	No Expansion Necessary
Township of Tay - Port McNicoll / Village of Victoria Harbour		1,918	0	12,700	12,700	-10,800	-10,800	Expand existing WPCP	High	$34,600,000	N/A	Complete an Environmental Assessment to review all alternatives, however, the potential growth should be re-evaluated first.
Town of Wasaga Beach		15,433	0	7,333	7,333	8,100	8,100	No Gap	N/A	N/A	N/A	No Expansion Necessary

Appendix AA -
Suggested Alternatives to Overcome the Water Supply Gap

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity (m^3/day)		Additional Capacity Required (m^3/day)		Alternatives to Close Gap	Evaluation Criteria			Suggested Course of Action
				with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)		Environmental	Estimated Costs	Other Issues	
Township of Adjala Tosorontio	Everett	3,916.8	0	2,317	2,317	1,600	1,600	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Colgan	157.2	0	257	257	-100	-100	Equip the wells with larger capacity pumps.	Low	$20,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Equip the wells with larger capacity pumps.
	Lisle	656.6	0	207	207	450	450	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Loretto Heights	136.8	0	337	337	-200	-200	Supply water from another facility such as Weca.	Medium	$200,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Supply from other source.
	Rosemont	73.4	0	73	73	0	0	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Weca	915.8	0	316	316	600	600	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Hockley	90.0	0	240	240	-150	-150	Develop a new well with treament works.	Medium	$200,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
City of Barrie Equivalent future IC Allowance (See Note 1)		92,490.0	96,750	130,540	140,390	-38,050	-47,900	Construction of new water filtration plant in accordance with Approved Environmental Assessment.	Low	$52,500,000	N/A	Construct a new Water Filtration Plant.
Town of Bradford West Gwillimbury		13,986.4	9,950	27,086	30,686	-13,100	-16,700	Supply 13,000 m^3 water from the Alcona water supply in accordance with the Approved Environmental Assessment and Water supply aggreement.	Low	$25,000,000	An upgrade to the trunk watermain feeding the Alcona Reservior will need to be upgraded. The estimated cost is included.	Supply water from Alcona.
Township of Clearview	New Lowell	746.5	0	12,247	12,247	-11,500	-11,500	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$20,000,000	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete an Environmental Assessment to review all alternatives, however, the potential growth should be re-evaluated first.
	Stayner	6,540.5	0	36,291	45,091	-29,750	-38,550	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$67,500,000	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete an Environmental Assessment to review all alternatives, however, the potential growth should be re-evaluated first.
	Creemore	2,688.0	0	9,038	12,188	-6,350	-9,500	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$16,500,000	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete an Environmental Assessment to review all alternatives, however, the potential growth should be re-evaluated first.
	McKean Subdivision	1,055.0	0	555	555	500	500	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Colling-Woodlands Subdivision	270.0	0	220	220	50	50	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Buckingham Woods	76.4	0	76	76	0	0	No Gap	N/A	N/A	N/A	No Expansion Necessary
Town of Collingwood		20,640.0	0	54,740	77,290	-34,100	-56,650	1. Complete Current Approved Expansion 2. Complete further expansion of the existing Water Filtration Plant.	Low	$45,300,000	N/A	1. Complete current approved expansion. 2. Complete Environmental Assessment and expand the existing Water Filtration Plant.
Township of Essa	Angus	6,553.7	0	7,454	7,454	-900	-900	Construct a new well.	Medium	$700,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Construct a new well.
	Thornton-Glen	1,540.0	0	890	890	650	650	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Baxter	225.0	0	675	675	-450	-450	Connect to Regional Pipeline.	Medium	$800,000	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.

Appendix AA -
Suggested Alternatives to Overcome the Water Supply Gap

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity (m^3/day)		Additional Capacity Required (m^3/day)		Alternatives to Close Gap	Evaluation Criteria			Suggested Course of Action
				with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)		Environmental	Estimated Costs	Other Issues	
Town of Innisfil	Innisfil Heights	2,799.0	0	949	949	1,850	1,850	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Crossroads	2,030.0	0	980	980	1,050	1,050	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Stroud	2,097.6	0	2,248	2,248	-150	-150	Develop a new well with treament works.	Medium	$200,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Churchill	743.0	0	993	993	-250	-250	Supply from the Alcona to Bradford pipeline.	Medium	$1,000,000	Booster station and trunk watermain will be required, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Supply from other source.
	Goldcrest (Golf Haven and Gold Crest)	702.0	0	902	902	-200	-200	Supply from the Alcona to Bradford pipeline.	Medium	$1,500,000	Abandon existing well supply systems.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Supply from other source.
	Cookstown	851.0	0	2,301	2,301	-1,450	-1,450	Supply water from the Alcona water supply in accordance with an Approved Environmental Assessment.	Medium	$5,000,000	Additional Capacity would be required at the Alcona WFP. The estimated supply cost has been included.	Construct watermain from Alcona/BWG Pipeline in Accordace with EA.
	Alcona Lakeshore	12,700.0	11,050	17,000	17,000	-4,300	-4,300	Expand the existing water filtration plant in accordance with Approved Environmental Assessment.	High	$6,500,000	N/A	Expand Existing Water Filtration Plant.
Town of Midland		20,775.7	0	26,676	30,876	-5,900	-10,100	Develop a surface water supply system.	High	$11,000,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
								Develop of a new well with treament works.	Medium	$8,000,000	Assumes available groundwater supply.	
Town of New Tecumseth	Alliston / Beeton / Hillcrest	23,886.0	0	28,736	36,286	-4,850	-12,400	Supply water from the Collingwood to Alliston Regional Pipeline in accordance with the Approved Environmental Assessment.	Medium	$18,500,000	N/A	Increase existing supply from the Collingwood/New Tecumseth Pipeline.
	Tottenham	6,000.0	0	9,400	13,050	-3,400	-7,050	Supply water from the Collingwood to Alliston Regional Pipeline.	Medium	$12,500,000	Trunk watermain and booster stations will need to be constructed for supply from Beeton to Tottenham, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Supply from Collingwood/New Tecumseth Pipeline.
City of Orillia		39,502.0	0	40,302	52,702	-800	-13,200	Expand the existing surface water filtration plant.	High	$19,800,000	Review inpacts on Lake Simcoe as suface water source.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
Township of Oro-Medonte	Canterbury	209.1	0	9	9	200	200	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Craighurst	457.9	0	258	258	200	200	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Horseshoe Highlands	3,369.6	0	12,370	12,370	-9,000	-9,000	Develop two new wells with treatment works.	Medium	$7,200,000	The treatment facility will have to be increased in capacity, the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop two new groundwater wells.
	Maplewood	163.7	0	164	164	0	0	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Robin Crest	850.0	0	1,750	1,750	-900	-900	Develop two new wells with treatment works.	Medium	$700,000	The treatment facility, reservoirs and high lift pump stations will need to be expanded, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop two new groundwater wells.
	Sugarbush	2,485.4	0	2,735	2,735	-250	-250	Develop a new well with treament works.	Medium	$200,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Cedarbrook	196.1	0	146	146	50	50	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Harbourwood	921.6	0	622	622	300	300	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Lake Simcoe Regional Airport	73.0	0	23	23	50	50	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Medonte Hills	393.0	0	443	443	-50	-50	Install a new well pump into the existing well.	Medium	$50,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Shanty Bay	1,220.0	0	1,170	1,170	50	50	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Warminister	600.0	0	1,450	1,450	-850	-850	Develop a new well with treament works.	Medium	$700,000	The treatment facility, reservoirs and high lift pump stations and inground reservoir will need to be expanded, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.

Appendix AA -
Suggested Alternatives to Overcome the Water Supply Gap

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity (m^3/day)		Additional Capacity Required (m^3/day)		Alternatives to Close Gap	Evaluation Criteria			Suggested Course of Action
				with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)		Environmental	Estimated Costs	Other Issues	
Town of Penetanguishene	Payette	11,000.0	0	15,050	21,050	-4,050	-10,050	Develop a new surface water filtration plant.	High	$11,000,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a Surface Water Supply Source.
	Lepage	432.0	0	82	82	350	350	No Gap	N/A	N/A	N/A	No Expansion Necessary
Township of Ramara	Bayshore Village	1,243.8	0	1,594	1,594	-350	-350	Expand existing water supply system and treatment facility.	Medium	$350,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
	Park Lane	50.0	0	50	50	0	0	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Lagoon City/Brechin	4,000.0	0	5,350	7,250	-1,350	-3,250	Expand the existing surface water treatment plant .	High	$5,000,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
	Davy Drive	75.7	0	26	26	50	50	No Gap	N/A	N/A	N/A	No Expansion Necessary
	South Ramara	387.1	0	587	587	-200	-200	Expand the existing water supply.	Medium	$300,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Val Harbour	207.4	0	257	257	-50	-50	Install a new well pump into the existing well.	Medium	$50,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
Township of Severn	Severn Estates	108.9		59	59	50	50	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Bass Lake Woodlands	818.0	0	818	818	0	0	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Sandcastle Estates	388.8	0	239	239	150	150	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Washago	544.3	0	294	294	250	250	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Coldwater	2,138.0	0	2,938	2,938	-800	-800	Expand the existing groundwater supply source.	Medium	$650,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	West Shore	2,780.0	0	2,780	2,780	0	0	No Gap	N/A	N/A	N/A	No Expansion Necessary
Township of Springwater	Anten Mills	1,557.6		558	558	1,000	1,000	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Del Trend	1,581.0	0	631	631	950	950	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Elmvale	4,546.0	0	3,346	3,346	1,200	1,200	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Hillsdale	1,185.0	0	2,485	2,485	-1,300	-1,300	Expand the existing groundwater supply source.	Medium	$1,000,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Midhurst	6,850.0	0	3,700	3,700	3,150	3,150	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Minesing	740.0	0	940	940	-200	-200	Currently being expanded to supply 200 m^3/day gap.	N/A	$200,000	N/A	Expansion in progress.
	Snow Valley	1,400.0	0	1,000	1,000	400	400	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Vespra Downs	169.0	0	169	169	0	0	No Gap	N/A	N/A	N/A	No Expansion Necessary
Township of Tay	Victoria Harbour/Port McNicoll	7,845.1	0	26,845	26,845	-19,000	-19,000	Expand the existing surface water treatment plant .	High	$28,500,000	N/A	Complete an Environmental Assessment to review all alternatives, however, the potential growth should be re-evaluated first.
	Rope	432.0	0	82	82	350	350	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Midland Bay Woods	301.0	0	301	301	0	0	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Bay Berry	392.3	0	142	142	250	250	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Waubaushene	1,225.0	0	4,525	4,525	-3,300	-3,300	Expand the existing surface water treatment plant .	High	$5,000,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.

Appendix AA -
Suggested Alternatives to Overcome the Water Supply Gap

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity (m^3/day)		Additional Capacity Required (m^3/day)		Alternatives to Close Gap	Evaluation Criteria			Suggested Course of Action
				with No Intensification	with Highest Intensification (Max of 4 scenarios)	with No Intensification	with Highest Intensification (Max of 4 scenarios)		Environmental	Estimated Costs	Other Issues	
Township of Tiny	Perkinsfield	1,382.0	0	932	932	450	450	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Bluewater	835.9	0	1,736	1,736	-900	-900	Develop new wells with treament works.	Medium	$700,000	The treatment facility and reservoir will have to be expanded, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Georgian Bay Estates	949.2	0	1,149	1,149	-200	-200	Develop a new well with treament works	Medium	$200,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Georgian Sands	3,145.0	0	3,495	3,495	-350	-350	Expand the existing groundwater supply source.	Medium	$300,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand the existing groundwater supply.
	LA Place	198.0	0	398	398	-200	-200	Develop a new well with treament works.	Medium	$200,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	TeePee Points	123.0	0	223	223	-100	-100	Install a new well pump into the existing well.	Low	$50,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Sand Castle Estates	490.0	0	440	440	50	50	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Vanier Woods	360.0	0	360	360	0	0	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Wyevale Central	920.0	0	1,320	1,320	-400	-400	Install a new well pump into one of the existing wells.	Low	$50,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump into one of the existing wells.
	Cook's Lake	400.0	0	300	300	100	100	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Georgian Highlands	751.7	0	452	452	300	300	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Lefaive	308.7	0	259	259	50	50	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Pennorth	61.4	0	111	111	-50	-50	Install a new well pump into the existing well.	Low	$50,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Rayko	194.4	0	194	194	0	0	No Gap	N/A	N/A	N/A	No Expansion Necessary
	Sawlog Bay	189.0	0	289	289	-100	-100	Install a new well pump into one of the existing wells.	Low	$50,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump into one of the existing wells.
	Thunder Bay	200.0	0	400	400	-200	-200	Expand the existing groundwater supply source by duplicating the existing system.	Medium	$200,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand the existing groundwater supply with additional wells.
	Whip-Poor-Will 2	360.0	0	710	710	-350	-350	Develop a new well with treament works.	Medium	$300,000	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Woodland Beach	170.0	0	1,270	1,270	-1,100	-1,100	Develop new wells with treament works.	Medium	$900,000	The treatment facility and reservoir will have to be expanded, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
Town of Wasaga Beach		31,415.0	0	32,865	32,865	-1,450	-1,450	Develop an additional groundwater well source	Medium	$1,200,000	The treatment facility and reservoir will have to be expanded.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater source.