

County of Simcoe Water and Wastewater Visioning Strategy

Final Background Information Brief and Servicing Gap Analysis

FINAL DRAFT

Prepared For:



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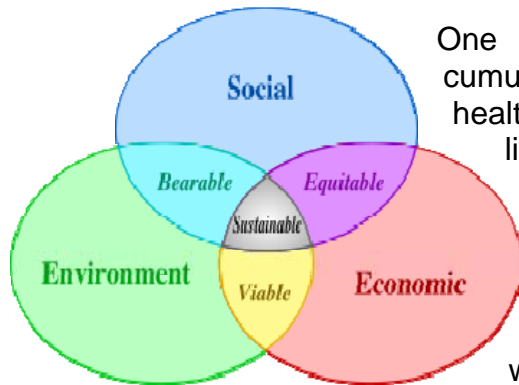
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1. INTRODUCTION

1.1. General



One of society's greatest challenges concerns the cumulative impacts of rural and urban development on the health of our ecosystems. These impacts are often not limited to the community in which they occur, but may also affect adjacent and/or downstream areas. One of the most effective ways of dealing with these issues is to use an integrated, ecosystem planning approach to ensure "sustainable development". The analysis and comparisons should be made within the context of a broad ecological unit, in this

case, the watershed.

With the development of recent provincial planning policies by the Ontario Government, the County of Simcoe is facing intense growth pressures. Forecasts from both the public and the private sectors identify Simcoe County as one of the key areas for planned employment and population growth opportunities. Demand for growth also presents opportunities for the County to enhance the area's future prosperity with long term sustainable employment and an opportunity for residents to live, work and play in well planned communities based on sound and sustainable solutions.

In response to this vision, County Council adopted the following resolution - CCW-007-09 - at the December 2009 General Meeting in order to complete a County-wide water and wastewater visionary strategy:

THAT County staff, in consultation with the staff of the member municipalities, the separated cities, neighbouring municipalities, first nation partners and the development community, be required to prepare a report on the existing water and wastewater system requirements, agreements and plans (including septage and leachate), as well as analysis of the current and potential delivery matrix and options with respect to long term solutions regarding co-ordination of this service delivery;

AND THAT the Provincial and Federal governments and the assistance of an outside engineering consulting firm be utilized to accomplish this task.

Greenland International Consulting Ltd. (Greenland) was retained by the County of Simcoe to prepare a work plan that would address the County resolution CCW-007-09, as presented above, and subsequently with the implementation of the work plan. Specifically, the primary objective of this Project is the preparation of a Background

Information Brief document and Servicing Gap Analysis which assesses existing water and wastewater system requirements for member municipalities, the separated cities, and federal lands within the County.

1.2.Goals and Objectives of this Background Information Brief

In response to growing concerns about growth, land development and effects on the natural environment, the Province of Ontario has recently undertaken some important initiatives in regards to planning and growth management. Some of these policies include the Greenbelt Act and Places to Grow Act. With respect to Simcoe County, new growth pressure is expected due to the implementation of such policies. This has created restrictions with respect to land development within the Greater Toronto Area (GTA). Due to this expected influx in new development, the Province of Ontario prepared the document entitled: *Places to Grow - Simcoe Area: A Strategic Vision for Growth* in June 2009. In October 2010, the document was updated with feedback requested by 31 January 2011. The document's **Next Steps** section indicates, the Province of Ontario will "...undertake a Simcoe area infrastructure plan, including a strategy for water and wastewater in the Simcoe area that includes mechanisms for service delivery". This proposed Next Step by the Province was the genesis of the County Resolution CCW-007-09.

It should be noted that the Province's Vision for Growth document was finalized in January 2012 into the *Growth Plan for the Greater Golden Horseshoe*, further clarifying growth forecasts and distribution within the Greater Golden Horseshoe area with a specific Chapter (6) dedicated to the Simcoe Sub-Area.

To support the County Resolution, as well as potential future infrastructure strategies initiated by the Province, County Staff retained Greenland to complete the primary objective of this project which is to prepare a Background Information Brief and Servicing Gap Analysis that assesses existing water and wastewater system requirements for member municipalities, the separated cities, and federal lands within the County.

The objective is achieved through development of the following document goals:

1. Assess the existing water and wastewater system capacities (**for the Project Year 2009**) with respect to servicing existing and proposed population growth identified in the County of Simcoe adopted Official Plan (OP);
2. Compile a general review of existing environmental (natural, socio-economic) conditions for the County of Simcoe; and
3. Based on Greenland's assessment and review of the above two (2) objectives, prepare individual summaries of water and wastewater servicing opportunities and constraints which should also consider baseline condition results from *Greenland's technology in-kind* (CANWET™) provided during the project.

1.3. Description of Study Area

The proposed Study Area includes all of the County of Simcoe, Canadian Forces Base (CFB) Borden and the cities of Barrie and Orillia. Simcoe County (County) is located north of the Greater Toronto Area (GTA). Lake Simcoe is located along the eastern boundary of the County, while Georgian Bay forms the northern boundary. Grey and Dufferin Counties form the western boundary of the County. There are two (2) major watersheds located within the County of Simcoe, the Lake Simcoe Basin and Nottawasaga River Basin. The majority of the County lies within the Nottawasaga River system that drains northward to Georgian Bay. The Severn River forms the main outlet from Lake Simcoe and drains northwest to Georgian Bay. There are also several other significant tributaries in the County, including the Coldwater, Hog, Sturgeon and Wye Rivers which drain to Severn Sound of Georgian Bay. **Figure 1.3.1, Appendix A-1** presents the project Study Area.

Based on the County of Simcoe Official Plan, the proposed Study Area is comprised of sixteen (16) municipalities, namely:

1. Township of Adjala-Tosorontio;
2. Town of Bradford West Gwillimbury;
3. Township of Clearview;
4. Town of Collingwood;
5. Township of Essa;
6. Town of Innisfil;
7. Town of Midland;
8. Town of New Tecumseth;
9. Township of Oro-Medonte;
10. Town of Penetanguishene;
11. Township of Ramara;
12. Township of Severn;

-
13. Township of Springwater;
 14. Township of Tay;
 15. Township of Tiny;
 16. Town of Wasaga Beach; and,
 17. CFB Borden.

Due to their location and importance from an economic perspective, this study has also had regard for the City of Barrie, the City of Orillia, First Nations communities and Federal Lands. Therefore, the water and wastewater infrastructure and servicing requirements of the above referenced municipalities and Federal Lands (Canadian Forces Base (CFB) Borden) will be reviewed during the subject study. First Nations communities within the County boundaries were also requested to participate in the Visioning Strategy, but information has not been forthcoming from these communities regarding their water and wastewater infrastructure.

1.4. Background Information Brief Report Structure

Based upon information provided by the County, a detailed literature review was conducted by Greenland to provide a background summary of Simcoe County's past and current policies and plans, current and forecasted population and employment growth, as well as servicing requirements with regards to water and wastewater servicing capacities. The background information was obtained from the County and reviewed as part of this Background Information Brief:

1. County of Simcoe. (2007). The County of Simcoe Official Plan.
2. County of Simcoe (2008). County of Simcoe Official Plan (Adopted Nov. 25, 2008) with Map Schedules & Revised Schedule 5.1 Showing updated City of Barrie Boundary.
3. Ainley & Associates Limited (August 2006). Intergovernmental Action Plan – Existing Capacities Assessment: Infrastructure Assessment Report.
4. Intergovernmental Action Plan – Existing Capacities Assessment: Infrastructure Assessment Addendum Report (August 2007).
5. Dillon Consulting Limited (August 2006). Intergovernmental Action Plan – Implementation Assessment Report.
6. Ainley & Associates Limited (August 2007). The County of Simcoe Growth Management Study: Assessment of Water Supply and Wastewater Treatment Facilities.
7. Hemson Consulting (May 2008). *Simcoe Area Growth Plan*. Ontario.
8. Earth Tech Canada (July 2008). County of Simcoe Transportation Master Plan.
9. Ministry of Energy & Infrastructure (June 2009). *Simcoe Area: Strategic Vision for Growth*.
10. Ministry of Infrastructure (January 2012). Growth Plan for the Greater Golden Horseshoe

Additional documents reviewed and summarized as part of this document include:

1. Greenland International Consulting Ltd. (2006). *Lake Simcoe and Nottawasaga River Basins Assimilative Capacity Studies* (Province of Ontario).
2. Berger Consultants and Greenland International Consulting Ltd. (2006). *Pollutant Target Loading Study for the Lake Simcoe and Nottawasaga River Basins* (Province of Ontario).
3. Various Water and Wastewater Class Environmental Assessment documents prepared by the 16 member municipalities, City of Barrie, City of Orillia, CFB Borden and/or updates published since the completion of the Ainley 2007 water supply and wastewater treatment assessment listed above.
4. Lake Simcoe Protection Plan.
5. The Severn Sound Remedial Action Plan Stage 2 Report 1993 specifically the sewage effluent targets for municipal plants in the Severn Sound Watershed.
6. Severn Sound Sustainability Plan.
7. Any additional required information not available from public documents or from various municipalities regarding water supply and wastewater treatment capacities and proposed expansions, including interviews with the participating municipalities, cities and CFB Borden in the summer of 2010, where applicable.

In addition to the summer 2010 municipal interviews, the following points of consultation have been completed as part of this Project:

- Presentation of Individual Background Information Memos for each member municipality – Spring 2010;
- Interviews with technical municipal staff of each member municipality and CFB Borden – Summer 2010;
- Individual Background Information Memos for each member municipality – Fall 2010;
- Presentation of Interim Findings to County CAOs – January 2011;
- Preparation of Draft Report and circulation to member municipalities – May 2011;
- Presentation of May Draft Report Findings to CAOs and municipal technical staff – June 2011; and
- Receipt of Municipal comments on May Draft Report – August 2011;
- Presentation of May Draft Report Findings to affected Conservation Authorities, Severn Sound Association (SSEA) and neighbouring municipalities (Agencies and Partners) – September 2011; and
- Receipt of Agency and Partner comments on May 2011 Draft Report – October 2011.

Copies of the presentations listed above are provided in **Appendix A-1**.

The information reviewed, summarized and assessed as part the development of this Background Information Brief is presented in the subsequent Chapters of this document. The Background Information Brief Chapters are summarized below:

Chapter 1: Introduction

The introduction section will state the purpose, work plan as well as the overall structure of this study.

Chapter 2: Background –Socio Economic Environment

As part of this study, Greenland has completed a review of current social and economic characteristics within this Study Area and with specific reference to water and wastewater servicing. This section of the study includes a review of the existing, and future employment projections, land use and existing, and future population projections for individual municipalities within the study area. This information was reviewed and is based on data available from the Municipal Official Plans, Communications with the participating Municipalities, Simcoe County's Adopted Official Plan as well as Provincial employment and population allocation data.

Chapter 3: Background – Natural Environment

As part of this study, Greenland has also completed a review of the current natural environmental features within this study area. Such features include but are not limited to the Niagara Escarpment, the Oak Ridge's Moraine as well as areas of natural and scientific interest (ANSIs). These areas were analyzed within this study to determine potential environmental constraints which may limit potential future water and wastewater servicing opportunities within the study area.

Chapter 4: Background – Water and Wastewater Servicing Analysis

review of the current municipally owned water and wastewater servicing systems was conducted by Greenland as part of this study. **The 2009 water and wastewater servicing data was used for this study. The 2009 populations for the individual municipalities were also estimated and confirmed with the participating municipalities.** Using this information, Greenland completed a water and wastewater servicing gap analysis for each of the municipalities within the study area. This gap analysis compared individual future (year 2031) employment and population allocations with the current water and wastewater systems in each municipality to determine if these systems are capable of accommodating the future (year 2031) employment and population growth. **The future employment and population growth was based on data obtained through the Simcoe County's**

Adopted Official Plan and was also compared with the Province of Ontario Places to Grow Plan document for the Simcoe Area. Based on this servicing gap analysis, the ability of an individual municipality to accommodate the approved future (year 2031) growth with its current water and wastewater systems was assessed.

Chapter 5: Identification of Opportunities and Constraints

Based on the background information presented within this study as well as data obtained through the completed servicing gap analysis, opportunities and constraints were developed and presented within this section of the study with respect to water and wastewater servicing.

Chapter 6: Level 2 Opportunities

This chapter further illustrates and evaluates opportunities for municipalities to meet their 2031 growth water and wastewater servicing requirements.

Chapter 7: Level 3 Opportunities

Chapter 7 provides specific and detailed examples of possible solutions for selected municipalities that address the 2031 servicing needs of the sponsor community with the potential of servicing the needs of neighbouring communities and/or municipalities, including: Town of Innisfil 6th Line Infrastructure Project; Community of Angus/CFB Borden Wastewater Treatment Plant Residual Capacity Opportunities; and the Waypoint Water Pollution Control Plant Servicing Opportunity in the Town of Penetanguishene.

Chapter 8: Closure

Chapter 8 summarizes how the objectives of this Study were achieved, presents recommendations that have been developed out of the completion of the Study and finally suggests next steps for future use of the information contained within this document.

2. BACKGROUND – SOCIO ECONOMIC CONDITIONS

2.1. Simcoe County Official Plan (OP): 2008 Adopted

2.1.1. General

The County of Simcoe has developed and implemented a plan known as the **County's Strategic Plan** which was prepared with reference to the Provincial Planning Act. This Plan provides policy context for land use planning with respect to social, economic and environmental concerns to facilitate proper growth within the County in the near future. This plan applies to the sixteen (16) municipalities which constitute Simcoe County and states that local Official Plans (OP) and zoning bylaws shall be brought into conformity with the County Plan.

Simcoe County's Strategic Plan was implemented in 1993 and applies to the following areas of interest:

1. Official Plans;
2. Zoning Bylaws;
3. Subdivision approvals;
4. Long term transportation, water and wastewater management plans;
5. EAs;
6. Watershed Management plans;
7. Financial programs and budgets;
8. Economic development; and,
9. Human Services.

The primary objective of this plan as indicated within Simcoe County's August 2007 consolidated Official Plan (OP) document is as follows:

1. Protect, conserve and enhance the County's natural and cultural heritage;
2. To achieve wise management and uses of the County's resources;
3. To implement growth management to achieve lifestyle quality and efficient and cost effective municipal servicing, development and land use;
4. To achieve coordinated land use planning among the County's local municipalities and with neighbouring counties, districts, regions, and separate cities, and local First Nations lands;
5. To further community economic development which promotes economic sustainability in Simcoe County communities, providing employment and business opportunities; and
6. To promote, protect and enhance public health and safety.

On 25 November 2008 this OP was adopted by the County of Simcoe but to date it has been not approved by the Province. As such the 1998 OP for the County remains in force. Recently, in January 2012, the Province released the revised *Places To Grow: Growth Plan for the Greater Golden Horseshoe*, revising forecasts in population, employment and the distribution of this growth. The revised forecasts have been included for reference. **However, for the purpose of this Visioning Strategy document, the adopted 2008 OP conclusions with respect to settlement areas and population growth were used.**

2.1.2. Simcoe County's Official Plan: Structure and Features of the County

Municipal Organization

Simcoe County sets a broad policy framework for planning while the local municipalities establish a more detailed set of policies which apply to their needs. The cities of Barrie and Orillia are separate from the County, but are economically and geographically an integral part of the County. The two (2) cities (Barrie and Orillia) are not subject to the policies of the County OP.

Physical Geography

Based on information presented in Simcoe County's Official Plan the following significant physical geographical features are located within the County (See **Figure 1.3.1, Appendix A-1** presenting these details and features):

1. The Niagara Escarpment and the Oak Ridge's Moraine form much of the county's western and southern geological areas;
2. Bass Lake Moraine comprises the northwest regions of Simcoe County;
3. Limestone plain comprises the east regions of Simcoe County;
4. Granitic bedrock comprises the northeast regions of Simcoe County;
5. Several large rivers drain into the Georgian Bay, the two predominate are Nottawasaga and the Wye River; and,
6. The County contain sixty six (66) provincially significant wetlands, twenty one (21) areas of Natural and Scientific interest, and at least sixty four (64) species of plant and animals that are considered to be vulnerable.

Settlement Areas

As of 2006 the County of Simcoe has a population of approximately 272,200 people with an additional 166,400 residents residing in Barrie and Orillia. The existing conditions land use for each of the municipalities within the County and surrounding study areas (City of Barrie and Orillia) are presented in **Appendix A-2**. Based on information provided in the adopted County's Official Plan (See **Figure 1.3.1**,

Appendix A-1), an increase of approximately 228,400 people and 70,500 jobs will occur between 2006 and 2031 collectively in the County of Simcoe, City of Barrie and City of Orillia . Population density is generally greater in the southern portion of Simcoe County due to its proximity to the Greater Toronto Area (GTA). Residential development has also been attracted to the shores of Georgian Bay and Lake Simcoe. In the summer months the seasonal occupancy increases the population of the County well above the permanent population.

Resources and Economic Base

As presented within the Official Plan, Simcoe County has a wide range of economic bases which includes, but is not limited to, agricultural industries, natural resources, tourism and recreation industries as well as a diverse field of industrial and servicing industries.

2.1.3. Simcoe County's Official Plan: Growth Management Strategy

Based on information provided through Simcoe County's adopted Official Plan, the Growth Management Strategy contains four (4) themes which will be taken into consideration for future population and employment growth within the County. These four (4) themes are as follows:

1. Direction of most non resource related growth and development to settlements. Development tends to occur in more dense areas because it is more economical to service. Local municipalities are to be responsible for undertaking growth and management strategies which will form the basis for identifying the amount of growth in specific areas.
2. Enabling and managing resource based development such as agriculture and forestry, aggregates and tourism. Managing these resources was considered within this plan in order to achieve a balance between economic and environmental concerns.
3. Protection of the County's natural and cultural heritage including water resources. Both surface and groundwater play a key part in the natural heritage and economic well being of the County of Simcoe. This plan was created to encourage the conservation of water within the County in order to protect the long term quality and quantity of this resource. As stated by the County, land development in higher densities will conserve land areas for other resources such as natural heritage protection.
4. Development of complete communities with diverse economic functions, opportunities and a diverse range of housing. This plan focuses on providing a

wide range of business and employment opportunities to meet the needs of Simcoe County's growing population and will include the development of rural business parks and highway commercial development. This section of this strategy will also take into consideration the management and usage of agricultural, aggregate, forestry and other land resources.

2.1.4. Simcoe County's Official Plan: Employment and Population Projections

Existing and Projected Population and Employment Growth

Populations in the Simcoe County and the Cities of Barrie and Orillia have grown steadily since 1981. As stated with Simcoe County's Official Plan, the total population has nearly doubled, growing from approximately 240,000 in 1981 to almost 440,000 in 2006. Under the "Places to Grow Plan" prepared by the Government of Ontario, Simcoe County is expected to receive an annual population growth rate of approximately 2% and employment growth rate of approximately 1.5%.

Between 2006 and 2031, this represents an increase of approximately 228,400 people and 70,200 jobs; based on the Province's allocation of 667,000 people for Simcoe County (including the Cities of Barrie and Orillia) and an allocation of 254,000 jobs by the year 2031. Based upon information prepared for the Simcoe County Official Plan: 2008 Document" report; population growth is summarized in **Table 2.1.4.1.**

Table 2.1.4.1: Simcoe County Official Plan (Revised Plan): Population Growth Rates in Simcoe County, Barrie and Orillia

Region	Town/Township	2006 Census Population (Persons)	Simcoe County Official Plan (Adopted) 2031 Population Allocation (Persons)	Population Growth 2006 - 2031 (Persons)	Percent Growth From 2006 - 2031 Population
SIMCOE COUNTY	Township of Adjala-Tosorontio	11,100	14,200	3,100	128%
	Town of Bradford West Gwillimbury	25,000	49,700	24,700	199%
	Township of Clearview	14,600	26,000	11,400	178%
	Township of Collingwood	18,000	30,200	12,200	168%
	Township of Essa	17,600	22,900	5,300	130%
	Town of Innisfil	32,400	65,000	32,600	201%
	Town of Midland	16,900	19,700	2,800	117%
	Town of New Tecumseth	28,800	49,000	20,200	170%
	Township of Oro-Medonte	20,800	28,100	7,300	135%
	Town of Penetanguishene	9,700	12,300	2,600	127%
	Township of Ramara	9,800	15,500	5,700	158%
	Township of Severn	12,500	20,200	7,700	162%
	Township of Springwater	18,100	26,500	8,400	146%
	Township of Tay	10,100	11,300	1,200	112%
	Township of Tiny	11,200	13,900	2,700	124%
	Town of Wasaga Beach	15,600	35,000	19,400	224%
	Total Population	272,200	439,500	167,300	161%
Other	City of Barrie	166,400	227,500	61,100	137%
	City of Orillia				
	Total Population	438,600	667,000	228,400	152%

(Simcoe County Official Plan, 2008)

NOTE: The projections presented are intended to be used as guidelines for proper growth and development within Simcoe County and may not be exact to the values to date.

Density and Intensification

Six (6) areas within Simcoe County are expected significant growth and are identified as growth node municipalities. These areas are as follows:

1. The Town of New Tecumseth
2. The Town of Bradford West Gwillimbury
3. The Town of Innisfil
4. The Town of Collingwood
5. The Town of Penetanguishene
6. The Town of Midland

According to Simcoe County's Official Plan, intensification is going to be directed to the six (6) communities as presented above and that 40% of new growth will be developed within these built boundaries by the year 2015.

The Cities of Barrie and Orillia are also anticipating significant future population growth within their jurisdictions. The County's rapid growth is mainly a result of migration from the adjacent Greater Toronto Area. As a result of this, the majority of development is expected to occur in the southern regions of Simcoe County where good highway access to the Greater Toronto Area is readily available.

Collingwood and Wasaga Beach are also expected to experience significant growth over the next 20 years due to their proximity to recreational areas such as Georgian Bay, pre-existing industrial development as well as their proximity to major urban centres such as the City of Barrie.

Economic/Employment Development

Simcoe County has a diverse economic base which is comprised of agriculture, resource based industries, small to midsized manufacturing, professional services as well as a strong service and tourism industry. Additionally, Simcoe County has several major employers including Honda, CFB Borden and Casino Rama which collectively contribute approximately 8,500 jobs to the County. It should be noted that the largest employer in the County is the Simcoe County District School Board.

In order to grow the economic base to accommodate for the proposed additional population, new development will likely occur within the proximity of new employment growth. Through the provincial "Growth Plan" and Simcoe County's Official Plan, policies have been developed to direct growth to more urbanized areas of Simcoe County. Water and wastewater servicing capacities must be assessed in relation to the commercial, industrial and employment growth as well. Based upon information prepared for Simcoe County's Official Plan (OP), employment growth is summarized in **Table 2.1.4.2**.

Table 2.1.4.2: Simcoe County Official Plan (Revised Plan): Employment Growth Rates in Simcoe County, Barrie and Orillia

Region	Town/Township	2006 Census Employment (Persons)	Simcoe County Official Plan (Adopted) 2031 Employment Allocation (Persons)	Employment Growth 2006 - 2031 (Persons)	Percent Growth From 2006 - 2031 Population
SIMCOE COUNTY	Township of Adjala-Tosorontio	1,600	2,100	500	131%
	Town of Bradford West Gwillimbury	8,000	16,200	8,200	203%
	Township of Clearview	4,400	5,800	1,400	132%
	Township of Collingwood	10,800	14,400	3,600	133%
	Township of Essa	7,700	10,300	2,600	134%
	Town of Innisfil	5,700	13,100	7,400	230%
	Town of Midland	12,000	16,000	4,000	133%
	Town of New Tecumseth	19,700	26,300	6,600	134%
	Township of Oro-Medonte	4,700	6,200	1,500	132%
	Town of Penetanguishene	5,300	7,000	1,700	132%
	Township of Ramara	1,900	2,500	600	132%
	Township of Severn	3,900	5,300	1,400	136%
	Township of Springwater	5,000	6,700	1,700	134%
	Township of Tay	1,500	2,000	500	133%
	Township of Tiny	1,400	1,900	500	136%
	Town of Wasaga Beach	3,100	4,100	1,000	132%
		Total Employment	96,700	139,900	43,200
Other	City of Barrie	87,100	114,100	27,000	131%
	City of Orillia				
	Total Employment	183,800	254,000	70,200	138%

(Simcoe County Official Plan, 2008)

Economic/Employment Development

Five (5) areas within Simcoe County are expecting significant employment growth are identified as Economic Growth Node municipalities in the County. These areas are the Town of Innisfil, the Town of Bradford West Gwillimbury, the Town of New Tecumseth, the Town of Collingwood, and the Town of Midland. Significant employment growth is also anticipated within the City of Barrie and Orillia. The majority of economic growth within the County is in close proximity to the Highway 400 corridor as well as a few key economic districts, such as Collingwood and Midland-Penetanguishene.

2.1.5. Land Use Designations

As stated within the County's Official Plan, when local municipal official plans are considered to be more restrictive than the County's Official Plan (OP), the more

restrictive plan will apply with respect to development. Please note that planning within specific areas is subject to local municipal official plans as well as the Niagara Escarpment Plan and the Oak Ridge's Moraine Conservation Plan where applicable.

2.2. Places to Grow - Better Choices, Brighter Future: Growth Plan for the Greater Golden Horseshoe

2.2.1. General

In 2006, the Province of Ontario released the Growth Plan for the Greater Golden Horseshoe. This document was revised in an Office Consolidation in January 2012. The purpose of the document was to manage intensified growth, encourage the plan for "complete communities" and to protect natural and historically significant features in the process. Due to the degree of growth and development within Simcoe County, the Province has also developed a growth plan specific to the Simcoe Area which takes in to consideration population and employment growth as well as the overall quality of life. Specifically, the January 2012 Growth Plan document includes a Chapter (Chapter 6) to address growth in the Simcoe Sub-Area.

Amendments for the Simcoe Sub-Area focus on encouraging development which makes sense for the communities; protects the natural environment; ensures a healthy Lake Simcoe; and, positions the economy for investment and growth. Also stated within this document is the need to coordinate growth with infrastructure investment, which must be considered to ensure that growth pressures are not generated within areas that are not ideal and economically efficient or feasible.

The amended growth projections from the 2012 Growth Plan document are included in this Report for comparison and discussion, **All assessments of opportunities and constraints as well as associated recommendations in this Study have been based on the 2009 County of Simcoe Official Plan projections.** However, the objectives sustainability goals of the January 2012 Growth Plan for the Simcoe Sub-Area have been incorporated into the recommendations of this Study.

This Province's Plan also addresses key priorities that relate to the sustainable growth and prosperity of the Simcoe Area. Some of these priorities include important environmental assets, including: Lake Simcoe; and, agricultural lands.

It should be noted that in March 2011, the Minister of Infrastructure appointed a Provincial Development Facilitator to undertake additional consultations with municipalities in the Simcoe Area. Resulting from these consultations, the following key changes were developed for inclusion within the **January 2012 Growth Plan for the Golden Horseshoe** as it relates to the Simcoe Area:

-
- A greater amount of flexibility is provided for approval of development in settlement areas in Simcoe.
 - Interim Settlement Area Boundary policies are removed.
 - Addition of Alcona as a primary settlement area.
 - Process for review of strategic employment area decisions.
 - There are no changes to the policies that apply for the rest of the Greater Golden Horseshoe outside of the Simcoe Area.

Population Growth

The Province's Plan identifies urban and employment nodes within the Simcoe area. New residential or urban growth has been allocated in the Plan to these specified areas, including seven (7) major urban nodes within the Simcoe Sub-Area; City of Barrie, the City of Orillia, the Town of Collingwood, the Town of Bradford West Gwillimbury, Midland-Penetanguishene, the community of Alcona in the Town of Innisfil, and the community of Alliston in the Town of New Tecumseth. As stated within this Growth Plan, the majority of future growth will reside within these seven (7) urban nodes, supported by smaller towns and communities. This proposed provincial strategy focuses on the future development of these seven (7) nodes due to pre-existing municipal infrastructure and economic development that currently exists within those seven (7) nodes. Based upon information found within the *Growth Plan for the Greater Golden Horseshoe, January 2012* document (Schedule 7), the following population allocation has been proposed for the Simcoe Area and is presented in **Table 2.2.1.1**.

Table 2.2.1.1: Provincial Growth Plan: Population Growth Rates in Simcoe County, Barrie and Orillia

Region	Town/Township	2006 Census Population (Persons)	Provincial Growth Plan 2031 Population Allocation (Persons)	Population Growth 2006 - 2031 (Persons)	Percent Growth From 2006 - 2031 Population
SIMCOE COUNTY	Township of Adjala-Tosorontio	11,100	13,000	1,900	117%
	Town of Bradford West Gwillimbury	25,000	50,500	25,500	202%
	Township of Clearview	14,600	19,700	5,100	135%
	Township of Collingwood	18,000	33,400	15,400	186%
	Township of Essa	17,600	21,500	3,900	122%
	Town of Innisfil	32,400	56,000	23,600	173%
	Town of Midland	16,900	22,500	5,600	133%
	Town of New Tecumseth	28,800	56,000	27,200	194%
	Township of Oro-Medonte	20,800	27,000	6,200	130%
	Town of Penetanguishene	9,700	11,000	1,300	113%
	Township of Ramara	9,800	13,000	3,200	133%
	Township of Severn	12,500	17,000	4,500	136%
	Township of Springwater	18,100	24,000	5,900	133%
	Township of Tay	10,100	11,400	1,300	113%
	Township of Tiny	11,200	12,500	1,300	112%
	Town of Wasaga Beach	15,600	27,500	11,900	176%
	Total Population	272,200	416,000	143,800	153%
Other	City of Barrie	133,500	210,000	76,500	157%
	City of Orillia	31,400	41,000	9,600	131%
	Total Population	437,100	667,000	229,900	153%

The concept of “complete communities” was introduced with the June 2009 release of the Growth Plan, and continues throughout the January 2012 release as a means of introducing a greater mix of residential housing that is within closer proximity to areas of employment, recreation and culture.

Further to the projected population growth forecasts, the Province has identified that there may be a need to re-designate additional agricultural or rural lands for urban uses in settlement areas. The Province will be looking to these re-designations as areas to assign a further 20,000 people over the next 5 years, subject to County of Simcoe approval.

Employment Growth

The majority of future employment growth has also been assigned to the seven (7) urban nodes in the Province’s Plan as well as a few strategic areas within the Simcoe Area. The Highway 400 corridor is identified in the plan as one of Simcoe area’s most significant transportation corridors. As such, the development of land along and adjacent to the Highway 400 corridor has been proposed within this Growth Plan for employment growth. Two (2) specific areas of the Highway 400 corridor have been identified as strategic employment areas. These two (2) areas are as follows:

1. Innisfil Heights – Town of Innisfil
2. Along Simcoe County Road 88 – Town of Bradford West Gwillimbury

Other strategic employment areas identified in the Growth Plan include the Lake Simcoe Regional Airport Economic Employment District (Township of Oro-Medonte) and the Rama Road Economic Employment District (Township of Ramara).

The City of Barrie has also been identified as an important area for employment growth within the Simcoe Area and is expected to accommodate up to 50% of Simcoe Area's future 2031 employment growth, as presented in the Province's document. Based upon information found within the *Growth Plan for the Greater Golden Horseshoe, January 2012* document, the following employment allocation has been proposed for the Simcoe Area and is presented in **Table 2.2.1.2**.

Table 2.2.1.2: Provincial Growth Plan: Employment Growth Rates in Simcoe County, Barrie and Orillia

Region	Town/Township	2006 Census Employment (Persons)	Provincial Growth Plan 2031 Employment Allocation (Persons)	Employment Growth 2006 - 2031 (Persons)	Percent Growth From 2006 - 2031 Population
SIMCOE COUNTY	Township of Adjala-Tosorontio	1,600	1,800	200	113%
	Town of Bradford West Gwillimbury	8,000	18,000	10,000	225%
	Township of Clearview	4,400	5,100	700	116%
	Township of Collingwood	10,800	13,500	2,700	125%
	Township of Essa	7,700	9,000	1,300	117%
	Town of Innisfil	5,700	13,100	7,400	230%
	Town of Midland	12,000	13,800	1,800	115%
	Town of New Tecumseth	19,700	26,500	6,800	135%
	Township of Oro-Medonte	4,700	6,000	1,300	128%
	Town of Penetanguishene	5,300	6,000	700	113%
	Township of Ramara	1,900	2,200	300	116%
	Township of Severn	3,900	4,400	500	113%
	Township of Springwater	5,000	5,600	600	112%
	Township of Tay	1,500	1,800	300	120%
	Township of Tiny	1,400	1,700	300	121%
	Town of Wasaga Beach	3,100	3,500	400	113%
		Total Employment	96,700	132,000	35,300
Other	City of Barrie	64,300	101,000	36,700	157%
	City of Orillia	19,700	21,000	1,300	107%
	Total Employment	180,700	254,000	73,300	141%

Sustainable Growth

In addition to allocating population and employment nodes, this growth plan also focuses on sustainable growth in the Simcoe area in order to protect the environment and landscape of the study area. As indicated within the Growth Plan, growth within the Lake Simcoe, Nottawasaga River and Severn watersheds will be managed according to the Growth Plan and policies including the Lake Simcoe Protection Plan, Greenbelt Plan, the Oak Ridge's Moraine Conservation Plan, and the Niagara Escarpment Plan.

The January 2012 Growth Plan for the Simcoe Sub-Area includes the following four (4) policy areas for ensuring sustainable growth in the Simcoe Area:

Policy 6.2 Allocating population and employment growth to support the primary settlement areas and other serviced settlement areas.

Policy 6.3.1 Identifying primary settlement areas that are the focus for growth and intensification.

- Primary settlement areas have been identified, including Alcona in the Town of Innisfil (newly amended).

Policy 6.3.2 Providing flexibility to approve development in settlement areas.

- The policies in the Plan for land needs analysis and delineation of an interim settlement area boundary have been removed.
- Development may be approved in settlement areas in excess of what is need to accommodate the forecasts in Schedule 7, provided the development is on lands designated for urban uses as of January 19, 2012.
- The County may redesignate additional agricultural or rural lands for urban uses in settlement areas, up to a total amount of land across the County equivalent to what is need to accommodate 20,000 people.
- In all cases development must continue to meet applicable planning tests such as contributing to the Greenfield density targets and meeting the requirements of the Lake Simcoe Protection Plan.
- Settlement area boundary expansions continue to be subject to the tests of the Growth Plan and are based on Schedule 7.
- Municipalities in the Simcoe Area are encouraged to achieve greater efficiency and conservation in energy, water and wastewater management through building and community design.

-
- The County of Simcoe and lower tier municipalities in the County shall establish and implement phasing policies to ensure the orderly and timely progression of development on lands for urban uses.

Policy 6.4 Identifying strategic settlement employment areas to optimize the Highway 400 corridor and create the opportunity for investment.

- Four (4) strategic employment areas have been identified.

For additional clarification and information, please refer to the *Growth Plan for the Greater Golden Horseshoe* document (January 2012) – www.placestogrow.ca.

2.3. Lake Simcoe Protection Plan

First implemented in 2008, the Lake Simcoe Protection Plan (LSPP) encompasses a significant area within the County of Simcoe as well as the municipalities surrounding the City of Barrie and Orillia. As such, future wastewater servicing within some areas of Simcoe County will be required to remain in compliance with this plan. This plan was created as a result of the growing nutrient loading problems that currently exist within Lake Simcoe as result of agricultural activities as well as effluent discharge from local municipalities. The primary objectives of this plan are as follows:

1. Protect, improve or restore the elements that contribute to the ecological health of the *Lake Simcoe watershed*, including, water quality, hydrology, key natural heritage features and their functions, and key hydrologic features and their functions;
2. Restore a self-sustaining coldwater fish community in Lake Simcoe;
3. Reduce loadings of phosphorus and other nutrients of concern to Lake Simcoe and its tributaries;
4. Reduce the discharge of pollutants to Lake Simcoe and its tributaries;
5. Respond to *adverse effects* related to *invasive species* and, where possible, prevent *such species* from entering the *Lake Simcoe watershed*;
6. Improve the *Lake Simcoe watershed's* capacity to adapt to climate change;
7. Provide for ongoing scientific research and monitoring related to the ecological health of the *Lake Simcoe watershed*;
8. Improve conditions for *environmentally sustainable recreational* activities related to Lake Simcoe and to promote such activities;

-
9. Promote environmentally sustainable land and water uses, activities and *development* practices;
 10. Build on the protections for the *Lake Simcoe watershed* that are provided by provincial plans that apply in all or part of the *Lake Simcoe watershed*, including the Oak Ridge's Moraine Conservation Plan, the Greenbelt Plan, and provincial legislation, including the Clean Water Act, 2006, the Conservation Authorities Act, the Ontario Water Resources Act, and the Planning Act; and,
 11. Pursue any other objectives set out in the *Lake Simcoe* Protection Plan.

The *Lake Simcoe* Protection Plan builds upon past actions and policies that were taken to reduce the environmental impact that people have on Lake Simcoe and its tributaries. This plan mainly focuses on the overall water quality of Lake Simcoe and the primary stressors that degrade water quality. These include but are not limited to:

1. Excessive nutrients, primarily phosphorus;
2. Pollutants and contaminants, such as heavy metals, organic chemicals, sediments, and chlorides; and
3. Pathogens, such as *E. coli*.

For additional information with regards to the Lake Simcoe Protection Plan, please refer to the document using the following link:

<http://www.ene.gov.on.ca/publications/6932e01.pdf>

2.4. Severn Sound Sustainability Plan

The Severn Sound watershed is located in the southeastern part of Georgian Bay, and the northern part of Simcoe County. Tributary watersheds to Severn Sound include: Wye River; Hog River, Sturgeon River; and Coldwater River. The land within the watershed lies within the jurisdiction of nine (9) municipalities:

- City of Orillia;
- Town of Midland ;
- Town of Penetanguishene;
- Township of Georgian Bay;
- Township of Oro-Medonte;
- Township of Severn;
- Township of Springwater;
- Township of Tay; and,
- Township of Tiny.

In late 2007, a Sustainability Advisory Team (SAT) was formed to help in the creation of the Severn Sound Sustainability Plan. The SAT consisted of over 50 individuals, with representatives from community organizations, government, businesses and cultural groups. The SAT released the Draft Sustainability Plan in December of 2008.

The Sustainability Plan is a vision for the Severn Sound watershed in the year 2050, as prepared by the Severn Sound Environmental Association (SSEA). It includes Goals, Strategic Directions and Actions that will, when implemented, ensure the sustainability of the watershed for generations to come. The Severn Sound Sustainability Plan was finalized and endorsed by all nine (9) partner municipalities in the spring of 2009.

Currently, the Sustainability Plan Steering Committee is in the process of developing a strategy for the Plan's implementation. Additional details of the Plan can be found at: <http://www.severnsound.ca/>.

It should be noted the Severn Sound Sustainability Plan follows the delisting of Severn Sound as an Area of Concern (AOC), through the completion of the Severn Sound Remedial Action Plan (RAP). Existing RAP or SSEA reports or activities that are currently under way that are relevant to the Visioning Strategy include the following:

- The Severn Sound Remedial Action Plan Stage 2 Report 1993 (a copy of the sewage effluent targets for municipal plants in the Severn Sound Watershed are included in **Appendix A-1**). These effluent targets are receiving water-based and are being used in current effluent requirements for upgrades to sewage plants and recognized by MOE in the development of the new Certificates of Approval for the plants in the Severn Sound.
- Updated Assessment Report (UAR) for the Severn Sound Source Protection Area (available on www.ourwatershed.ca).

3. BACKGROUND - NATURAL ENVIRONMENT

3.1. Natural Heritage Features

3.1.1. General

The existing land use designations in the County of Simcoe are illustrated in **Figure 2.1.1, Appendix A-1**. Please note that all land use maps presented within this study were generated through GIS data provided by the Simcoe County Land Information Network Cooperative (LINC). **Table 3.1.1.1** lists the seven (7) land use designations which were used in the Project and are based on information in part, provided through the Simcoe County Official Plan (adopted 2008). In addition, the Simcoe County Natural Heritage Features are presented in **Figure 3-1, Appendix A-1** (showing the entirety of Simcoe County) and for each of the individual municipalities in **Appendix A-2**.

In general, and as presented in **Chapter 2.0**, the following natural environment features are located within the County:

1. The Niagara Escarpment and the Oak Ridge's Moraine form much of the county's western and southern geological areas.
2. Bass Lake Moraine comprises the northwest regions of Simcoe County;
3. Limestone plane comprises the east regions of Simcoe County.
4. Granitic bedrock comprises the northeast regions of Simcoe County.
5. Several large rivers drain into the Georgian Bay, the two predominate are Nottawasaga and the Wye River. Smaller tributaries drain to Lake Simcoe on the east side of the County and to Georgian Bay (Severn Sound) in the north.
6. The County contains sixty six (66) provincially significant wetlands, twenty one (21) areas of Natural and Scientific interest, and at least sixty four (64) species of plant and animals that are considered to be vulnerable.

Table 3.1.1.1: Generalized Land Use Designation Definitions

Designation	Description
Rural Boundary	This designation includes non-prime agricultural areas. As identified within Schedule 3.6 found with Simcoe County's OP. This area permits the use of agriculture activities, agricultural related uses, secondary uses, natural heritage conservation and forestry, aggregate development subject to approval, agricultural produce sales outlets as well as highway, commercial, institutional, residential lots which are constructed by consent, country recreational facilities, country residential subdivisions and rural business parks.
Settlement Areas	This designation includes areas of traditional mixed use central places such as Cities, Towns, Villages and Hamlets. Simcoe County has indicated a significant quantity of settlement areas which are identified within Schedule 3.5 , Land Use Designation within Simcoe County's Official Plan document.
Greenlands Boundary	This designation includes areas that have been identified by Simcoe County as natural heritage systems and areas of interest. As identified within Schedule 3.7 found with Simcoe County's OP, these areas includes wetlands, ANSI's, significant woodlands, significant wildlife habitats, environmentally sensitive areas, major lakes and water bodies, and Niagara Escarpment areas. While development is permitted within this area (with appropriate approval), Simcoe County discourages development within these areas when alternative sites are present.
Niagara Escarpment Plan Boundary	This designation includes areas that have been identified by the Province of Ontario as environmentally sensitive areas. As identified within Schedule 3.8 found with Simcoe County's OP, development within these areas is permitted but must meet the requirements of the Niagara Escarpment Plan (NEP) and development policies implemented by Simcoe County as well as the local municipality.
Transportation Areas	This designation includes public and private roads, active and non-active railways as well as public and private airports.
Oak Ridge's Moraine Area	This designation includes areas that have been identified by the Province of Ontario and some of Ontario's most significant and continuous natural landforms.
Agricultural	This designation includes prime agricultural areas. As identified within Schedule 3.6 found with Simcoe County's OP. This area permits the use of agriculture activities, agricultural related uses, secondary uses, natural heritage conservation and forestry, aggregate development subject to approval and agricultural produce sales outlets.
Major Rivers	This designation includes areas where major water bodies exist within Simcoe County.

NOTE: For additional information regarding Land Use Designations, please refer to **Schedule 3.4 – 3.10** found with Simcoe County's Official Plan (adopted 2008).

3.1.1. Niagara Escarpment Plan

The Niagara Escarpment Plan (NEP) is a provincial environmental plan that allows only for development that is compatible with its natural environment. The Niagara Escarpment extends approximately 725 km from Queenston on the Niagara River to the islands off Tobermory on the Bruce Peninsula. With respect to Simcoe County, the Niagara Escarpment Plan (NEP) traverses the western portion of the Township of Clearview. The Niagara Escarpment Plan and its extent within Simcoe County can be found in **Figure 3.1.1** and **Figure 3-2** in **Appendix A-1**.

Within the NEP areas, development must apply with the corresponding Niagara Escarpment Plan policies as well as policies from this plan and the Municipal plan. Within Simcoe County the following four (4) parks are within the NEP:

1. Nottawasaga Lookout;
2. Devil's Glen;
3. Nottawasaga Bluff; and,
4. Noisy River Natural Reserve.

As stated within the Niagara Escarpment Plan, the escarpment area is situated within an area of intensified agricultural activity, seasonal dwellings, and the mineral aggregate extraction industry. The primary objective of this plan is to minimize and remediate the affect that human impacts have on this environmentally significant landscape. The objectives stated within this Plan are as follows:

1. To protect unique ecologic and historic areas;
2. To maintain and enhance the quality and character of natural streams and water supplies;
3. To provide adequate opportunities for outdoor recreation;
4. To maintain and enhance the open landscape character of the Niagara Escarpment in so far as possible, by such means as compatible farming or forestry and by preserving the natural scenery;
5. To ensure that all new development is compatible with the purpose of the Plan;
6. To provide for adequate public access to the Niagara Escarpment; and
7. To support municipalities within the Niagara Escarpment Plan Area in their exercise of the planning functions conferred upon them by the *Planning Act*.

As such, growth and development within these areas is subject to the NEP as well as Simcoe's Official Plan and the local municipal official plan.

3.1.2. Oak Ridge's Moraine

The Oak Ridge's Moraine Conservation Action Plan (ORMCP) was first implemented in 2001 and involves all levels of government. This plan was established to support

the protection, restoration and enhancement of all natural features within the Oak Ridge's Moraine and to protect groundwater recharge areas. The Oak Ridge's Moraine is located within the southern reaches of Simcoe County, within the Township of Adjala-Tosorontio and small parts of the Town of New Tecumseth. Areas in Simcoe County that are within the Oak Ridge's Moraine Conservation Action Plan are illustrated within **Figure 3.2.1, Appendix A-1**.

3.2. Surface Water

3.2.1. General

There are two (2) major watersheds located within the County of Simcoe, the Lake Simcoe Basin and Nottawasaga River Basin. The majority of the County lies within the Nottawasaga River system that drains northward to Georgian Bay. The Severn River forms the main outlet from Lake Simcoe and drains northwest to Georgian Bay. Please note that there are numerous tributaries situated within the County of Simcoe that also discharge to the Nottawasaga River, the Severn River, or Severn Sound of Georgian Bay.

Please refer to **Appendix A-3** for natural heritage features which include major water courses within the County of Simcoe and neighbouring municipalities.

3.2.2. Natural Hazards

Typically, local conservation authorities regulate development and growth within specific areas based on natural hazards as well as from a natural conservation perspective. With regards to natural hazards, these regulations typically are used to prevent or mitigate the effects the natural environment has on people and/or the environment. These natural hazards for example include restricting development within floodplain areas as well as areas with hazardous slopes.

There are two (2) Conservation Authorities (CAs), located within the County of Simcoe and surrounding areas. The Nottawasaga Valley Conservation Authority (NVCA) encompasses the majority of land area within Simcoe County, while Lake Simcoe Region Conservation Authority (LSRCA) is predominately situated around Lake Simcoe.

Based on **Section 3.1** within "**NVCA's Planning Regulation Guidelines**", Development should be directed to areas which area outside of hazardous lands which are adjacent to shorelines, river systems, and inland lakes which are potentially impacted by flooding hazards, erosion hazards and/or dynamic beach hazards. For additional information regarding Natural Hazards regulations within the Simcoe County area, please refer to the NVCA website using the following link:

<http://www.nvca.on.ca/OurProgramsandServices/Planning/PlanningPolicies/PlanningandRegulationGuidelines/index.htm>

Based on information presented obtained through the NVCA website, the most significant natural hazards, due to their susceptibility to seasonal flooding, are located with NVCA jurisdiction in the following areas:

1. Silver Creek;
2. Pretty River;
3. Batteaux Creek;
4. Noisy River;
5. Lamont Creek;
6. Mad River;
7. Nottawasaga River;
8. Willow Creek;
9. Beeton Creek; and,
10. Innisfil Creek.

Please note that both the NVCA, as well as the LSRCA, have very similar planning guidelines, goals and policies. With regards to the LSRCA, the “**Lake Simcoe Region Conservation Authority Watershed Development Policies**” document is used to regulate development and growth within the LSRCA boundaries. For additional information regarding Natural Hazards regulations within the Simcoe County area, please refer to the LSRCA website using the following link: http://www.lsrca.on.ca/pdf/watershed_development_policies.pdf

The Severn Sound Environmental Association operates in municipalities which include water courses that drain to Severn Sound, but with no jurisdiction over natural hazards. Where CA jurisdiction does not apply, the Ontario Ministry of Natural Resources enforces Natural Hazard Regulations in Simcoe County.

3.2.3. Water Quality and Nutrient Loading Analysis

General

A long history of nutrient loading to surface water features from agricultural activities and urbanization in the County of Simcoe has resulted in the water quality within some watersheds being severely compromised, resulting in the deterioration of cold water fish habitats. The cause of this deterioration is primarily a result of excessive phosphorus concentrations from a wide variety of sources, one being wastewater effluent.

As part of this Visioning Strategy document preparation, the CANWET™ modelling tool was used to assess current nutrient loading found within Simcoe County.

Mathematical models are more often being used to estimate the responses of water bodies to changes in nutrient loadings, and to assist in developing and assessing the water quality benefits to be accrued from various eutrophication management options. Eutrophication is a term that best describes the over fertilization of major water bodies, such as streams and lakes with nutrients. As a result of this over fertilization, limiting nutrients for aquatic plant growth such as nitrogen and phosphorus rapidly become available within affected water bodies. As such, the growth of phytoplankton (algae) greatly increases resulting in what is termed as “algae blooms”. These “algae blooms” can negatively affect the natural nutrient balance found within water bodies. Negative environmental effects include anoxia which involves the loss of oxygen in the water which can severely affect populations in native aquatic species. Since phosphorus is generally the limiting nutrient in Simcoe County water bodies, the CANWET™ analysis in this Background Information Brief was focused on the modeling of phosphorus loading found within Simcoe County surface water systems.

CANWET™ Theory

The CANWET™ model contains a daily water balance plus nutrient and sediment transport routines that provide analysis on a catchment or watershed basis depending on the delineation. The model allows for the assessment of agricultural and urban beneficial management practices (BMPs) in reducing loading rates of sediment and nutrients to waterways. CANWET™ has been used in the past for assimilative capacity studies, sub-watershed target setting, secondary plan scenario evaluations, source water protection water balance studies and the study of BMP (beneficial management practice) efficiencies, primarily in Simcoe County.

The results presented herein are a compilation of modeling results from the 2006 Assimilative Capacity Study for the Nottawasaga River Basin (completed in conjunction with assimilative capacity work for the Lake Simcoe basin), the 2008 water balance and nutrient load assessment completed for the Lake Simcoe basin and new model runs completed for parts of the Black-Severn watershed and the series of smaller watersheds that discharge directly into Severn Sound and Georgian Bay within the County of Simcoe boundaries.

Approach

CANWET™ model input data sets were developed for areas outside the Lake Simcoe and Nottawasaga River watersheds where coverage previously did not exist, namely the Severn Sound tributary subwatersheds. This involved expanding the catchment delineation mapping, streams, land use, digital elevation mapping, point sources locations and a host of dependant data sets to include areas that had not previously been modeled. The new area was delineated into 82 catchments, consistent in size

with catchments used in the already completed models for Lake Simcoe and the Nottawasaga River.

In previous drafts of this Report, CANWET™ v3.6 was used to clip spatial data and simulate hydrologic and water quality response for the period 1995 through 2005 using available meteorological stations. The previously mapped results for the entire County from the Nottawasaga non-point source and in-stream assimilative capacity models prepared using CANWET™ v.2 were merged with results from the CANWET™ v.3 model prepared for the LSRCA for the portion of the Lake Simcoe watershed within the Simcoe County boundaries. The new model runs using CANWET™ v.3.6 were also added to this map. Results were normalized by area to eliminate the appearance of greater loading from larger catchments. The location of point sources were added to the map along with the limited in-stream modeling completed for the Nottawasaga River watershed.

For this latest version and update to the Report, CANWET™ v4 was used to model the County watersheds expecting significant new growth by 2031. Specifically, these watersheds included the priority watersheds of the Nottawasaga River, Innisfil Creeks (series of small tributaries with discharge to Lake Simcoe), Coldwater River and Sturgeon River.

Limitations

The new modeling work was not calibrated. Detailed analysis of in-stream water quality was completed for the priority watershed listed above. Routing of flow and non-point source nutrient loads from catchments and point sources was completed.

Non-point source loads were combined with point-source discharges and in-stream flows were assessed to determine the amount of available dilution. The resulting output maps presented in **Appendix A-8** were used in assessing possible opportunities and constraints. Modeling results are only as good as the input supplied. Although we endeavour to use the most up-to-date data available, field verification of this information was not within the scope of the study.

The CANWET™ model allows for the inclusion of nutrient and sediment load reductions associated with various urban and rural BMPs, reservoirs and wetlands. However, without access to detailed information on where BMPs are implemented, the areas they service and the efficiency they are achieving, we were unable to include them in the model runs.

Results and Discussion

Mapping is provided in **Appendix A-8**, which shows the compilation of modeling runs and location of point sources. The map is intended to illustrate, on a relative scale,

the contribution of non-point source loads and the locations of point sources that will influence in-stream water quality. Existing conditions results for Innisfil Creeks, Nottawasaga River and Coldwater River/Sturgeon River are presented in **Appendix A-8**.

3.3. Groundwater - Aquifer Vulnerability and Water Balance Concerns

With respect to water servicing, groundwater from confined and un-confided aquifers are constantly at risk of groundwater mining, a condition that occurs when the rate of withdrawals surpasses the recharge rate as well as potential groundwater contamination. Aquifers that have municipal water supply systems connected to them are predominately the areas where groundwater mining and potential groundwater contamination would occur. It should also be noted that the majority of residents that live in Simcoe County rely solely on groundwater for their safe, inexpensive drinking water supply. As such, protecting these water sources is essential to ensure safe, healthy, and sustainable drinking water for Simcoe County. It should be noted that groundwater protection zones are presented within **Appendix A-4** of this Study.

4. BACKGROUND-WATER AND WASTEWATER SERVICING ANALYSIS

The following approach was undertaken for the purpose of completing the servicing (gap) analysis of water and wastewater systems in Simcoe County, Orillia, Barrie, and on Federal Lands:

1. As a first step in the County of Simcoe's Water and Wastewater Visionary Strategy (Background Information Brief), Greenland Consulting Engineers (Greenland) compiled a summary of the existing water and wastewater servicing requirements for each of the municipalities in the study area. The data from **2009** was considered to be the most current data available for the purpose of this study with regards to water and wastewater servicing within Simcoe County.
2. **The current (2009) population** was also determined for the purpose of this study and was confirmed with each of the participating municipalities and communities within the Study Area. These populations were used to determine the degree of growth within each of the municipalities as well as to determine the current water and wastewater service population.
3. The **future (2031) population** was determined from the Simcoe County adopted Official Plan.
4. This data was analyzed and compiled into a series of Water and Wastewater Servicing Analysis documents that focused on individual municipalities, CFB Borden, and the cities of Barrie and Orillia.
5. These documents were then presented for review and confirmation by each of the respective municipalities.
6. To eliminate any discrepancies in the background data collected and information collected in 2006 (as part of the Intergovernmental Action Plan Servicing Capacities Assessment); municipal interviews and surveys were performed for each of the municipalities within the study area in the summer of 2010. The interviews were held with staff of each of the member municipalities, CFB Borden and the Cities of Barrie and Orillia to present and discuss drafts of analysis completed for existing and future water and wastewater servicing requirements.
7. Following completion of the interviews, the completed draft servicing gap analysis was updated and re-circulated to the municipalities and CFB Borden for final review. Further communication with the municipalities has also

occurred throughout 2011 to ensure that all data collected was accurate, including presentations to County municipality Chief Administrative Officers (CAOs), review agencies (Conservation Authorities) and neighbouring municipalities.

Once all the data within the **Water and Wastewater Servicing Analysis** documents were revised by the municipalities and CFB Borden, the data was then compiled and presented within this Report.

4.1. Township of Adjala-Tosorontio Servicing Gap Analysis

4.1.1. Township of Adjala-Tosorontio Supporting Documentation

The following information and data was reviewed specific to Adjala-Tosorontio and is included within this study. The information obtained for the Township of Adjala-Tosorontio to-date is listed as follows:

1. Colgan Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
2. Everett Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
3. Hockley Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
4. Lisle Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
5. Loretto Heights Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
6. Rosemont Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
7. Weca Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
8. New Horizon Subdivision Sewage Treatment Plant: 2009 Annual Performance Report.
9. Township of Adjala-Tosorontio 2009 Annual Water Summary Report.
10. Township of Adjala-Tosorontio Schedule B Class Environmental Assessment for Colgan Water Supply, September 2005.
11. Township of Adjala-Tosorontio Schedule B Class Environmental Assessment for Rosemont Water Supply, September 2006.
12. Additional information provided to the County by the Township during Project interviews conducted in July 2010.

4.1.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the Township for 2006 was 10,695. Based on the 6.1% growth between 2001 and 2006, the estimated 2009 population was determined to be approximately 11,085 people (390 person growth). This was compared with the Township of Adjala-Tosorontio building permits from the past three years.

Based on Residential building permits obtained through Simcoe County, the total number of Residential units for the Township of Adjala-Tosorontio from 2006 - 2009 was 81 units which equates to 243 people (assuming 3.0 people/unit based on the Township's Growth Management Plan) additional population. Based on information provided through the Township of Adjala-Tosorontio's Planning Department, the approximate population growth from 2006 to 2009 was in the range of 350-400 people. As such, the estimated population growth of 390 people was used for this study.

Current and projected populations for the Township of Adjala-Tosorontio are presented in **Table 4.1.2.1**. Projected populations are based on proposed County Official Plan 2031 allocated growth as well as allocated growth for 2031 as identified in the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 document.

Table 4.1.2.1: Simcoe County Official Plan Projected Population Growth Rate - Township of Adjala-Tosorontio

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
Township of Adjala-Tosorontio	9,361	10,082	10,695	6.1%	1.2%	11,085	390	13,000	2,305	1,915	14,200	3,505	3,115

GENERAL NOTES:

1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7

4.1.3. Projected Population Growth

Based on information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected populations for 2031 within this Township ranged from 13,000 people based on the proposed provincial allocation and 14,200 people based on Simcoe County's Official Plan. From a base population of 10,695 in 2006 the population difference by 2031 ranges from 2,305 to 3,505. This equates to an average annual increase of between 92 to 140 people.

Please refer to **Figure No. LU-1**, found in **Appendix A-2** for the Township of Adjala-Tosorontio's current Land Use Designation Map.

4.1.4. Projected Employment Growth

Through information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected employment growth for 2031 range between approximately 500 jobs and 200 jobs, respectively. This equates to an additional equivalent population of between 250 and 100, respectively, that will require water and wastewater servicing.

Employment Service Population Assumptions:

Section 5.5.2.1 within the Guidelines for the Design of Sanitary Sewage Systems (MOE 2008) indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems notes that the average daily flows generated within an employment environment ranged from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent employment growth population (positions). Projected employment growth for the Township of Adjala-Tosorontio is presented in **Table 4.1.4.1**.

Table 4.1.4.1: Simcoe County Official Plan Projected Employment Growth Rate - Township of Adjala-Tosorontio

Town/Township	EMPLOYMENT GROWTH										Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031			
Township of Adjala-Tosorontio	1,600	2,100	1,800	31.3%	12.5%	1.3%	0.5%	500	200	250	100	

GENERAL NOTES:

1. Based on Employment Growth obtained through Simcoe County's Official Plan and the Greater Golden Horseshoe Growth Plan 2011

4.1.5. Water Supply

Please refer to **Figure No. WAT-1.** found in **Appendix A-4** for the Township of Adjala-Tosorontio current water servicing plan.

As of 2009, the Township of Adjala-Tosorontio had seven (7) groundwater supply systems to service their current demands. Based on information provided through the Township, all units connected to these water supply systems are fully metered. These water supply systems are as follows:

Colgan Well Supply

The Colgan water supply system is classified as a small municipal residential water system that currently services approximately 71 houses and a school. This equates to approximately 213 people (assuming 3.0 People/ Household) being serviced excluding the school. The system consists of five (5) active groundwater wells, three (3) of which are new wells that have just been recently commissioned. As stated by the Township, the two (2) older wells are expected to be decommissioned as a result of the recently constructed wells.

This facility has a maximum rated capacity of 262.9 m³/day based on the facility's permit to take water. As of 2009, the maximum daily demand (MDD) for this facility was approximately 142.8 m³/day. As stated by the Township, the Township is looking to expand their permit to take water to accommodate additional growth within this servicing area.

Everett Well Supply

The Everett water supply system is classified as a large municipal residential water system that currently services approximately 643 houses. This equates to approximately 1,929 people (assuming 3.0 people/household) being serviced. The system consists of three (3) active groundwater wells with a hydraulic rated capacity of 4,870 m³/day. This facility has a maximum rated capacity of 4,870 m³/day based on the facility's permit to take water. As of 2008, the maximum daily demand (MDD) for this facility was approximately 1,469.1 m³/day. The 2009 MDD was approximately 705.6 m³/day. Due to the drastic change in MDD from 2008 to 2009 an average MDD was taken which equates to approximately 1,088 m³/day.

Hockley Well Supply

The Hockley water supply system is classified as a small municipal residential water system that currently services approximately 14 houses. This equates to approximately 42 people (assuming 3.0 people/household) being serviced. The system consists of one (1) active groundwater well with a hydraulic rated capacity of 89.7 m³/day. This facility has a maximum rated capacity 89.7 m³/day based on the facility's permit to take water. As of 2009, the maximum daily demand (MDD) for this facility was approximately 39.3 m³/day.

Lisle Well Supply

The Lisle water supply system is classified as a small municipal residential water system that currently services approximately 78 houses. This equates to approximately 234 people (assuming 3.0 people/household) being serviced. The system consists of two (2) active groundwater wells with a hydraulic rated capacity of 656.6 m³/day for each well. This facility has a maximum rated capacity 1,313.2 m³/day based on the facility's permit to take water. As of 2009, the maximum daily demand (MDD) for this facility was approximately 117.0 m³/day.

Loretto Well Supply

The Loretto water supply system is classified as a small municipal residential water system that currently services approximately 26 houses. This equates to approximately 78 people (assuming 3.0 people/household) being serviced. The system consists of one (1) active groundwater well with a hydraulic rated capacity of 163.8 m³/day. This facility has a maximum rated capacity 163.8 m³/day based on the facility's permit to take water. As of 2009, the maximum daily demand (MDD) for this facility was approximately 49.2 m³/day.

Rosemont Well Supply

The Rosemont water supply system is classified as a small municipal residential water system that currently services approximately 47 houses. This equates to approximately 141 people (assuming 3.0 people/household) being serviced. This water supply system consists of two (2) municipal groundwater wells, two (2) pumping stations, two (2) hydraulically-linked reservoirs and one (1) distribution system.

This facility has a maximum rated capacity 85.0 m³/day based on the facility's permit to take water. As of 2009, the maximum daily demand (MDD) for this facility was approximately 68.1 m³/day.

Over the past few years, Rosemont has required water by truckload to supplement their small water system.

A Class Environmental Assessment (EA) has been completed for this system. The preferred solution to ensure that an adequate water supply is available for the Rosemont community is building a new well source. This well will increase the Maximum Daily Output from 66.4 L/min to approximately 78.4 L/min. It is unknown if a new well source has been constructed at this time.

Weca Well Supply

The Weca water supply system is classified as a small municipal residential water system that currently services approximately 87 houses. This equates to approximately 261 people (assuming 3.0 people/household) being serviced. The system consists of two (2) active groundwater wells with a hydraulic rated capacity of 915.8 m³/day. This facility has a maximum rated capacity 915.8 m³/day based on the facility's permit to take water. As of 2008, the maximum daily demand (MDD) for this facility was approximately 227.1 m³/day.

It was assumed that the remaining population within the Township of Adjala-Tosorontio is serviced by private wells. Based on information provided by the Township, approximately 10,000 people in the Township are serviced by private wells.

4.1.6. Wastewater Treatment

Please refer to **Figure No. SAN-1** found in **Appendix A-5** for the Township of Adjala-Tosorontio's current wastewater servicing plan.

The Township of Adjala-Tosorontio currently has one (1) Class 1 wastewater treatment plant within the Township, as discussed herein.

New Horizon Subdivision Sewage Treatment Plant

The New Horizon Subdivision Sewage Treatment Plant is classed as a Type 1 WWTP which exclusively services the New Horizon Subdivision located within the Township of Adjala-Tosorontio. This facility is comprised of two (2) raw sewage pumping stations, a primary settling tank, four (4) stage rotating biological contractor, de-nitrification zone rotating biological contractor, a final settling tank, multi-media filters, final effluent dosing pumping station and a subsurface final effluent disposal system which consists of three (3) tile beds. A 50 kW diesel generator is also located on-site as an auxiliary power supply in the event of power outages. Based on this facility's C of A (#2145-6TEJDM), this facility has a rated capacity of 175 m³/day. As of 2009, the average daily flows (ADF) for this wastewater treatment plant are approximately 74.4 m³/day. This system was designed to service the 100 lot subdivision which equates to approximately 300 people.

The remaining population within the Township of Adjala-Tosorontio is serviced by private or communal wastewater treatment systems. Based on information provided by IMPAC, the total number of private septic systems within this township is approximately 3,367 units.

4.1.7. Additional Water and Wastewater Systems

Non-Municipal Water and Wastewater Systems (Township of Adjala-Tosorontio)

The following properties/communities are using a combination of communal water and/or septic systems to service their current population. These properties/communities are as follows:

1. Based on available information at this time, there is no private communal water and/or wastewater communal systems located within this Township.

External Water and Wastewater Connections

At this time no known external water and/or wastewater servicing connections exist between the Township of Adjala-Tosorontio and other municipalities within Simcoe County.

4.1.8. Extent of Water and Wastewater Infrastructure

The Township of Adjala-Tosorontio has mapping of existing serviced areas but digital mapping of the water and wastewater serviced areas are not available at this time.

4.1.9. Projected Servicing Gap

Based upon information obtained as a part of this study, a servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This information is presented in **Table 4.1.9.1** and includes both an assessment of the County OP and Provincial (Growth Plan) population projections for 2031.

Servicing Gap General Assumptions:

1. Township's wastewater average daily flows (ADF) were obtained through the Township of Adjala-Tosorontio.
2. Township's water maximum daily demands (MDD) were obtained through the Township of Adjala-Tosorontio.
3. 2009 Serviced Population was determined based on 2009 Annual Water Reports obtained through the Township.
4. Additional Population Potential (APP) was based upon the adopted Simcoe County's Official Plan.
5. It was assumed that all APP (2031) population growth within this Municipality would have municipal water and wastewater service.

Based on the information provided, there is currently no negative net water servicing gap for this Township due to the considerably large positive servicing gap presented at the Everett, Lisle, Rosemont, and Weca water supply systems. Based on the approved additional population growth indicated through the Simcoe County's Official Plan, no future negative water servicing gaps are expected to occur for future (2031) populations within this Municipality.

The Township will experience a negative wastewater treatment servicing gap without expanded or new systems to accommodate the proposed municipal growth. Alternatively, individual wastewater treatment systems could be used to service the proposed growth in areas which can support those types of systems.

Finally, it should be noted that the Township of Adjala-Tosorontio is embarking on a new secondary plan for the Everett Settlement Area. The Township anticipates that servicing requirements will change to address the planning process and associated servicing solutions will be developed to accommodate any changes to the servicing requirements.

Table 4.1.9.1: Township of Adjala-Tosorontio Servicing Gap Analysis

TOWNSHIP ADJALA-TOSORONTIO																				
Water Supply Systems																				
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
Everett	3,917	5,403	1,253	1,902	3,500	3,917	6,945	1,088	1,929	5,016	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time
Colgan	157	168	182	213	50	263	392	143	213	179										
Lisle	657	842	119	168	650	1,313	2,626	117	234	2,392										
Loretto Heights	137	139	70	78	50	164	472	49	141	331										
Rosemont	73	154	61	141	-	85	59	68	47	12										
Weca	916	707	290	246	450	916	1,053	227	261	792										
Hockley	90	55	62	42	-	90	99	39	43	56										
Total	5,947	7,468	2,037	2,790	4,600	6,748	11,646	1,731	2,868	8,778										

TOWNSHIP ADJALA-TOSORONTIO																				
Water Supply Systems																				
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
New Horizon	NA	NA	NA	NA	NA	175	709	74	300	409	-	3,115	250	- 2,955	- 729	-	1,915	100	- 1,605	- 396
Total	NA	NA	NA	NA	NA	175	709	74	300	409	-	3,115	250	- 2,955	- 729	-	1,915	100	- 1,605	- 396

GENERAL NOTES:
 Per capita demand and flow rates based upon 2009 data in table
 Serviced Population for 2009 assumed that all new growth within this Township would be fully serviced.
 2009 Rated Capacity data was obtained through the Township of Adjala-Tosorontio's website.
 2009 Equivalent Population was based on 2009 Design per capita flows and demands.

4.2. Town of Bradford West Gwillimbury Servicing Gap Analysis

4.2.1. Town of Bradford West Gwillimbury Supporting Documentation

The following information and data was reviewed specific to Bradford West Gwillimbury and is included within this study. The information obtained for the Town of Bradford West Gwillimbury to-date is listed as follows:

1. Bradford Wastewater Treatment Plant Annual Operating Report: January 1 to December 31, 2009.
2. The Corporation of the Town of Bradford West Gwillimbury Water Treatment System Ontario Regulation 170/03 Section 11- 2009 Annual Report
3. Town of Bradford West Gwillimbury 2009 Annual Summary Compliance Report.
4. Additional information was obtained through the Town of Bradford West Gwillimbury municipal website last updated on July 2010.

4.2.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the Town for 2006 was 25,000. Based on the 12.5% growth between 2001 and 2006, the estimated 2009 population was determined to be approximately 26,871 people (growth of 1,871 people). This was compared with the Town of Bradford West Gwillimbury building permits from the past three years.

Based on Residential building permits obtained through Simcoe County, the total number of Residential units for the Town of Bradford West Gwillimbury from 2006 - 2009 was 1,045 units which equates to 3,340 people (assuming 3.1 people/unit based on 2006 Census data). Though information provided by the Town of Bradford West Gwillimbury's Planning Department, the approximate population growth from 2006-2009 was within the range of 1,900 to 2,000 people. As such, a growth of 1,871 people or a 2009 population of 26,871 people was used for this study.

Current and projected populations based on Simcoe's Official Plan for the Town of Bradford West Gwillimbury are presented in **Table 4.2.2.1**. Projected populations are based on proposed County Official Plan 2031 allocated growth as well as allocated growth for 2031 as identified in the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 document.

Table 4.2.2.1: Simcoe County Official Plan Projected Population Growth Rate - Town of Bradford West Gwillimbury

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
Town of Bradford West Gwillimbury	20,123	22,228	25,000	12.5%	2.5%	26,871	1,871	50,500	25,500	23,629	49,700	24,700	22,829

GENERAL NOTES:

1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.

4.2.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within the Township of Bradford West Gwillimbury. Given its proximity to the Greater Toronto Area, and accessibility to Highway 400, there will be increased pressure for more accelerated growth. The Town of Bradford West Gwillimbury has the physical capability to grow beyond the population and household figures noted herein.

Based on information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected populations for 2031 within this Town ranged from 50,500 people based on the proposed provincial allocation and 49,700 people based on the Simcoe County's Official Plan. From a base population of 25,000 in 2006 the population difference by 2031 ranges from 24,700 to 25,500 based on County and Provincial projections, respectively. This equates to an average annual increase of between 988 to 1,080 people.

Please refer to **Figure No. LU-4** found in **Appendix A-2** for the Town of Bradford West Gwillimbury's current land use designation map.

Town of Bradford West Gwillimbury's Official Plan

In accordance with the Town of Bradford West Gwillimbury's Official Plan and Official Plan Amendments (OPA), the following areas are to be serviced by municipal water and wastewater infrastructure:

1. **Bradford Urban Area:** Based on the Town's Official Plan, the majority of new growth within the Town of Bradford West Gwillimbury will occur within the service limits of the Bradford urban area with a population of approximately 38,800 people by 2026.
2. **Lands on Line 8 west of Sideroad 10 (Interphase Industrial):** Based on the Towns' Official Plan, a designated 36 ha parcel of land on the west side of Sideroad 10 is to be developed into an industrial park which will be fully serviced.
3. **Bond Head Settlement Area:** Based on the Towns' Official Plan, the Bond Head Settlement area is expected a population growth from 500 to 4,400 residents.
4. **Highway 400 Employment Lands Secondary Plan:** Based on the Towns' Official Plan, a new 500 ha industrial area is expected to within the Highway

400/County Road 88 Corridor. It is expected that a total employment population of approximately 15,000 people will be required to be serviced as a result of this development.

Based on information provided by the Town, the projected residential and employment serviced populations are as follows (and are generally consistent with County and Provincial projections for the Town of BWG):

Serviced Areas	2026 Residential Population	2026 Employment Population
Bradford Urban Area	38,800	15,000
Interphase Industrial		
Bond Head Area	4,400	
Highway 400 Employment		15,000
Total	43,200	30,000
Total Servicing Planned	47,400	30,000

NOTE: For the purpose of this study, future population allocation found within Simcoe County’s Official Plan (adopted) will be population projection data used within this Study.

4.2.4. Projected Employment Growth

Through information provided in the *Simcoe County Official Plan*, the projected employment growth for 2031 is approximately 8,200 jobs. The Places to Grow Act estimates somewhat higher growth at 10,000 additional jobs by 2031, based on forecast development at the Highway 400 Employment Lands. This equates to an additional equivalent population of between 4,100 and 5,000 persons, respectively, that will require water and wastewater servicing. Projected employment growth for Town of Bradford West Gwillimbury is presented in **Table 4.2.4.1**.

Employment Service Population Assumptions:

Section 5.5.2.1 within the *Guidelines for the Design of Sanitary Sewage Systems (MOE 2008)* indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the *Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems* notes that the average daily flows generated within an employment environment ranged from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent

employment growth population (positions). Projected employment growth for the Town of Bradford West Gwillimbury is presented in **Table 4.2.4.1**.

Table 4.2.4.1: Simcoe County Official Plan Projected Employment Growth Rate - Town of Bradford West Gwillimbury

Town/Township	EMPLOYMENT GROWTH											
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)		2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031	Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
Town of Bradford West Gwillimbury	8,000	16,200	18,000	102.5%	125.0%		4.1%	5.0%	8,200	10,000	4,100	5,000

GENERAL NOTES:
 1. Based on Employment Growth obtained through Simcoe County's Official Plan and the Greater Golden Horseshoe Growth Plan 2011

4.2.5. Water Supply

Please refer to **Figure No. WAT-4** found in **Appendix A-4** for the Town of Bradford West Gwillimbury current water servicing plan.

As of 2009, the Town of Bradford West Gwillimbury currently utilizes eight (8) groundwater wells with a peak capacity of approximately 14,000m³/day (2009 Annual Water System Compliance Report for the Town of Bradford West Gwillimbury).

The Town of Bradford West Gwillimbury Water Treatment System has seven (7) active groundwater wells which supply this facility:

1. Doane Well
2. Soda Pop Well
3. Church Well 1
4. Bingham Street Well
5. Church Well 2
6. Simcoe Street Well
7. 8th Line Well
8. Simcoe Replacement Well (currently not connected to this system)

These eight (8) facilities have a combined rated capacity of approximately 13,226 m³/day based on information provided through the Town. This water distribution system currently consists of approximately 114 km of watermains with diameters up to 400 mm and three (3) standpipes (water towers) which are located within the Town of Bradford:

Standpipe No. 1 is located off of Essa and Queen Street and has an approximate storage capacity of 7,720 m³. The Roy Storey booster pumping station is also located at Standpipe No. 1 and consists of a re-chlorination system and standby power system.

Standpipe No. 2 is located north of Archer Court and has an approximate storage capacity of 8,460 m³. The Appi Sikkema booster pumping station is also located at Standpipe No. 2 and consists of a re-chlorination system and standby power system.

Standpipe No. 3 (John Fennel Reservoir) is located at 10th Sideroad and 12th Line with an approximate storage capacity of 10,000 m³. The facility also has a booster pumping station which consists of a re-chlorination system and standby power system. This facility has been designed to facilitate future expansion, by adding two (2) 3,000 m³ cells and/or one (1) 5,000 m³ cell.

Through a joint water agreement, the Town of Bradford West Gwillimbury has negotiated for a maximum 13,000 m³/day of water from the Alcona Lakeshore WTP in Innisfil to meet its immediate growth needs. At this time, the maximum capacity of water (13,000 m³/day) is not being utilized by the Town from the Alcona Lakeshore WTP in Innisfil. For this study, it was assumed that the maximum 13,000 m³/day of water will be utilized by the Town to service their growing population.

The total capacity of the water supply system is approximately 26,226 m³/day with a servicing population of approximately 21,718 people. Based on information provided through the Town, the ten (10) year average for the per capita ADF demands was approximately 338 L/capita/day. The per capita maximum daily demand was approximately 1.80 times the average daily demand (based on April 2010 Class EA document). As a result, the per capita MDD was determined to be approximately 0.608 m³/capita/day.

Future Water Servicing

Based on information provided through the Town of Bradford West Gwillimbury and the Water and Wastewater Class Environment Assessment completed by C.C Tatham & Associates Ltd, additional water capacity could potentially be provided to the Town of Bradford through the Phase 3 expansion of the Alcona Lakeshore water treatment plant which will have an overall design capacity of approximately 105,000 m³/day through this proposed expansion. The Town of Innisfil has completed a Class EA for the expansion of the Alcona Water Treatment Plant which will be capable of providing water servicing to both Municipalities to 2031 upon implementation.

In the event that this facility provides additional water to the Town of Bradford West Gwillimbury, some of the existing wells will be decommissioned.

It was assumed that the remaining population within the Town of Bradford West Gwillimbury is serviced by private wells.

4.2.6. Wastewater Treatment

Please refer to **Figure No. SAN-4** found in **Appendix A-5** for the Town of Bradford West Gwillimbury current wastewater servicing plan.

The Town of Bradford West Gwillimbury currently uses a Class 3 wastewater treatment facility located within the Town of Bradford. In 2009, the Town completed its proposed WWTP facility expansion which has a design rate capacity of 19,400 m³/day. This facility is located east on Dissette Street and presently discharges tertiary effluent to the Holland River which drains into Lake Simcoe.

As of January 2010, a C of A No. 6664- 7ZGKXG was issued for this facility which would allow for a peak treatment rate capacity of 17,400 m³/day with a design capacity of 19,400 m³/day. Based on the rate capacity, an additional 24,400 people can be serviced from this facility at the rate of 0.35 m³/c/d. Consequently, in order to reduce the overall phosphorus effluent concentrations to the acceptable targets set out in the Lake Simcoe Protection Plan, the Town will most likely need to upgrade their facility even though it has the hydraulic capacity to accommodate the 2031 projected future growth.

In 2009, this facility treated an average daily flow (ADF) of 7,227 m³/day or 41% of its currently rated capacity. At this time, this facility does currently accept septage generated through the pump out of holding and septic tanks. The average daily concentrations generated through the pump out of such septic and holding tanks is unknown at this time. The Town's current wastewater servicing system consists of a gravity sewer line ranging from 150 mm to 600 mm in diameter, and six (6) pumping stations with corresponding forcemain.

Future Wastewater Servicing

As stated previously within this section of the study, this facility does have the hydraulic capacity to accommodate the 2031 projected population growth within the Town of Bradford West Gwillimbury. As a result of the recently implemented Lake Simcoe Protection Plan, phosphorus concentrations within this facility's effluent are expected to be in exceedance with the targets that are set within this plan. As such, a request for proposal has been issued by the Town of Bradford West Gwillimbury

regarding a Class Environmental Assessment to address the Town's future wastewater servicing requirements.

It was assumed that the remaining population within the Town of Bradford West Gwillimbury is presently being serviced by privately owned septic systems or communal wastewater treatment systems.

4.2.7. Additional Water and Wastewater Systems

The following properties/communities are using a combination of communal water and/or septic systems to service their current population. These properties/communities are as follows:

1. At this time, it is not known if any properties within the Town of Bradford West Gwillimbury are connected to a privately owned communal type water and/or wastewater system.

External Water and Wastewater Connections

Based on information provided through the Town's Public Works Department, no external water and/or wastewater servicing connections from surrounding Towns/Townships exist within the Town of Bradford West Gwillimbury.

4.2.8. Extent of Water and Wastewater Infrastructure

Until additional information from the Town is provided, detailed sanitary sewer and watermain maps for this area could not be provided.

4.2.9. Projected Servicing Gap

Based upon information obtained as part of this study, a servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This information is presented in **Table 4.2.9.1** and includes both an assessment of the County OP and Provincial (Growth Plan) population projections for 2031.

Servicing Gap General Assumptions:

1. Town's historical 2009 per capita maximum daily flows were provided through the Town of Bradford West Gwillimbury.
2. Town's historical 2009 per capita average daily flows were provided through the Town of Bradford West Gwillimbury.
3. 2009 Serviced Population was based on information provided through the Town.

-
4. Additional Population Potential (APP) was based upon the adopted Simcoe County's Official Plan.
 5. It was assumed that future (2031) growth within the Town of Bradford West Gwillimbury would be fully serviced.
 6. It was assumed that the Town would be provided with an additional 5,900 m³/day of water capacity from the Town of Innisfil's Alcona Lakeshore WTP.
 7. An additional service population was added to the future (2031) serviced

Based on the information provided, there will be negative net water and wastewater servicing gap for the 2031 population for this Town due the immense degree of development with this region.

Table 4.2.9.1: Town of Bradford West Gwillimbury Servicing Gap Analysis

Town of Bradford West Gwillimbury																									
Water Supply Systems																									
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps									
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)					
Bradford West Gwillimbury	13,986	19,913	11,749	18,400	1,500	* 20,326	33,430	13,205	21,718	11,712	Data unavailable at this time					Data unavailable at this time									
Total	13,986	19,913	11,749	18,400	1,500	20,326	33,430	13,205	21,718	11,712	9,332	22,829	4,100	-	5,886	-	3,579	**	9,332	23,629	5,000	-	7,586	-	4,612

Town of Bradford West Gwillimbury																								
Wastewater Treatment Systems																								
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps								
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)				
Bradford West Gwillimbury	8,870	25,125	5,584	17,400	7,725	17,400	44,722	7,227	18,575	26,147	Data not available at this time					Data not available at this time								
Total	8,870	25,125	5,584	17,400	7,725	17,400	44,722	7,227	18,575	26,147	-	22,829	4,100	-	783	-	304	-	23,629	5,000	-	2,483	-	966

GENERAL NOTES

Per capita demand and flow rates based upon 2009 data in table
 Serviced Population for 2009 assumed that all new growth within this Town would be fully serviced.
 2009 Rated Capacity data was obtained through the Town of Bradford West Gwillimbury's website.
 * 7,100 m³/day of water provided through the Alcona WTP (Innisfil) through Phase 2 expansion.
 ** 8,900 m³/day of water provided through the Alcona WTP (Innisfil) through Phase 3 expansion. 2031 groundwater rated capacity = 10,000 m³/day.
 2009 Equivalent Population was based on the 2009 per capita maximum daily flows and demands.

4.3. Township of Clearview Servicing Gap Analysis

4.3.1. Township of Clearview Supporting Documentation

The following information and data was reviewed specific to Clearview and was presented within this study. The information obtained for the Township of Clearview to-date is listed as follows:

1. New Lowell Water Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
2. Stayner Water Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
3. Creemore Water Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
4. McKean Water Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
5. Colling-woodlands Water Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
6. Buckingham-Woods Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
7. Additional information within this document was obtained through the Township of Clearview's Municipal website and through project interviews conducted as part of this study in July 2010.

4.3.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the Township for 2006 was 14,600. Based on the 5.8% growth between 2001 and 2006, the estimated 2009 population was determined to be approximately 15,111 people (growth of 511 people). This was compared with the Township of Clearview building permits from the past three (3) years.

Based on Residential building permits obtained through Simcoe County, the total number of Residential units for the Township of Clearview from 2006 - 2009 was 144 units, which equates to 404 people of additional population assuming 2.8 people/unit. The 2.8 people/unit was based upon the 2006 census data regarding housing trends within the Township of Clearview and was confirmed by the Township to be the most appropriate value for this study. For the purpose of this project, the 2009 Census population growth of 511 persons was used. Current and projected populations for the Township of Clearview are presented in **Table 4.3.2.1**.

Table 4.3.2.1: Simcoe County Official Plan Projected Growth Rate - Township of Clearview

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006- 2031	Provincial Populatoin Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006- 2031	Simcoe County Population Difference 2009-2031
Township of Clearview	12,407	13,796	14,600	5.8%	1.2%	15,111	511	19,700	5,100	4,589	26,000	11,400	10,889

GENERAL NOTES:

1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.

Projected populations are based on proposed County Official Plan 2031 allocated growth as well as allocated growth for 2031 as identified in the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 document. Please refer to **Figure No. LU-7** found in **Appendix A-2** for the Township of Clearview current land use designation map

4.3.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within the Township of Clearview. However, applications submitted prior to the release of the Greater Golden Horseshoe Growth Plan are subject to transition regulations which indicate that those applications may be disposed of as if there were no growth plan in effect as long as there is no significant increase in the area of a settlement area. A substantial portion of anticipated growth in Clearview is subject to the transition regulations and is occurring within approved settlement areas on designated lands.

Given the proximity to the City of Barrie and the Town of Collingwood, as well as accessibility to the transportation network within the Township, growth is expected within the Township primarily within the communities of Stayner, Creemore, New Lowell and Nottawa. The Township of Clearview has the physical capability to grow beyond the population and household figures noted below within approved settlement areas, but may be impacted by constraints related to the current capacity of the sewer and water systems. The municipality has completed and has had approved a series of Environmental Assessments to expand water and sewage treatment systems in three (3) of the critical growth communities. Additionally, community approvals are in place for an expansion of the existing sewage treatment system.

Based on information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected populations for 2031 within this Township ranged from 19,700 people based on the proposed provincial allocation and 26,000 people based on the County projections. From a base population of 14,600 in 2006, the population difference by 2031 ranges from 4,589 to 10,899, respectively. This equates to an average annual increase of between 183 to 435 people. Neither of these scenarios incorporates the implications of the transition regulations and the ultimate status of lands which are located within approved settlement area boundaries and which have been designated and zoned for development. These scenarios also do not take into consideration the implications of requirements of providing for intensification in concert with Greenfield development.

For the purpose of this Project, the County of Simcoe additional potential 2031 population was used to assess opportunities and constraints and develop final recommendations for the Study.

Township of Clearview's Growth Plan

Based on information provided through the Township of Clearview, the existing approved Greenfield developments exceed the provincial growth allocations for 2031. Requirements to provide for intensification further increases the discrepancy. Not providing for intensification causes issues and makes achievement of the upper-tier population targets significantly more challenging for the Township. Based on the Township's growth plan the following growth is anticipated from 2009 – 2031:

Stayner:	Greenfield (approved units): 1,640 Greenfield (new units – transition and other): 1,150 Intensification units: 640 – 860
Creemore:	Greenfield (approved units): 498 Intensification units: 160 – 220 New Lowell: Greenfield (transition units): 500 –1200
Nottawa:	Greenfield (transition units): 500 –1200
Total:	Greenfield (approved units): 2,138 Greenfield (new units—transition and other): 2,150— 3,550 Intensification units: 800—1,080

Total residential units: 5,088—6,768

4.3.4. Projected Employment Growth

Through information provided through the *Simcoe County Official Plan*, the projected employment growth for 2031 is approximately 1,400 jobs. This equates to an additional equivalent population of 700 that will require water and wastewater servicing. The Places to Grow Act indicates employment growth of 700, or an equivalent population of 350. For the purpose of this Project, the County of Simcoe additional potential 2031 population was used for opportunity and constraint assessments and development of final Study recommendations.

Employment Service Population Assumptions:

Section 5.5.2.1 within the Guidelines for the Design of Sanitary Sewage Systems (MOE 2008) indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems notes that the average daily flows generated within an employment environment ranges from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent employment growth population (positions). Projected employment growth for Township of Clearview is presented in **Table 4.3.4.1**.

Table 4.3.4.1: Simcoe County Official Plan Projected Employment Growth Rate – Township of Clearview

Town/Township	EMPLOYMENT GROWTH										
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031	Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
Township of Clearview	4,400	5,800	5,100	31.8%	15.9%	1.3%	0.6%	1,400	700	700	350

GENERAL NOTES:
 1. Based on Employment Growth obtained through Simcoe County's Official Plan and the Greater Golden Horseshoe Growth Plan 2011

4.3.5. Water Supply

Please refer to **Figure No. WAT-7** found in **Appendix A-4** for the Township of Clearview current water servicing plan.

As of 2010, the Township uses twenty (20) groundwater wells for its water supply which supplies six (6) individual communities. These water supply systems have a combined maximum rated capacity (permit) of 11,641.80 m³/day.

These well-based systems are currently being utilized close to their full capacity and are not capable of accommodating additional growth without improvements and expansion. However, the municipality has completed and approved EAs to expand

the water servicing capacity in New Lowell and Nottawa. There is also a provision within the approvals of the C-NT Collingwood to Alliston (CA) pipeline to allow for servicing New Lowell, Stayner and Nottawa through this significantly under-utilized infrastructure. In 2009, 250 m³/day additional water was supplied to the Township of Clearview from the expanded Raymond A. Barker Ultra-filtration Plant located within the Town of Collingwood through the CA pipeline in New Lowell. The six (6) Clearview Township Municipal water supply systems are as presented in the following sub-sections.

New Lowell

This is considered to be a large municipal residential type system which utilizes a feed from the CA pipeline of 250 m³/day plus three (3) active groundwater wells for its water supply. A recently approved Class Environmental Assessment (EA) will allow for expansion of this water servicing mechanism to accommodate additional growth.

Total storage capacity in the municipal reservoir (4 cells) is 1,440 m³. Untreated water is treated with sodium hypochlorite prior to being stored. This system currently has 341 servicing connections which equates to approximately 955 people (assuming 2.8 people/unit).

Stayner

This is considered to be a large municipal residential type system which utilizes three (3) active groundwater wells for its water supply. An additional well has been drilled but has not been connected to this system at this time. Total storage capacity in the municipal reservoir is 7,100 m³. Untreated water is treated with sodium hypochlorite and a blend of sodium phosphates for iron sequestering. This system currently has 1,600 servicing connections which equates to approximately 4,480 people (assuming 2.8 people/unit). Based on information provided through the Township of Clearview, Stayner has the capability to be hooked into the CA pipeline to augment water supplies.

Creemore

This is considered to be a large municipal residential type system which utilizes two (2) active groundwater wells for its water supply. Untreated water is treated with sodium hypochlorite prior to being stored. Storage occurs in a single cell reservoir of 1,373 m³. This system currently has 517 servicing connections which equates to approximately 1,448 people (assuming 2.8 people/unit).

McKean

This is considered to be a large municipal residential type system which utilizes three (3) active groundwater wells for its water supply. Untreated water is treated with sodium hypochlorite prior to being stored in a 335 m³ two (2) cell storage reservoir. This system also uses a blend of sodium phosphates for iron sequestering and currently has 124 servicing connections which equates to approximately 348 people (assuming 2.8 people/unit).

The community of Nottawa, in which the McKean system is located, has the capability of being hooked up directly to the Collingwood municipal water system to expand or augment water servicing. The municipality has a completed and approved a Class EA to permit full servicing of the community including growth areas on this basis. A second option was to utilize a hook up to the CA pipeline which incorporated provision for this opportunity.

Colling-Woodlands

This is considered to be a small municipal residential type system which utilizes five (5) active groundwater wells for its water supply. Untreated water is treated with sodium hypochlorite prior to being stored in a two (2) cell, 100 m³ storage reservoir. This system also uses sodium silicate for iron sequestering and currently has 78 servicing connections servicing 70 houses. This equates to approximately 219 people (assuming 2.8 people/unit) being serviced.

There are no current plans to expand this system as no growth is expected to occur on this system.

Buckingham Woods

This is considered to be a small municipal residential type system which utilizes three (3) active groundwater wells for its water supply. Untreated water is treated with sodium hypochlorite and sodium silicate for iron sequestering. This system was originally designed to service 18 houses which equates to a serviced population of approximately 51 people (2.8 people/unit). The system was recently expanded to service an adjacent provincially approved large lot subdivision of 43 lots which equates to an additional 121 people being serviced.

There are no current plans to expand this system as no further growth is expected to occur.

4.3.6. Wastewater Supply

Please refer to **Figure No. SAN-7** found in **Appendix A-5** for the Township of Clearview current wastewater servicing plan.

The Township of Clearview has two (2) Class 2 wastewater treatment plants situated in Creemore and Stayner. Growth Pressures also occur in two (2) currently unserviced areas in New Lowell and Nottawa.

Stayner Wastewater Treatment Plant (WWTP)

Stayner is currently serviced by a Class 2 municipal sewage treatment plant utilizing extended aeration. The rated capacity of the Stayner System is 2,500 m³. There are approximately 1,558 service connections to the Stayner WWTP.

The municipality completed and received MOE approval of a Municipal Class EA which recommended that treatment capacity be expanded through the pumping of effluent through a forcemain system to the Town of Wasaga Beach WWTP. The municipality, with the support of the County, has completed design of the system expansion, budgeted for the first phase of required capital works, and has entered into negotiations with Wasaga Beach for a total treatment capacity of 5,000 m³ which will be implemented in two (2) 2,500 m³/day average daily flow phases.

Creemore Wastewater Treatment Plant (WWTP)

Creemore is currently serviced by a membrane treatment system with an approved capacity of 1,400 m³/day. Only Phase 1 has been constructed at this time and it has a capacity of 860 m³/day which is not currently fully utilized. There are approximately 505 service connections to the Creemore WWTP.

Nottawa Wastewater Servicing

In regards to wastewater servicing, the community of Nottawa currently uses individual septic systems to service the wastewater generated within the Town.

The completed and approved Nottawa Municipal Class EA for sewage servicing recommended that servicing to be achieved through connection to the existing WWTP in Collingwood. Initial negotiations with Collingwood have been undertaken and completed infrastructure improvements in the Collingwood collection system have been designed to accommodate flows from Nottawa.

New Lowell Wastewater Servicing

New Lowell is entirely serviced by existing private systems. The community has an extensive area of designated development land. Any growth is currently required, by policy, to be on full services. A servicing study must be completed prior to additional growth in this community being approved.

4.3.7. Extent of Water and Wastewater Infrastructure

The municipality has provided mapping of existing serviced areas. A digital version of the extent of water and wastewater infrastructure for the Township is not available at this time and is expected to be completed by 2011. As municipal servicing expands, these maps will be required to be updated.

4.3.8. Additional Water and Wastewater Servicing Systems

Remaining Water Servicing Systems

The municipality is also serviced by numerous private individual wells outside of the primary settlement areas. Small communal systems occur throughout the rural area and smaller hamlets. Additionally, larger communal services occur in the ski resort communities at Devil's Glen and Osler.

No significant rural growth is anticipated as a result of the majority of the development activity being directed to the four (4) settlement areas.

Growth is anticipated in the ski resort communities and is expected to occur on either communal or municipal service systems.

Remaining Wastewater Servicing Systems

The municipality is also serviced by numerous private individual systems outside the primary settlement areas. Small communal systems occur in the ski resort communities at Devil's Glen and Osler.

1. No significant rural growth is anticipated as a result of the majority of the development activity being directed to the four settlement areas.

Growth is anticipated in the ski resort communities, and this is expected to occur on either communal or municipal service systems.

4.3.9. Projected Servicing Gap

Based upon information obtained through the Township of Clearview a servicing gap analysis is presented in **Table 4.3.9.1** and includes both an assessment of the County OP and Provincial (Growth Plan) population projections for 2031.

Servicing Gap General Assumptions:

1. The Township's historical average daily flows and maximum daily flows for 2009 were obtained through the Township.
2. 2009 Serviced Population was based in part on the Township of Clearview Annual Operation Reports.
3. 2009 Servicing Population was determined assuming that all approved population growth within this area would be fully serviced (i.e. 2006 Servicing Population + change in population from 2006 – 2009).
4. Additional Population Potential (APP) was based upon the adopted Simcoe County's Official Plan.

Based on projected growth provided through Simcoe County's Official Plan, the 2031 population of Clearview was determined to be approximately 26,000 people. Based on this additional population potential, servicing gaps are expected to occur for future water and wastewater servicing which will need to be addressed.

As presented herein, the Township of Clearview has initiated and completed and/or approved studies or Class EA's to address some of the servicing gaps in **Table 4.3.9.1**.

NOTE: Additional information can be provided if required.

Table 4.3.9.1: Township of Clearview Servicing Gap Analysis

Town Clearview																									
Water Supply Systems																									
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps									
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)					
New Lowell	747	785	581	672	100	1,166	2,017	552	955	1,062	Future population has not been allocated to individual settlement areas at this time. Data unavailable at this time	-	10,889	700	-	5,721	-	5,391	-	4,589	350	-	929	-	876
Stayner	6,541	4,562	5,430	4,166	400	6,541	6,278	4,668	4,480	1,798															
Creemore	2,868	2,158	1,747	1,543	600	2,868	3,641	1,061	1,448	2,193															
McKean	1,055	747	503	392	350	1,054	1,085	338	348	737															
	270	242	190	188	50	361	234	338	219	15															
Collingwoodlands	76	57	59	48	-	252	115	112	51	64															
Total	11,357	8,551	8,510	7,009	1,500	12,042	13,370	7,069	7,501	5,869	-	10,889	700	-	5,721	-	5,391	-	4,589	350	-	929	-	876	

Town Clearview																									
Water Supply Systems																									
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps									
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)					
Stayner	2500	6151	1500	4060	2100	2,500	6,129	1,860	4,560	1,569	Future population has not been allocated to individual settlement areas at this time. Data not available at this time	-	10,889	700	-	8,945	-	3,517	-	4,589	350	-	2,295	-	902
Creemore	1400	4096	435	1400	2700	860	2,487	488	1,411	1,076															
Total	3,900	10,247	1,935	5,460	4,800	3,360	8,616	2,348	5,971	2,645															

GENERAL NOTES

Per capita demand and flow rates based upon 2009 data in table
 Serviced Population for 2009 assumed that all new growth within this Township would be fully serviced.
 2009 Rated Capacity data was obtained through the Township of Clearview's website.
 2009 Equivalent Population was based on 2009 Design per capita flows and demands.

4.4. Town of Collingwood Servicing Gap Analysis

4.4.1. Town of Collingwood Supporting Documentation

The following information and data was reviewed specific to Collingwood and is included within this study. The information obtained for the Town of Collingwood to-date is listed as follows:

1. Class Environmental Assessment Collingwood Wastewater Servicing Needs: Information Package July 2008.
2. Town of Collingwood Official Plan – January 2009.
3. Collingwood Drinking Water System 2009 Annual Summary Compliance Report.
4. Additional information provided through Collingwood Public Utility Services (CPUS) to the County during project interviews conducted in July 2010.
5. Additional information was obtained through the Town of Collingwood's municipal's website last updated in July 2010.

4.4.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the Town for 2006 was 17,503. Based on the 9.1% growth between 2001 and 2006, the estimated 2010 population was determined to be approximately 18,462 people (growth of 959 people). This was compared with the Town of Collingwood building permits from the past three (3) years.

Based on residential building permits obtained through Simcoe County, the total number of residential units for the Town of Collingwood from 2006 - 2009 was 827 units which equates to 2,150 people (assuming 2.6 people/unit) additional population.

Based on information provided by the Town of Collingwood, 2006 – 2009 population growth was estimated in the range of 1,000 people and generally as per the estimated 9.1% growth between 2006-2009. As such, a growth of 959 people or a 2009 population of 18,462 people was used within this study.

Current and projected populations for the Town of Collingwood are presented in **Table 4.4.2.1**. Projected populations are based on proposed County Official Plan 2031 allocated growth as well as allocated growth for 2031 as identified in the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 Document.

Table 4.4.2.1: Simcoe County Official Plan Projected Growth Rate – Town of Collingwood

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
Town of Collingwood	15,596	16,039	17,503	9.1%	1.8%	18,462	959	33,400	15,897	14,938	30,200	12,697	11,738

GENERAL NOTES:

1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.

4.4.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within the Town of Collingwood. The Town of Collingwood has the physical capability to grow beyond the population and household figures noted herein. Additional consideration should be given with regards to projected population for the significant and increasing seasonal or non-permanent resident population that exist within the Town of Collingwood and surrounding area.

Based on information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected populations for 2031 within this Town ranged from 33,400 people based on the proposed provincial allocation and 30,200 people based on the Simcoe County's Official Plan. From a base population of 17,503 in 2006 the population difference by 2031 ranges from 12,697 to 15,897, respectively. This equates to an average annual increase of between 507 to 700 people.

Please refer to **Figure No. LU-8** from **Appendix A-2** for the Town of Collingwood current land use Designation Map.

4.4.4. Projected Employment Growth

Through information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected employment growth for 2031 ranges between approximately 3,600 jobs and 2,700 jobs, respectively. This equates to an additional equivalent population of between 1,800 and 1,350 that will require water and wastewater servicing. The equivalent service population was determined based on the following assumptions and calculations:

Employment Service Population Assumptions:

Section 5.5.2.1 within the Guidelines for the Design of Sanitary Sewage Systems (MOE 2008) indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems notes that the average daily flows generated within an employment environment ranged from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent employment growth population (positions). Projected employment growth for Town of Collingwood is presented in **Table 4.4.4.1**.

Table 4.4.4.1: Simcoe County Official Plan Projected Employment Growth Rate - Town of Collingwood

Town/Township	EMPLOYMENT GROWTH										
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031	Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
Town of Collingwood	10,800	14,400	13,500	33.3%	25.0%	1.3%	1.0%	3,600	2,700	1,800	1,350

GENERAL NOTES:
 1. Based on Employment Growth obtained through Simcoe County's Official Plan and the Greater Golden Horseshoe Growth Plan 2011

4.4.5. Water Supply

Please refer to **Figure No. WAT-8** from **Appendix A-4** for the Town of Collingwood's current water servicing plan.

An expansion of the Collingwood WTP has recently been completed providing a maximum rated capacity of 31,140 m³/d. Surface water from Nottawasaga Bay is the Town of Collingwood's exclusive water supply with a water treatment facility servicing the majority of the Town. The Collingwood Drinking Water System consists of The Raymond A. Barker Ultra-filtration Plant (RAB).

The Collingwood distribution system is comprised of approximately 145.5 km of various diameter watermains, 24.1 km of private water mains, one (1) 2,250 m³ elevated storage tank, one (1) 6,800 m³ in-ground reservoir and booster pumping station, one (1) 2,500 m³ in-ground reservoir and booster station and one (1) in-line booster station located on Osler Bluff Road. This facility currently services water to four (4) other municipalities. These municipalities are as follows:

- 1. Town of Blue Mountains:** Based on information provided by the CPUS, the Town of Blue Mountains currently has a water agreement with the Town of Collingwood to utilize up to 4,000 m³ of water daily.
- 2. Town of New Tecumseth:** Based on information provided by the CPUS, the Town of New Tecumseth currently has a water agreement with the Town of Collingwood to utilize up to 9,500 m³ of water daily through the 58 km Regional Pipeline connecting from the Town of Collingwood to the Town of Alliston.
- 3. Angus Well Supply System (Township of Essa):** The Angus Well Supply

System currently uses water from the Town of Collingwood's RAB treatment facility to supplement additional water demands. Treated water is distributed to Angus through the 58 km Regional Pipeline from the Town of Collingwood to the Town of Alliston.

4. **Baxter Distribution System (Township of Essa):** Approximately 100 m³ of water is supplied to the Baxter System from the RAB treatment facility through the 58 km Regional Pipeline connecting from the Town of Collingwood to the Town of Alliston.
5. **Township of Clearview:** The Stayner Well Supply System currently uses water from the Town of Collingwood's RAB treatment facility to supplement additional water demands. Treated water is distributed to Stayner through the 58 km Regional Pipeline connecting from the Town of Collingwood to the Town of Alliston.

Based on information provided through CPUS, there are approximately 9,605 residential customers (includes commercial condominiums) presently being serviced from this facility. This equates to approximately 24,013 people being serviced by this facility assuming the CPUS average occupancy/residence of 2.5 people per unit. Please note that this population takes the other drinking water systems that receive drinking water from the RAB treatment facility into consideration. The maximum daily demand for this facility for 2007, 2008 and 2009 are 31,132 m³/day, 30,865 m³/day, and 29,990 m³/day respectively.

Through discussions with CPUS, an expansion of this facility to approximately 60,000 m³/day has been proposed by the Town of Collingwood to accommodate future growth within the Town as well as the expansion for water servicing to external towns/townships. With consideration for the intake pipe capacity, this facility could potentially be expanded to have a maximum rated capacity of approximately 90,000 m³/day.

NOTE: As a means to reduce water consumption within the Town, CPUS has launched a water conservation programme which aims to replace conventional 13 L toilets with high efficiency 6L low flush toilets considering that toilet usage accounts for up to 30% of water consumption within a conventional residence.

It was assumed that the remaining population within the Town of Collingwood is serviced by private wells

4.4.6. Wastewater Treatment

Please refer to **Figure No. SAN-8** from **Appendix A-5** for the Town of Collingwood current wastewater servicing plan.

Currently the Town of Collingwood utilizes a Class 3 wastewater treatment facility to service the Town. The overall capacity of Collingwood's WWTP is approximately 24,500 m³/day. Based on information provided by the Town of Collingwood's Public Works Department (CPUS), this facility currently services 18,048 people within the Town. The average daily flows from this facility for 2007 to 2009 are 15,224 m³/day, 21,069 m³/day, and 17,330 m³/day respectively.

As a result of expected growth in the Town, in 2007 the Town of Collingwood retained Conestoga Rovers and Associates (CRA) to develop a Municipal Class Environmental Assessment to determine the wastewater treatment services needed to accommodate the additional potential projected growth in the Town.

The preferred option selected by the Town of Collingwood was to expand the existing facility by an additional 12,000 m³/day which would be implemented in two (2) 6,000 m³/day phases. Currently, the Town of Collingwood has not implemented any plans to expand the existing plant or construct an additional wastewater treatment facility (*Town of Collingwood: Class EA Collingwood Wastewater Servicing Need Information Package, 2008. Conestoga Rover and Associates*).

It was assumed that the remaining population within the Town of Collingwood was serviced by private or communal septic/wastewater treatment systems.

4.4.7. Extent of Water and Wastewater Infrastructure

The Town of Collingwood has provided mapping of existing serviced areas. As municipal servicing expands, these maps will need to be updated. Expansion of systems has various levels of approval through the Town of Collingwood.

4.4.8. Additional Water and Wastewater Systems

Non-Municipal Communal Water and Wastewater Systems (Collingwood)

At this time, no communal type water and wastewater systems exist within the Town of Collingwood.

Please note that additional communal water and/or septic systems may be present within the Town of Collingwood but this information was unavailable at the time that this report was prepared.

External Water and Wastewater Connections

Based on information provided through CPUS, five (5) external water servicing connections from surrounding Towns/Townships are serviced by the Town of Collingwood Water Treatment Plan (See Section 3.4). Based on information by the Township of Clearview, a potential wastewater connection from Nottawa to Collingwood is currently being considered to service Nottawa future population growth.

4.4.9. Projected Servicing Gap

A servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This information is presented in **Table 4.4.9.1** and includes both an assessment of the County OP and Provincial (Growth Plan) population projections for 2031.

Servicing Gap General Assumptions:

1. Town's wastewater average daily flows (ADF) were obtained through the Town of Collingwood.
2. Town's water maximum daily demands (MDD) were obtained through the Town of Collingwood.
3. 2009 water and wastewater serviced population were obtained from the Town of Collingwood.
4. Additional Population Potential (APP) was based upon the adopted Simcoe County's Official Plan.
5. It was assumed that all approved future (2031) population growth within this Municipality would have municipal water and wastewater service.

In addition, based on projected growth provided through Simcoe County's Official Plan, the 2031 population of Collingwood was determined to be approximately 30,200 people. Based on this additional population potential a servicing gap was determined for the water servicing system within the Town of Collingwood for 2031. This information is also presented in **Table 4.4.9.1**. However, as presented herein, there is a provision in the Certificate of Approval (C of A) for the WTP for the Town to expand the plant to a 60,000m³/day facility under its current C of A.

Based on the additional population potential, a wastewater servicing gap is expected to occur within the Town of Collingwood at the current wastewater treatment plant capacity. However, as detailed herein a Class EA has been undertaken for the plan and two (2) proposed 6,000 m³/d expansions are proposed which will address the future wastewater treatment servicing gap. Implementation plans for the expansions need to be confirmed with the Town.

Table 4.4.9.1: Town of Collingwood Servicing Gap Analysis

Town Collingwood																								
Water Supply Systems																								
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps								
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)				
Collingwood (RAB)	19,140	18,765	17,877	17,551	1,214	31,140	26,512	28,205	24,013	2,499	Data unavailable at this time					Data unavailable at this time								
Total	19,140	18,765	17,877	17,551	1,214	31,140	26,512	28,205	24,013	2,499	-	11,738	1,800	-	11,040	-	12,967	-	14,938	1,350	-	13,790	-	16,197

Town Collingwood																								
Wastewater Treatment Systems																								
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps								
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)				
Collingwood	24545	20694	16151	14979	5700	24,545	25,562	17,330	18,048	7,514	Data not available at this time					Data not available at this time								
Total	24,545	20,694	16,151	14,979	5,700	24,545	25,562	17,330	18,048	7,514	-	11,738	1,800	-	6,024	-	5,785	-	14,938	1,350	-	8,774	-	8,425

GENERAL NOTES

Per capita demand and flow rates based upon 2009 data in table
 Serviced Population for 2009 assumed that all new growth within this Township would be fully serviced.
 2009 Rated Capacity data was obtained through the Township of Clearview's website.
 2009 Equivalent Population was based on 2009 Design per capita flows and demands.

4.5. Township of Essa Servicing Gap Analysis

4.5.1. Township of Essa Supporting Documentation

The following information and data was reviewed specific to Essa and was presented within this study. The information obtained for the Township of Essa to-date is listed as follows:

1. Angus Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
2. Thornton-Glen Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
3. Baxter Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
4. 2009 Water Consumption Report created by the Township of Essa.
5. Additional information provided to the County during project interviews conducted in July 2010.

4.5.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the Township for 2006 was 17,600. From the 4.7% growth between 2001 and 2006, the estimated 2009 population was determined to be approximately 18,098 people (growth of 498 people). This was compared with the Township of Essa building permits from the past three (3) years.

A record of residential building permits was obtained through Simcoe County, the total number of Residential units for the Township of Essa from 2006 - 2009 was 476 units which equates to 1,286 people (assuming 2.7 people/unit) additional population.

Through information provided by the Township of Essa's Planning Department, the approximate population growth from 2006-2009 was within the range of 1,250 to 1,500 people. As such, a growth of 1,286 people or a 2009 population of 18,886 people was used for this study.

Current and projected populations for the Township of Essa are presented in **Table 4.5.2.1**. Projected populations are based on proposed County Official Plan 2031 allocated growth as well as allocated growth for 2031 as identified in the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 document. Please refer to **Figure No. LU-9** from **Appendix A-2** for the Township of Essa's current land use designation map.

Table 4.5.2.1: Simcoe County Official Plan Projected Growth Rate - Township of Essa

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
Town of Essa	16,363	16,808	17,600	4.7%	0.9%	18,886	1,286	21,500	3,900	2,614	22,900	5,300	4,014

GENERAL NOTES:

1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.

4.5.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within the Township of Essa. Given its proximity to the City of Barrie, the Greater Toronto Area (GTA), and accessibility to Highway 400, there is expected to be an increased growth within this Township. The majority of this growth will be directed to the following settlement areas:

1. The community of Angus.
2. The community of Thornton.
3. The community of Baxter.

The Township of Essa has the physical capability to grow beyond the population and household figures noted herein.

Based on information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected populations for 2031 within this Township ranged from 21,500 people based on the proposed provincial allocation and 22,900 people based on the Simcoe County's Official Plan. From a base population of 17,600 in 2006 the population difference by 2031 ranges from 3,900 to 4,014, respectively. This equates to an average annual increase of between 156 to 160 people.

Township of Essa Official Plan

Based on information provided through the Township and their Official Plan, the majority of growth will occur within the community of Angus where there is approximately 1,576 approved and draft approved residential units pending. The community of Thornton has 17 registered and draft approved residential units that were permitted in 2006. The community of Baxter has a 250 unit subdivision that was draft approved as of 20 January, 2010. In addition, 75 existing houses using private wells will be connected to the Baxter WTP.

As stated by the Township of Essa, in order to accommodate this additional growth, the Baxter Treatment system will need to be expanded and an additional in-ground storage reservoir constructed.

4.5.4. Projected Employment Growth

Through information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected employment growth for 2031 is approximately 2,600 jobs based on Simcoe County's Official Plan and 1,300 based on the Province's projections. This equates to an additional equivalent population of

between 1,300 and 650, respectively, that will require water and wastewater servicing.

Employment Service Population Assumptions:

Section 5.5.2.1 within the *Guidelines for the Design of Sanitary Sewage Systems (MOE 2008)* indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the *Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems* notes that the average daily flows generated within an employment environment ranged from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent employment growth population. Projected employment growth for Township of Essa is presented in **Table 4.5.4.1**.

Table 4.5.4.1: Simcoe County Official Plan Projected Employment Growth Rate - Township of Essa

Town/Township	EMPLOYMENT GROWTH										
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031	Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
Town of Essa	7,700	10,300	9,000	33.8%	16.9%	1.4%	0.7%	2,600	1,300	1,300	650

GENERAL NOTES:
 1. Based on Employment Growth obtained through Simcoe County's Official Plan and the Greater Golden Horseshoe Growth Plan 2011

4.5.5. Water Supply

Please refer to **Figure No. WAT-9** from **Appendix A-4** for the Township of Essa's current water servicing plan.

The Township of Essa presently uses three (3) municipal water systems for its water supply which are fully metered. These three systems are as follows:

Angus Well Supply System

The Angus well supply system, treatment and storage works, service the community of Angus and includes the Mill Street Water Treatment Plant, McGeorge Water

Treatment Plant and the Brownley Water Treatment Plant. These facilities supply the treated water through a common distribution system. Based information provided in the 2009 Water Consumption report, 2,684 water connections exist within the community of Angus as of 2009. This equates to approximately 7,247 people (assuming 2.7 people/unit) being serviced.

The maximum rated capacities for each of these facilities are as follows:

Mill Street Water Treatment Plant = 3,927 m³/day
McGeorge Water Treatment Plant = 2,627 m³/day
Brownley Water Treatment Plant = 4,251 m³/day

A Class Environmental Assessment for a new in-ground Reservoir has been completed. Please note that the Mill Street Water Treatment Plant received the daily difference (100 m³ minus Baxter Water System daily water taking) from the Collingwood to Alliston treated water transmission main (pipeline) in 2009. Please note that the transmission main water is available from this pipeline to Angus, but a capital cost would be applied to the Township if utilized.

Based upon the Township's population, the Township has no current major water supply capacity issues but there may be some potential future water servicing issues within the community of Angus and would be dependent upon the water supply from Collingwood's Raymond A. Barker Ultra-filtration Plant or by advancing more wells in the Angus area.

Thornton Well Supply System

The Thornton (Glen Avenue) well supply system, treatment and storage works servicing the community of Thornton includes the Glen Avenue Pump house, where raw water is pumped and disinfected with NSF certified 12% Sodium Hypochlorite and two (2) above ground storage tanks, each with a capacity of 556 m³. This facility has a maximum rated capacity of 1,540 m³/day. Based information provided in the 2009 Water Consumption report, 480 water connections exist within Thornton as of 2009. This equates to approximately 1,296 people (assuming 2.7 people/unit) being serviced.

Baxter Well Supply System

As of November 2007 this water system was switched over to the Collingwood to Alliston treated water transmission main (pipeline). The Raymond A. Barker Ultra-filtration Plant (RAB) in Collingwood supplies safe drinking water through the pipeline to the Baxter Facility. Modifications to the chlorination system enable re-chlorination of the treated water in the pipeline prior to distribution. Treated water

from Collingwood is monitored by an on-line free chlorine analyzer in the pump house. Based information provided in the 2009 Water Consumption report, 55 water connections exist within Baxter as of 2009. This equates to approximately 149 people (assuming 2.7 people/unit) being serviced.

It was assumed that the remaining population within the Township of Essa is serviced by private wells.

4.5.6. Wastewater Treatment

Please refer to **Figure No. SAN-9** from **Appendix A-5** for the Township of Essa current wastewater servicing plan.

The Township of Essa currently has only one (1) Class 2 wastewater treatment plant which predominately services the community of Angus. As of 2009, the facility's rated design capacity was determined to be approximately 5,511 m³/day which would be more than capable of servicing the Town of Angus's current and future needs. Based on information provided in the 2009 Water Consumption report, approximately 2,684 wastewater servicing connections exist within the Town of Angus as of 2009. This equates to approximately 7,247 people (assuming 2.7 people/unit) being serviced. Please note that this facility currently accepts septage from within the Township and from neighbouring Towns/Townships. Based on the facility's C of A (No. 4500 62PGYJ), this facility can accept a maximum septage volume of 11 m³/day.

It was assumed that the remaining population within the Township of Essa was serviced by private or communal septic/wastewater treatment systems.

4.5.7. Extent of Water and Wastewater Infrastructure

The Township of Essa has mapping of existing serviced areas but is not available at this time. Through discussion with the Township, digital mapping of the water and wastewater serviced areas is not available at this time.

4.5.8. Additional Water and Wastewater Systems

Non-Municipal Communal Water and Wastewater Systems (Township of Essa)

The following properties/communities are using a combination of communal water and/or communal wastewater treatment systems to service their current population. These properties/communities are as follows:

1. **Rainbow Campground:** This campground is located off of Brentwood Road

-
- within the Township of Essa. This campground has 17 residences that are connected to a municipal water connection and has a communal type septic system. This campground has seventeen (17) permanent units with an additional forty (40) units available for development. This site is intended for seasonal usage.
2. **Thornton Plaza:** This property is located on 4171 Innisfil Beach Road. This facility has a privately owned communal septic system and is connected to the municipal watermain.
 3. **Shamrock Campground:** This property is located on 25 Side Road/County Road 10. This property uses individual septic and well supplies to service the residents.
 4. **Hoe Doe Campground:** This property has individual septic systems to service its residents. This property uses private wells for water servicing.

Please note that additional communal water and/or septic systems may be present within the Township of Essa. Additional information from the Township is required.

External Water and Wastewater Connections

Based on information provided through the Township Public Works department, no external water and/or wastewater servicing connections from surrounding Towns/Townships exist for the Township of Essa municipal systems.

4.5.9. Projected Servicing Gap

Based upon information obtained as part of this, a servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This information is presented in **Table 4.5.9.1** and includes both an assessment of the County OP and Provincial (Growth Plan) population projections for 2031.

Servicing Gap General Assumptions:

1. The Township's 2009 wastewater average daily flows were obtained from the Township.
2. The Township's 2009 water maximum daily flows were obtained from the Township.
3. 2009 Serviced Population was based on the 2009 Water Consumption Report provided by the Township.
4. Additional Population Potential (APP) was based upon the Simcoe County's

Official Plan.

Based on the information provided, there is currently no negative net water servicing gap for this Township due to the significantly large positive servicing gap presented at the Angus and Thornton Glen water supply systems. Based on the approved population growth indicated through the Simcoe County's Official Plan, no future negative water servicing gaps are expected to occur as a result of the proposed development within this Municipality.

There is also no net servicing gap for future wastewater flows projected at the Angus Wastewater Treatment Plant, even if all the proposed Township 2031 growth was proposed to occur in Angus.

Table 4.5.9.1: Township of Essa Servicing Gap Analysis

Town of Essa																				
Water Supply Systems																				
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
Angus	6,554	11,958	3,094	6,210	5,450	10,805	22,882	3,422	7,247	15,635	Data unavailable at this time					Data unavailable at this time				
Thorton-Glen	1,540	1,596	658	750	850	1,540	1,531	1,304	1,296	235	Data unavailable at this time					Data unavailable at this time				
Baxter	225	242	132	156	100	100	177	84	149	28	Data unavailable at this time					Data unavailable at this time				
Total	8,319	13,796	3,884	7,116	6,400	12,445	24,590	4,810	8,692	15,898	-	4,014	1,300	10,584	5,857	-	2,614	650	12,634	6,992

Town of Essa																				
Wastewater Treatment Systems																				
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
Angus	5511	13911	2233	6200	7700	5,511	15,450	2,585	7,247	8,203	Data not available at this time					Data not available at this time				
Total	5,511	13,911	2,233	6,200	7,700	5,511	15,450	2,585	7,247	8,203	-	4,014	1,300	2,889	1,030	-	2,614	650	4,939	1,762

GENERAL NOTES

Per capita demand and flow rates based upon 2009 data in table
 Serviced Population for 2009 was based on 2009 Water Consumption Report
 2009 Rated Capacity data was obtained through the Township of Essa.
 100 m³/day Water Supply for Baxter Water Supply System is supplied by the Town of Collingwood's RAB Water Treatment Facility
 2009 Equivalent Population was based on 2009 Design per capita flows and demands.

4.6. Town of Innisfil Servicing Gap Analysis

4.6.1. Town of Innisfil Supporting Documentation

The following information and data was reviewed specific to Innisfil and is included within this study. The information obtained for the Town of Innisfil to-date is listed as follows:

1. Churchill Well Supply System Infrastructure and Engineering Water Works 2009 Annual Report.
2. Innisfil Heights Well Supply System Infrastructure and Engineering Water Works 2009 Annual Report.
3. Cookstown Well Supply System Infrastructure and Engineering Water Works 2009 Annual Report.
4. Alcona Water Treatment Plant System Infrastructure and Engineering Water Works 2009 Annual Report.
5. Goldcrest Well Supply System Infrastructure and Engineering Water Works 2009 Annual Report.
6. Stroud Well Supply System Infrastructure and Engineering Water Works 2009 Annual Report.
7. Golf Haven Well Supply System Infrastructure and Engineering Water Works 2009 Annual Report.
8. Crossroads Well Supply System Infrastructure and Engineering Water Works 2009 Annual Report.
9. Town of Innisfil Lakeshore Water Treatment Expansion: Municipal Class Environmental Assessment, November 2008.
10. Town of Innisfil: Lakeshore Water Pollution Control Plant Class Environmental Assessment Public Information Centre, April 2009.
11. Innisfil Lakeshore WPCP Expansion Environmental Study Report, September 2010.
12. Town of Innisfil: Cookstown Water Pollution Control Plant Class Environmental Assessment Public Information Centre, June 2010
13. Additional information provided by the Town of Innisfil

4.6.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the Town for 2006 was 32,400. Based on the 13.0% growth between 2001 and 2006, the estimated 2010 population was determined to be approximately 34,932 people (growth of 2,532 people). This was compared with the Town of Innisfil permits from the past three (3) years. Based on residential building permits obtained through Simcoe County, the total number of residential units for the Town of Innisfil from 2006 - 2009 was 809 units which equates to 2,427 people (assuming 3.0 people/unit based on 2006 Census Data) additional population. For the purpose of this study, a 2009 population of 34,932 was used. Current and projected populations for the Town of Innisfil are presented in **Table 4.6.2.1**. Projected populations are based on proposed County Official Plan 2031 allocated growth as well as allocated growth for 2031 as identified in the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 document.

Please refer to **Figure No. LU-10** from **Appendix A-2** for the Town of Innisfil current Land use designation map.

4.6.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within the Town of Innisfil. Given its proximity to the City of Barrie, Highway 400 and to the Greater Toronto Area, there is expected to be intensified growth within the Town of Innisfil. The Town of Innisfil has the physical capability to grow beyond the population and household figures herein. Due to its proximity to Lake Simcoe, consideration should be given with regards to projected population for the significant and increasing seasonal or non-permanent resident population that exist within the Town of Innisfil and surrounding area.

Based on information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected populations for 2031 within this Township ranged from 56,000 people based on the proposed provincial allocation and 65,000 people based on the Simcoe County's Official Plan. From a base population of 32,400 in 2006 the population difference by 2031 ranges from 23,600 to 32,600, respectively. This equates to an average annual increase of between 944 to 1,304 people.

Table 4.6.2.1: Simcoe County Official Plan Projected Growth Rate – Town of Innisfil

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
Town of Innisfil	24,711	28,666	32,400	13.0%	2.6%	34,932	2,532	56,000	23,600	21,068	65,000	32,600	30,068

GENERAL NOTES:

1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.

Town of Innisfil's Official Plan

Based on the Town of Innisfil's Official Plan, the future objective for the Town is to "permit growth to occur in a controlled, orderly fashion on full municipal services". This includes the growth in housing, commercial, institutional and employment areas. In order to achieve the employment objective of one job for every two residents, an employment target of 27,750 will need to be achieved by 2026. It is anticipated that approximately 60 percent of jobs will occur on traditional employment lands and remainder must be designated to new lands to achieve that target.

As stated within Section 2.5 of the Town's Official Plan, the following population and employment allocation has been proposed for 2026:

Urban Settlement Area	Planned Population (2026)
Alcona	22,000
Cookstown	2,100
Lefroy – Belle Ewart	8,350
Sandy Cove	8,500
Innisfil Heights	120
Total Population	41,070

*Please Note that additional employment is expected to occur within the Town of Innisfil as stated through their Official Plan.

Based on the information provided through the Town's Official Plan, the Town of Innisfil is projecting a higher than estimated population growth as proposed by Simcoe County's Official Plan. However, recent Amendment No.1 for the Town of Innisfil's projected growth is compliant with Simcoe County's Official Plan growth projections. As such, projected population and employment data from Simcoe County's Official Plan will be used for the purpose of this Study.

4.6.4. Projected Employment Growth

With information provided through the *Simcoe County Official Plan* and the Places to Grow Act, the projected employment growth for 2031 is approximately 7,400 jobs. This equates to an additional equivalent population of 3,700 that will require water and wastewater servicing. The equivalent service population was determined based on the following assumptions and calculations:

Employment Service Population Assumptions:

Section 5.5.2.1 within the Guidelines for the Design of Sanitary Sewage Systems (MOE 2008) indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems notes that the average daily flows generated within an employment environment ranged from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent employment growth population (positions). Projected employment growth for Town of Innisfil is presented in **Table 4.6.4.1**.

Table 4.6.4.1: Simcoe County Official Plan Projected Employment Growth Rate - Town of Innisfil

Town/Township	EMPLOYMENT GROWTH										
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031	Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
Town of Innisfil	5,700	13,100	13,100	129.8%	129.8%	5.2%	5.2%	7,400	7,400	3,700	3,700

GENERAL NOTES:

1. Based on Employment Growth obtained through Simcoe County's Official Plan and the Greater Golden Horseshoe Growth Plan 2011
2. 2031 Provincial Proposed Population Allocation is from the, Simcoe Area: *A Strategic Vision for Growth - Ontario Ministry of Energy and Infrastructure - (June 2009)*
3. 2031 Provincial Proposed Population Allocation may change, subject to the finalization of the October 2010 revised *Strategic Vision for Growth* document by the Province of Ontario.

4.6.5. Water Supply

Please refer to **Figure No. WAT-10** from **Appendix A-4** for the Town of Innisfil current water servicing plan.

The Town of Innisfil currently uses seven (7) municipal groundwater wells, six (6) of which are currently in operation and one (1) surface water intake as its primary water supply source. All of these systems are fully metered and has a service population of approximately 24,000 people. These supply systems are as follows:

Alcona Lakeshore

Through the Phase 2 expansion of the Alcona Lakeshore WTP, this facility has a rated capacity of 26,000 m³/day. Through a joint municipal water agreement, the two municipalities are sharing the cost of the Phase 2 expansion of the lake-based water treatment plant which has recently been completed. Through Phase 2, the Town of Bradford West Gwillimbury has negotiated for a maximum 7,100 m³/day of water to meet its immediate growth needs. Based on information provided through the Town of Bradford West Gwillimbury, it has been proposed that an additional 5,900 m³/day of water capacity will be conveyed to the Town of Bradford West Gwillimbury once Phase 3 of the facility is completed.

To accommodate the servicing of the Town's Official Plan Amendment No. 1 (OPA 1), the Town of Innisfil has undertaken a Municipal Class Environmental Assessment (EA) for a possible Phase 3 expansion at the Lakeshore plant and will be completed for the fall of 2010. The expansion would increase overall capacity to approximately 105,000 m³/day. Based on this Class EA, two (2) 32 ML/day phases have been proposed for the expansion.

Innisfil Heights

As stated by the Town, in the event of the Phase 3 expansion of the Alcona Lakeshore Treatment Plant, the well at this facility will most likely become decommissioned. Based on information provided through the Town of Innisfil Infrastructure and Engineering Annual Water Reports, this facility is classed as a Large Municipal Residential drinking water supply system with a rated capacity of 3,110.4 m³/day. As of 2009, this facility was operating at approximately 37.1% of the system's rated capacity. This equates to maximum daily demand (MDD) of 1,155 m³/day.

Crossroads

As stated by the Town, the Crossroads well supply system has recently been decommissioned and connected to the Alcona Lakeshore Treatment Plant.

Stroud

As stated by the Town, in the event of the Phase 3 expansion of the Alcona Lakeshore Treatment Plant, it has been proposed that the Stroud water supply system will remain in operation. Based on information provided through the Town of Innisfil Infrastructure and Engineering Annual Water Reports, this facility is classed as a Large Municipal Residential drinking water supply system with a rated capacity of 2,711.9 m³/day. As of 2009, this facility was operating at approximately 37.8% of

the system's rated capacity. This equates to maximum daily demand (MDD) of 1,027 m³/day.

Churchill

As stated by the Town, in the event of the Phase 3 expansion of the Alcona Lakeshore Treatment Plant, it has been proposed that Churchill water supply system remain in operation. Based on information provided through the Town of Innisfil Infrastructure and Engineering Annual Water Reports, this facility is classed as a Large Municipal Residential drinking water supply system with a rated capacity of 743 m³/day. As of 2009, this facility was operating at approximately 43.6% of the system's rated capacity. This equates to maximum daily demand (MDD) of 324 m³/day.

Goldcrest and Golf Haven

These two (2) water supply systems are to be connected to Alcona Lakeshore Treatment Plant when the Phase 3 expansion of Alcona Lakeshore is completed. Based on information provided through the Town of Innisfil Infrastructure and Engineering Annual Water Reports, both of these facilities are classed as a Small Municipal Residential drinking water supply systems.

The Goldcrest facility consists of two (2) groundwater wells and a chlorination system with a rated capacity of 324 m³/day. As of 2009, this facility was operating at approximately 40.1% of the system's rated capacity. This equates to maximum daily demand (MDD) of 130 m³/day.

The Golf Haven facility consists of two (2) groundwater wells and a chlorination system with a rated capacity of 459 m³/day. As of 2009, this facility was operating at approximately 48.0% of the system's rated capacity. This equates to maximum daily demand (MDD) of 220 m³/day.

Cookstown

The Cookstown water supply system is proposed to be connected to the Alcona Lakeshore Treatment Plant in the near future. Based on information provided through the Town of Innisfil Infrastructure and Engineering Annual Water Reports, the existing Cookstown water supply system is classed as a Large Municipal Residential drinking water supply system. This facility consists of four (4) groundwater wells with a rated capacity of 1,570.77 m³/day. Due to the poor aesthetic quality of the raw water from Well #2, this well is only used during peak water supply periods.

As of 2009, this facility was operating at approximately 55.1% of the system's rated capacity. This equates to maximum daily demand (MDD) of 866 m³/day. Without taking Well #2 into consideration, this facility would be operating at 101.8% of the facility's current rated capacity.

It was assumed that the remaining population within the Town of Innisfil is serviced by private wells.

4.6.6. Wastewater Treatment

Please refer to **Figure No. SAN-10** from **Appendix A-5** for the Town of Innisfil current wastewater servicing plan.

The Town of Innisfil has two (2) wastewater treatment facilities, the first a Class 1 WWTP located in the municipality of Cookstown, the second a Class 2 WWTP situated in the Alcona Lakeshore area. Please note that both of these facilities currently accept septage from all surrounding municipalities.

Cookstown Wastewater Treatment Plant

Originally constructed in 1984, this Class 1 type WWTP has a rated capacity of 825 m³/day which is used to service the Cookstown area. This facility currently services approximately 1,500 people within the Town of Innisfil. The collection system consists of 11.43 km of gravitational sanitary mains which connect into the treatment plant located at 1315 Victoria Street West. This facility currently services approximately 460 residential servicing connections which equated to approximately 1,380 people (assuming 3.0 people/unit) within the Town of Cookstown.

Lakeshore Wastewater Treatment Plant

Expanded in 1996, this Class 2 WWTP has a rated capacity of 14,370 m³/day which is used to service the Innisfil area. This treatment facility is an extended aeration type plant with the effluent being filtered and disinfected with a Ultra-Violet type disinfection system. This facility currently services approximately 23,000 people within the Town of Innisfil and includes the following serviced areas:

1. **Sandy Cove: Existing Residential and Retirement Units:** Approximately 243 residential units and 1,196 connections for retirement units.
2. **Leonard's Beach Shoreline:** Approximately 190 connections.
3. **Alcona:** Approximately 5,034 connections.
4. **Big Cedar Shoreline:** Approximately 112 connections.
5. **Bell Ewart:** Approximately 770 connections.
6. **Lefroy:** Approximately 363 connections.

Please note that this information was obtained through the Innisfil Lakeshore WPCP Expansion Environmental Study Report, September 2010 report.

The collection system consists of 74.25 km of gravitational sanitary mains, discharging to five (5) sewage pumping stations within the Town. One Pumping Station is located at 1208 Killarney Beach Road and lifts the sewage collected from the Stoney Point area to the gravity sewer located on Ewart Street. It then flows by gravity to another Pump Station located at 1236 Maple Road where it is then lifted to the Treatment Plant. The Pump Station located at 690 6th Line lifts the sewage collected from the Tent City area directly to the Treatment Plant. The Pump Station located at 2298 Crystal Beach Road collects the sewage from all the areas north of Innisfil Beach Road. It is then lifted from this Pump Station to a manhole on Lakelands Avenue where it then flows by gravity to the Pump Station located at 1692 Cedar Grove Avenue. The sewage from the Pump Station along with the sewage collected from the area south of the Innisfil Beach Road is then lifted to the Treatment Plant. As of 2008, this facility had an average daily flow of approximately 7,908 with a 2008 service population of 22,528. This information was obtained through the Innisfil Lakeshore WPCP Expansion Environmental Study Report, September 2010 report.

Lakeshore Wastewater Treatment Plant Class Environmental Assessment

The Town of Innisfil is continuing to investigate options to obtain additional wastewater treatment capacity to accommodate the development of the Town as a as identified in OPA No. 1. Through a Class Environmental Assessment, it is proposed to expand/upgrade the Lakeshore Wastewater Treatment plant such that a total capacity of 40,000 m³/day would be available to service the future wastewater demands of the Town. This expansion has two proposed phases. Phase 1 will expand the plant to a rated capacity of 25,000 m³/day. Phase 2 would provide the remaining 15,000 m³/day. At this time, no expansion has been made to this facility. Based on information provided through the Town of Innisfil, the expansion of this facility will most likely occur to accommodate additional population growth. As such, for the purpose of this study it was assumed that this facility was expanded to its potential 40,000 m³/day rated capacity.

It was assumed that the remaining population within the Town of Innisfil was serviced by private or communal wastewater treatment systems.

4.6.7. Extent of Water and Wastewater Infrastructure

The Town of Innisfil has provided mapping of existing serviced areas. As municipal servicing expands, these maps will be required to be updated. Expansion of systems has various levels of approval through the Town of Innisfil.

4.6.8. Communal Water and Wastewater Systems

Non-Municipal Communal Water and Wastewater Systems (Town of Innisfil)

The following properties/communities are using a combination of communal water and/or septic systems to service their current population. These properties/communities are as follows:

1. **Sandy Cove Area:** As stated by the Town of Innisfil, all of Sandy Cove uses the municipal wastewater collection system for its wastewater servicing but use private wells for their water supply.

Please note that additional communal water and/or septic systems may be present within the Town of Innisfil. Additional information from the Town is required.

External Water and Wastewater Connections

Based on information provided through the Town of Innisfil, one (1) external water servicing connection exists from the Town of Innisfil to the Town of Bradford West Gwillimbury as discussed previously in this study. No other external servicing connections exist within this municipality.

4.6.9. Projected Servicing Gap

Based upon information obtained from the Town of Innisfil, a servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This is presented in **Table 4.6.9.1** and includes both an assessment of the County OP and Provincial (Growth Plan) population projections for 2031.

Servicing Gap General Assumptions:

1. Town's historical per capita average daily flows and per capita maximum daily flows were obtained by the Town of Innisfil annual servicing reports.
2. 2009 water and wastewater serviced populations were based on information

-
- provided by the Town.
3. Additional Population Potential (APP) was based upon the adopted Simcoe County's Official Plan.
 4. Committed Capacity increase for wastewater servicing assumed that Phases 1 and 2 for the Town's WWTP are completed.
 5. It was assumed that 7,100 m³/day of water produced from the Lakeshore Alcona WTP is being allocated to the Town of Bradford West Gwillimbury.

Based on projected growth provided through Simcoe County's Official Plan, the 2031 population of Innisfil was determined to be approximately 65,000 people. Based on this additional population potential, negative servicing gaps were determined for both the water and wastewater serving within the Town of Innisfil at current water and wastewater system design capacities. However based on information from the Town, and supporting completed Class EA, the Phase 3 expansion of the Alcona WTP will occur in the near future. This upgrade would be able to accommodate for all future (2031) growth with respect to water servicing within the Town's municipal boundaries. Additionally, the Class Environmental Assessment to expand/upgrade the Lakeshore Wastewater Treatment plant such that a total capacity of 40,000 m³/day has been completed. On implementation, the expansion would be more than capable of servicing the Town's future servicing demands.

Table 4.6.9.1: Town of Innisfil Servicing Gap Analysis

Town of Innisfil																						
Water Supply Systems																						
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps						
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)		
Innisfil Heights	2,799	3,116	882	1,080	2,050	3,110		1,008														
Crossroads	2,030	3,517	900	1,715	1,800	-																
Stroud	2,098	2,100	1,700	1,872	250	2,712		960														
Churchill	743	572	614	520	50	743		326														
Gilford (Golf Haven & Gold Crest)	702	748	623	730	-	783	49,200	357	21,418	25,052												
Cookstown	851	1,168	921	1,390	200	851		637														
Alcona Lakeshore	12,700	21,235	6,829	12,560	8,650	18,900		10,013														
Total	21,923	32,456	12,469	19,867	12,600	27,099	49,200	13,301	21,418	25,052	-	30,068	3,700	-	8,716	-	5,413	-	21,068	3,700	284	177

Town of Innisfil																						
Wastewater Treatment Systems																						
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps						
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)		
Cookstown	825	2143	533	1524	600	825	2,461	543	1,620	841												
Alcona Lakeshore	14370	34996	7162	19170	15800	14,370	34,660	9,340	22,528	12,132												
Total	15,195	37,139	7,695	20,694	16,400	15,195	37,122	9,883	24,148	12,974	-	30,068	3,700	-	20,794	-	8,510	-	21,068	3,700	11,794	4,827

GENERAL NOTES

Per capita demand and flow rates based upon 2009 data in table

Serviced Population for 2009 assumed that all new growth within this Town would be fully serviced.

2009 Rate Capacity data was obtained through the Town of Innisfil's website.

* 7,100 m³/day of water provided to Bradford West Gwillimbury through the Alcona WTP (Innisfil) through Phase 2 expansion.

Committed Capacity Increase for water servicing assumes that Phase 3 expansion occurs, all wells are decommissioned, and 5,900 m³/day of water provided to Bradford West Gwillimbury.

Committed Capacity Increase for wastewater servicing assumes that Phase 1 and 2 expansions occur.

2009 Equivalent Population was based on information through the Town of Innisfil's wet

4.7. Town of Midland Servicing Gap Analysis

4.7.1. Town of Midland Supporting Documentation

The following information and data was reviewed specific to Midland and is included within this study. The information obtained for the Town of Midland to-date is listed as follows:

1. Midland Water Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
2. Town of Midland Municipal Website.
3. Additional information provided to the County during Project Interviews conducted in July 2010.

4.7.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the Town for 2006 was 16,900. Based on the 4.2% growth between 2001 and 2006, the estimated 2009 population was determined to be approximately 17,329 people (growth of 429 people). This was compared with the Town of Midland building permits from the past three years.

Based on Residential building permits obtained through Simcoe County, the total number of Residential units for the Town of Midland from 2006 - 2009 was 146 units which equates to 395 people (assuming 2.7 people/unit based on 2006 Census Data) additional population. For the purpose of this study, the projected “census” growth population of 429 people was used.

Current and projected populations for the Town of Midland are presented in **Table 4.7.2.1**. Projected populations are based on proposed County Official Plan 2031 allocated growth as well as allocated growth for 2031 as identified in the Province of Ontario’s Growth Plan for the Golden Horseshoe January 2012 document.

Table 4.7.2.1: Simcoe County Official Plan Projected Growth Rate – Town Midland

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
Town of Midland	15,305	16,214	16,900	4.2%	0.8%	17,329	429	22,500	5,600	5,171	19,700	2,800	2,371

GENERAL NOTES:

1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.

4.7.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within the Town of Midland. Given its proximity to the City of Barrie, Georgian Bay and other recreational areas, there is expected to be some growth within the Town of Midland. The Town of Midland has the physical capability to grow beyond the population and household figures noted herein. Due to its proximity to Georgian Bay, consideration should be given with regards to projected population for the significant and increasing seasonal or non-permanent resident population that exist within the Town of Midland and surrounding area.

Based on information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected populations for 2031 within this Town ranged from 22,500 people based on the proposed provincial allocation and 19,700 people based on the Simcoe County's Official Plan. From a base population of 16,900 in 2006 the population difference by 2031 ranges from 5,600 to 2,800, respectively. This equates to an average annual increase of between 224 to 112 people.

Based on information provided through the Town's Planning Department, a recent 1,600 unit subdivision has been approved by the Town. This subdivision will be located in the south end of the Midland and provide an additional 4,320 population growth (assuming 2.7 people/unit) within the Town, which in itself exceed the County 2031 growth projections. It was assumed that all 1,600 of these units will be fully serviced by the Town's water and wastewater treatment facilities.

Please refer to **Figure No. LU-11** from **Appendix A-2** for the Town of Midland's current Land use designation map.

4.7.4. Projected Employment Growth

Through information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected employment growth for 2031 is approximately 4,000 jobs. This equates to an additional equivalent population of 2,000 that will require water and wastewater servicing. The Provincial Growth Plan projects employment growth in Midland of 1,800 jobs by 2031 or an equivalent population of 900 persons.

Employment Service Population Assumptions:

Section 5.5.2.1 within the Guidelines for the Design of Sanitary Sewage Systems (MOE 2008) indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the Manual of Policy

Procedures and Guidelines for Private Sewage Disposal Systems notes that the average daily flows generated within an employment environment ranged from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent employment growth population (positions). Projected employment growth for Town of Midland is presented in **Table 4.7.4.1**.

Table 4.7.4.1: Simcoe County Official Plan Projected Employment Growth Rate - Town of Midland

Town/Township	EMPLOYMENT GROWTH										
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031	Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
Town of Midland	12,000	16,000	13,800	33.3%	15.0%	1.3%	0.6%	4,000	1,800	2,000	900

GENERAL NOTES:
 1. Based on Employment Growth obtained through Simcoe County's Official Plan and the Greater Golden Horseshoe Growth Plan 2011

4.7.5. Water Supply

Please refer to **Figure No. WAT-11** from **Appendix A-4** for the Town of Midland's current water servicing plan.

The Town of Midland consists of five (5) Point of Entry well field areas, which utilize a total of thirteen (13) groundwater wells throughout the Town. These wells connect to five (5) water treatment systems within the town:

1. Harbourview Treatment System
2. Highway 12 Treatment System
3. Vindin Treatment System
4. Hanly Treatment System
5. Dominion Treatment System

The distribution system consists of approximately 105 km of water main with 5,500 water servicing connections; 5,000 residential connections and 500 commercial/industrial connections. These systems presently service approximately 17,000 people within the Town of Midland. As stated by the Town, all water servicing connections within the Town are metered.

Harbourview Treatment System

Located east of Harbourview Drive, Harbourview Treatment System consists of two (2) lift pumps, two (2) chemical metering pumps, one (1) 136 L sodium hypochlorite storage tank and one (1) ultraviolet (UV) reactor disinfection system. This system has a maximum rated capacity of 1,633 m³/day.

Highway 12 Water Treatment and Distribution System

Located south of Highway 12, Highway 12 Treatment System consists of two (2) active wells, two (2) chemical metering pumps, one (1) 500 L sodium hypochlorite storage tank and two (2) ultraviolet (UV) reactor disinfection system. This system has a maximum rated capacity of 9,158 m³/day.

Vindin Treatment System

The Vindin Treatment System consists of six (6) active wells, two (2) split case centrifugal high lift pumps, one (1) in-line centrifugal high lift pump, two (2) chemical metering pumps, two (2) 500 L sodium hypochlorite storage tanks and two (2) ultraviolet (UV) reactor disinfection systems. This system has a maximum rated capacity of 7,785 m³/day.

Hanly Treatment System

Located on the southwest corner of Hanly Street, the Hanly Street Treatment System consists of one (1) active well, two (2) chemical metering pumps, one (1) 200 L sodium hypochlorite storage tank and one (1) ultraviolet (UV) reactor disinfection system. This system has a maximum rated capacity of 1,313 m³/day.

Dominion Treatment System

Located on the northeast corner of Dominion Avenue, the Dominion Treatment System consists of one (1) active well, two (2) chemical metering pumps, one (1) 140 L sodium hypo chlorite storage tank and one (1) UV reactor disinfection system. This system has a maximum rated capacity of 1,987 m³/day.

Additional Water Supplies

Based on information provided through Midland municipal staff, the Town currently owns two (2) wells (Well #1 and Well #4) that are currently not being utilized. Well #1 is located at Fourth and Victoria Street and has a rated capacity of approximately 65 L/s. Well #4 is located at Sundowner and Sun Beach Road and has a rated capacity of approximately 56 L/s. The Sundowner Well is not connected to the Town of

Midland municipal water system. Based on information provided through the Town, Well #4 is not going to be brought online at this point in time.

The total combined maximum capacity of the five (5) active water treatment facilities was determined to be 21,876 m³/day. These treatment facilities are more than capable of servicing the Town of Midland's current water demands and will have the capacity to service the additional approved population growth within the Town, assuming all proposed growth is to be serviced by existing water systems.

For the purpose of this study, it has been assumed that the remaining existing population within the Town of Midland utilize a private well(s) for water servicing.

4.7.6. Wastewater Treatment

Please refer to **Figure No. SAN-11** from **Appendix A-5** for the Town of Midland's current wastewater servicing plan.

The Town of Midland uses a Class 4 wastewater treatment system to service its current wastewater treatment requirements. As of 2006, this facility had a maximum rated capacity of 15,665 m³/day servicing a population of approximately 14,000 people. It should also be noted that some areas within the Town of Midland use septic systems to treat their wastewater. According to the "Town of Midland Wastewater Treatment Center Annual Flows Report", the average daily flow (ADF) in 2009 was 9,515 m³/day. The extension of sanitary sewers to the Sunnyside area has also been contemplated as future development in the Bayport area occurs. Extension to the Midland Point and Portage Park areas are not under consideration at this time.

It was assumed that the remaining existing population within the Town of Midland is serviced by private or communal septic or wastewater treatment systems.

4.7.7. Extent of Water and Wastewater Infrastructure

The Town of Midland has provided mapping of existing serviced areas. As municipal servicing expands, these maps will be required to be updated. Expansion of systems has various levels of approval through the Town of Midland.

4.7.8. Additional Water and Wastewater Systems

Non-Municipal Communal Water and Wastewater Systems (Midland)

The following properties/communities are using a combination of communal water and/or wastewater treatment systems to service their current population. These properties/communities are as follows:

1. **Midland Point:** Water services within this area are connected to the Town's municipal watermain. Wastewater servicing is presently being serviced through private septic systems.
2. **Sunnyside:** Water services within this area are connected to the Town's municipal watermain. Wastewater servicing is presently being serviced through private individual septic systems.

Please note that additional communal water and/or septic systems may be present within the Town of Midland. Additional information from the Town is required.

External Water and Wastewater Connections

Based on information provided through the Town's Public Works department, the Town is presently servicing four (4) external properties with their municipal water system.

4.7.9. Projected Servicing Gap

Based upon information obtained as part of this study, a servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This information is presented in **Table 4.7.9.1** and includes both an assessment of the County OP and Provincial (Growth Plan) population projections for 2031.

Servicing Gap General Assumptions:

1. Town's historical per capita average daily flows (ADF) and per capita maximum daily flows (MDD) were obtained through the Town of Midland's Public Works Department.
2. 2009 Servicing Population was based on the 2009 Annual Water Report. The servicing population was estimated to be approximately 17,000.
3. Additional Population Potential (APP) was based upon the Simcoe County's Official Plan.
4. Rated capacities for the water systems were obtained through 2009 Annual

Water Reports.

5. It was assumed that 2031 population growth would be fully serviced.

Based on projected growth provided through Simcoe County's Official Plan, the 2031 population of Midland was determined to be approximately 19,700. Based on this additional population potential, no negative servicing gaps were identified for either of the water and wastewater treatment systems within the Town of Midland

Table 4.7.9.1: Town of Midland's Servicing Gap Analysis

Town of Midland																						
Water Supply Systems																						
Water Supply System	2006 Ainley Data					Water Supply System	2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps					
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)		Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	
Midland	20,776	19,949	15,811	16,700	3,250	Harbourview	1,633	23,106	16,217	17,129	5,977	Data unavailable at this time					Data unavailable at this time					
						Highway 12	9,158					Data unavailable at this time					Data unavailable at this time					
						Vndin	7,785					Data unavailable at this time					Data unavailable at this time					
						Hanly	1,313					Data unavailable at this time					Data unavailable at this time					
						Dominion	1,987					Data unavailable at this time					Data unavailable at this time					
Total	20,776	19,949	15,811	16,700	3,250	21,876	23,106	16,217	17,129	5,977	-	2,371	2,000	1,606	1,521	-	5,171	900	-	94	-	89

Town of Midland																					
Wastewater Treatment Systems																					
Wastewater Treatment System	2006 Ainley Data					Wastewater Treatment System	2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)		Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
Midland	15665	22477	8870	14000	8500	Midland	15,665	23,755	9,515	14,429	9,326	Data not available at this time					Data not available at this time				
Total	15,665	22,477	8,870	14,000	8,500	Total	15,665	23,755	9,515	14,429	9,326	-	2,371	2,000	4,955	3,268	-	5,171	900	3,255	2,147

GENERAL NOTES
 Per capita demand and flow rates based upon 2009 data in table
 Serviced Population for 2009 was based on information provided through the Public Works Department.
 2009 Rated Capacity data was obtained through the Town of Midland's website.
 2009 Equivalent Population was based on 2009 Design per capita flows and demands.

4.8. Town of New Tecumseth Servicing Gap Analysis

4.8.1. Town of New Tecumseth Supporting Documentation

The following information and data was reviewed specific to the Town of New Tecumseth and was presented within this Study. The information obtained for the Town of New Tecumseth to-date is listed as follows:

1. Alliston Water Supply System Ontario Regulation 170/03 Section 11, 2009 Annual Report.
2. Tottenham Well Supply System Ontario Regulation 170/03 Section 11, 2009 Annual Report.
3. Town of New Tecumseth Official Plan, April 2010 Document.
4. Town of New Tecumseth Strategic Plan, 2008 Document.
5. Town of New Tecumseth, 2009 Annual Wastewater Reports for the Alliston WWTP, Regional WWTP and Tottenham WWTP.
6. Additional information within this document was obtained through the Town of New Tecumseth's municipal website and project interviews conducted with the County in July 2010.

4.8.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the Town for 2006 was 28,800. Based on the 10.2% growth between 2001 and 2006, the estimated 2009 population was determined to be approximately 30,558 people (growth of 1,758 people). This was compared with the Town of New Tecumseth building permits from the past three years.

Based on Residential building permits obtained through Simcoe County, the total number of Residential units for the Town of New Tecumseth from 2006 - 2009 was 928 units which equates to 2,598 people (assuming 2.8 people/unit based on 2006 Census Data) additional population. Based on information provided through the Town of New Tecumseth, the population as of December 2009 was 31,398 (growth of 2,598). As such, a 2009 population of 31,398 will be used for this study.

Current and projected populations for the Town of New Tecumseth are presented in **Table 4.8.2.1**. Projected populations are based on proposed County Official Plan 2031 allocated growth as well as allocated growth for 2031 as identified in the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 document.

Table 4.8.2.1: Simcoe County Official Plan Projected Growth Rate - Town of New Tecumseth

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
Town of New Tecumseth	22,902	26,141	28,800	10.2%	2.0%	31,398	2,598	56,000	27,200	24,602	51,300	22,500	19,902

GENERAL NOTES:

1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.

4.8.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within the Town of New Tecumseth. Given its proximity to the City of Barrie, the Greater Toronto Area and its accessibility to the 400 series highways, there is expected to be intensified growth within the Town of New Tecumseth. The Town of New Tecumseth has the physical capability to grow beyond the population and household figures noted herein.

Based on information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected populations for 2031 within this Town ranged from 60,000 people based on the proposed provincial allocation and 49,000 people based on the Simcoe County's Official Plan. From a base population of 28,800 in 2006 the population difference by 2031 ranges from 20,200 to 27,200. This equates to an average annual increase of between 808 to 1,088 people.

Given that the County and Township Official Plans have similar growth projections for 2021 and Town's OP has been approved by the County, for the purpose of this study, projected population growth for 2031 will be based upon the Town's Official Plan.

Please refer to **Figure No. LU-12** from **Appendix A-2** for the Town of New Tecumseth current Land use designation map.

Town of New Tecumseth's Official Plan

Based on the Town of New Tecumseth's Official Plan (Approved by Simcoe County March, 2010), the population projections and allocation of population for the Town are as follows:

Community	2001	2006	2011	2016	2021	2031
New Tecumseth	25,800	29,600	33,900	38,500	42,900	51,300
Alliston	9,700	11,400	13,300	15,400	17,400	21,100
Tottenham	5,000	5,900	7,000	8,100	9,200	11,300
Beeton	3,400	3,900	4,400	5,000	5,600	6,800
Briar Hill	1,900	2,300	2,800	3,300	3,700	4,600
Rural Areas	5,800	6,100	6,400	6,700	7,000	7,500

(Town of New Tecumseth Strategic Plan, 2008 Document)

The primary goal of New Tecumseth's Official Plan is to direct new population and employment growth to existing urban settlement areas of Alliston, Beeton and

Tottenham where water and wastewater services are available which would support the effective use of land in these areas. Some minor discrepancies between the Town's Official Plan and Simcoe County's Official Plan do exist with regards to population allocation.

4.8.4. Projected Employment Growth

The projected employment growth for 2031 is 6,800 jobs equalling approximately 26,500 positions as identified in the County's OP and Provincial Growth Plan for the Town of New Tecumseth. This equates to an equivalent population of 3,400 people that will require water and wastewater servicing.

Employment Service Population Assumptions:

Section 5.5.2.1 within the Guidelines for the Design of Sanitary Sewage Systems (MOE 2008) indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems notes that the average daily flows generated within an employment environment ranged from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent employment growth population (positions). Projected employment growth for Town of New Tecumseth is presented in **Table 4.8.4.1**.

Table 4.8.4.1: Simcoe County Official Plan Projected Employment Growth Rate - Town of New Tecumseth

Town/Township	EMPLOYMENT GROWTH										
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031	Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
Town of New Tecumseth	19,700	26,500	26,500	34.5%	34.5%	1.4%	1.4%	6,800	6,800	3,400	3,400

GENERAL NOTES:

1. Based on Employment Growth obtained through Simcoe County's Official Plan and the Greater Golden Horseshoe Growth Plan 2011

4.8.5. Water Supply

Please refer to **Figure No. WAT-12** from **Appendix A-4** for the Town of New Tecumseth current water servicing plan.

Alliston, Beeton, Tottenham and Hillcrest areas of New Tecumseth use a combination of ground and surface water for their current water servicing needs. The water supply systems within the Town of New Tecumseth are as follows:

1. Tottenham Well Supply System
2. Alliston Water Supply System
3. Collingwood to Alliston Regional Pipeline
4. Briar Hill Water Supply System (please refer to Section 4.8.8)
5. Tecumseth Pines Retirement Facility Water Supply System (please refer to Section 4.8.8)

Tottenham Well Supply System

The Tottenham Well Supply System consists of four (4) active groundwater wells that are grouped into two general locations. Two of these wells comprise the Walkem Drive Wells and two of these wells comprise the Coventry Park Wells. The water from these wells is conveyed through two (2) dedicated mains that merge together at within a pressure sustaining valve chamber at the Mill Street Reservoir. All raw water is treated with fluoride with the primary treatment system located in the Walkem Drive Well Pump house, with a back-up system located at Coventry Park Well Pump house. This reservoir has storage capacity of 890 m³. The water from the production wells is treated at the reservoir with both sodium hypochlorite and sodium silicate. There is also one elevated storage tank within the system having a storage capacity of approximately 4,500 m³.

The Tottenham Water Supply System distributes treated water to 4,850 people (based on data provided through the Town). The distribution system of this facility consists of approximately 22 km of water main with 1,638 servicing connections. The maximum rated capacity for this system is approximately 6,000 m³/day based upon the facility's C of A. From the information provided through the Town's Public Works Department, the maximum daily demand (MDD) for this facility from 2007 to 2009 are 2,731 m³/day, 2,355 m³/day, and 2,830 m³/day, respectively. For this study, a 2009 average maximum daily demand of 2,639 m³/day was used.

Collingwood to Alliston Regional Pipeline

Through a water servicing agreement with the Town of Collingwood, the Town of New Tecumseth is able to withdraw up to 23,500 m³/day of water from the

Collingwood to Alliston (CA) Pipeline as per Collingwood Supply Agreement By-Law 99-116. This water supply is pre-treated by the Raymond A. Baker (RAB) water treatment facility in Collingwood and only requires a chlorine booster station to be fully treated. In order to withdraw this quantity of water, two (2) additional pumping stations would need to be constructed. As per the Collingwood Supply Agreement, as of January 1st, 2010 the minimum average daily water supply from the CA pipeline between 2010 and 2017 is 10,100 m³/day with a max daily supply up to 13,000 m³/day.

Alliston Water Supply System

The Alliston Water Supply System consists of seven (7) active groundwater wells and is augmented with treated surface water from the Collingwood Raymond A. Barker Ultra-filtration Plant via a 600 mm diameter transmission main to the Alliston Reservoir. It also consists of four (4) in-ground reservoirs with a total capacity of 8,450 m³ and one (1) elevated storage reservoir with a capacity of approximately 4,500 m³.

NOTE: As stated within the facility's C of A, the Alliston Reservoir is identified as the Parsons Road Reservoir and Booster Pumping Station. It should be noted that the Town is in the final stages of a contract that will increase the storage capacity of the facility by an additional 4,500 m³ to a total of 9,500 m³ (on line by 2013).

This system distributes water to the communities of Alliston and Beeton, and has an approximate servicing population of 16,400 people (based on the facility's 2009 Annual Report). The distribution system consists of approximately 115 km of watermains with approximately 4,680 servicing connections. This system has a maximum rated capacity of 27,385 m³/d which takes into consideration water contributing from the seven (7) contributing wells as well as water capacity contributed by the CA Pipeline (max. 13,000 m³/d until 2017). Based on information provided through the Town's Public Works Department, the maximum daily demand (MDD) for this facility from 2007 to 2009 are 13,378 m³/day, 11,423 m³/day, and 11,100 m³/day, respectively. For this study, a 2009 average maximum daily demand of 11,967 m³/day was used.

It was assumed that the remaining population within the Town of New Tecumseth is serviced by private wells or private water supply systems.

4.8.6. Wastewater Treatment

Please refer to **Figure No. SAN-12** from **Appendix A-5** for the Town of New Tecumseth current wastewater servicing plan.

The Town of New Tecumseth has three (3) Class 2 wastewater treatment facilities that are presently servicing Alliston, Beeton and Tottenham areas of the Town of New Tecumseth. These three facilities are as follows:

1. Tottenham Wastewater Treatment Plant
2. Regional Wastewater Treatment Plant
3. Alliston Wastewater Treatment Plant

Regional Wastewater Treatment Plant

The Regional Wastewater Treatment Plant was recently constructed in 2009 to replace the existing Regional WWTP. The new facility consists of inlet works with a three bar screens, three (3) aeration tanks, four (4) secondary clarifiers, two (2) floc clarifiers, three (3) sludge digesters, two (2) 6,000 m³ capacity biosolid storage tanks, tertiary filtration system, a ultra-violet disinfection system and phosphorus removal system. As of 2009, this facility currently services 6,950 people (based on information provided through the Town).

This facility has an overall rated design capacity of 11,400 m³/day. Based on the facility C of A, the facility has an **overall** rated capacity of 11,400 m³/day which discharges its effluent to the Nottawasaga River. Until the facility requires the additional capacity and has demonstrated that the effluent limits do not exceed the maximum allowable limits, this facility will remain to have the rated capacity of 7,595 m³/day even though the facility has the ability to treat up to 11,400 m³/day based on the facility's C of A. The average daily flow for this facility in 2009 was approximately 3,130 m³/day.

NOTE: Due to the recent decommissioning of the Beeton Lagoons, wastewater generated within Beeton is transferred to the Regional WWTP via a sewage forcemain.

Alliston Wastewater Treatment Plant

The Alliston/Sir Frederic Banting Wastewater Treatment Plant is an extended process, consisting of a common headworks and two modules (old and new plant) for secondary treatment and combine at a sand and anthracite filter. This facility also contains an ultra-violet disinfection system. At the time of the expansion, a new effluent outfall was also constructed. Sludge is further digested in the on-site digester prior to being transferred to the Regional WWTP via a sewage forcemain. As of 2009, this facility currently services 11,250 people (based on information provided through the Town).

Based on the facility's C of A, this WWTP has a rated capacity of 5,681 m³/day with average daily flow of 4,356 m³/day in 2009. This average daily flow equates to approximately 76.7% of the system's rated capacity. This facility currently discharges its effluent in the Boyne River which joins to Nottawasaga River and eventually discharges to Georgian Bay.

Tottenham Wastewater Treatment Plant

As of 2009, the average daily flows generated within this facility were approximately 2,024 m³/day. This facility consist of a manual bar screen, four (4) aeration basin with aerators, two (2) clarifiers, two (2) effluent drum filters , an ultra-violet disinfection system, and a phosphorus removal system. Based on the facility's C of A, the rated capacity of this system is 4,082 m³/day. As of 2009, this facility currently services 4,850 people (based on information provided through the Town). This facility currently discharges its effluent in the Beeton Creek.

2005 Class Environmental Assessment – Wastewater Servicing

As of 2005, the Town of New Tecumseth has also completed a Class EA to ensure their municipality is capable of accommodating the forecasted future growth. A list of wastewater servicing alternatives was presented with the completion of this Class EA.

The preferred alternative as a result of this Class EA was to decommission the Tottenham WWTP and pump all wastewater flows from the community of Tottenham to the Regional WWTP in Alliston via an expanded Beeton pumping station and forcemain system. In order to accommodate the additional capacity, it was proposed that the Regional WWTP plant be expanded to 23,000 m³/day.

Review of 2005 Class Environmental Assessment

As of 2009, XCG Consulting was acquired by the Town of New Tecumseth to undertake a review of the wastewater treatment strategy recommended in the Class Environmental Assessment conducted in 2005. From this review a new preferred alternative was presented to the Town of New Tecumseth. This new alternative is as follows:

1. The Regional WWTP would be expanded to 23,000 m³/day as suggested in the 2005 Class EA document.
2. The Alliston WWTP would be kept in service at its existing rated capacity of 5,681 m³/day.

-
3. A new Tottenham WWTP would be constructed at the same location of the existing WWTP with the same rated capacity as the existing system. A new system was recommended because the effluent quality being discharged from the existing facility is not within acceptable concentrations as stated by the MOE. To enhance the quality of effluent being discharged, the new Tottenham WWTP will be a state of the art facility capable of providing very high quality effluent.

The review this Class EA is expected to be completed by fall of 2010, and a decision will be made by the Town of New Tecumseth by last 2010.

It was assumed that the remaining population within the Town of New Tecumseth was serviced by private or communal septic/wastewater treatment systems.

4.8.7. Extent of Water and Wastewater Infrastructure

The Town of New Tecumseth has provided mapping of existing serviced areas. As municipal servicing expands, these maps will be required to be updated. Expansion of systems has various levels of approval in the Town of New Tecumseth.

4.8.8. Additional Water and Wastewater Systems

Non-Municipal Water and Wastewater Systems (Town of New Tecumseth)

The following properties/communities are using a combination of communal water and/or wastewater treatment systems to service their current population. These properties/communities are as follows:

1. **Green Briar Hill/Briar Hill:** This facility operates a private well which currently has a C of A for a rated capacity of approximately 1,100 m³/day. A Class EA was completed in 2007 to increase the capacity of the facility to 1,350 m³/day.
2. **Tecumseth Pines Retirement Facility (Located off of Highway 9):** This facility currently uses privately owned water and wastewater treatment systems.

Please note that additional communal water and/or septic systems may be present within the Town of New Tecumseth.

External Water and Wastewater Connections

Based on information provided through the Town Public Works Department, the only external servicing connection within the Town of New Tecumseth is the Collingwood to Alliston (CA) Pipeline. No additional external servicing connections exist at this time.

4.8.9. Projected Servicing Gap

Based upon information obtained through this Study, a servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This is presented in **Table 4.8.9.1** and includes both an assessment of the County OP and Provincial (Growth Plan) population projections for 2031.

Servicing Gap General Assumptions:

1. The Town's historical per capita average daily flows were obtained through the WWTP 2009 Annual Reports.
2. The Town's historical per capita maximum daily demands were obtained through the 2009 Annual Water Treatment Plant Reports.
3. 2009 Serviced Population was obtained through the Town of New Tecumseth.
4. Additional Population Potential (APP) was based upon the Simcoe County's Official Plan.
5. It was assumed that all future growth within the Town of New Tecumseth would be fully serviced.

Based on the assessment provided herein, the current water serving systems will be capable of servicing the additional population growth expected for 2031, in the County and Town Official Plans.

The current wastewater treatment capacity will be capable of accommodating the future (2031) wastewater servicing demands. It should also be determined what Scenario (1-3) based on the completed Class EA was selected to be implemented. Based on the servicing gap analysis, the proposed Class EA WWTP upgrades would address the Town's 2031 wastewater servicing gap. Due to the recent Phosphorus Loading Strategy being implemented by the Ministry of Environment (MOE) within Ontario, future expansions to one (1) or more of the Town's wastewater treatment facilities could possibly occur to achieve lower effluent phosphorus concentrations.

Table 4.8.9.1: Town of New Tecumseth Servicing Gap Analysis

Town of New Tecumseth																				
Water Supply Systems																				
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Town of New Tecumseth Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
Alliston/Beeton/Hillcrest	23,886	18,510	15,667	13,355	5,150	27,385	41,648	11,967	18,200	23,448	Data unavailable at this time					Data unavailable at this time				
Tottenham	6,000	7,390	3,506	4,750	2,650	6,000	11,027	2,639	4,850	6,177	-	19,902	3,400	6,323	4,007	-	24,602	3,400	1,623	1,029
Total	29,886	25,900	19,173	18,105	7,800	33,385	52,675	14,606	23,050	29,625	-	19,902	3,400	6,323	4,007	-	24,602	3,400	1,623	1,029

Town of New Tecumseth																				
Wastewater Treatment Systems																				
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Town of New Tecumseth Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
Tottenham	2509	5000	2281	5000	0	4,082	9,781	2,024	4,850	4,931	Data not available at this time					Data not available at this time				
Regional	9530	17851	6860	14133	3550	11,400	25,313	3,130	6,950	18,363	Data not available at this time					Data not available at this time				
Alliston						5,681	14,672	4,356	11,250	3,422	Data not available at this time					Data not available at this time				
Total	12,039	22,851	9,141	19,133	3,550	21,163	49,767	9,510	23,050	26,716	-	19,902	3,400	3,414	1,409	-	24,602	3,400	1,286	530

GENERAL NOTES

Per capita demand and flow rates based upon 2009 data in table
 Serviced Population for 2009 was obtained through 2009 Annual Water and Wastewater Reports.
 2009 Rated Capacity data was obtained through the Town of New Tecumseth.
 2009 Equivalent Population was based on 2009 Design per capita flows and demands.
 *Servicing gap calculation for New Tecumseth water systems do not include available supply capacity from private systems (Briar Hill/Tecumseth Pines). As such, actual total residual capacity may be slightly higher for 2031.

4.9. Township of Oro-Medonte Servicing Gap Analysis

4.9.1. Township of Oro-Medonte Supporting Documentation

The following information and data was reviewed specific to the Township of Oro-Medonte and was presented within this Study. The information obtained for the Township of Oro-Medonte to-date is listed as follows:

1. Canterbury Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
2. Cedarbrook Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
3. Craighurst Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
4. Harbourwood Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
5. Horseshoe Highlands Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
6. Lake Simcoe Regional Airport Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
7. Maplewood Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
8. Medonte Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
9. Robincrest Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
10. Shanty Bay Downs Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
11. Sugarbush Downs Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
12. Warminster Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
13. Horseshoe Valley Residential Development Strategy, June 2010.
14. Additional information within this document was obtained through the Township of Oro-Medonte's Municipal website and through Project interviews with the County conducted as part of this Study.

4.9.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the Township for 2006 was 20,031. Based on the 9.4% growth between 2001 and 2006, the estimated 2009 population was determined to be approximately 21,157 people (growth of 1,126 people). This was compared with the Township of Oro-Medonte building permits from the past three years.

Based on Residential building permits obtained through Simcoe County, the total number of Residential units for the Township of Oro-Medonte from 2006 - 2009 was 163 units which equates to 424 people (assuming 2.6 people/unit based on information provided through the Township) additional population. Through confirmation with the Township, it was concluded that population growth from 2006 to 2009 in Oro-Medonte was within the range of 400 to 600 people. As such, a growth of 424 people or a 2009 population of 20,455 will be used for this Study. Current and projected populations for the Township of Oro-Medonte are presented in **Table 4.9.2.1**. Projected populations are based on proposed County Official Plan 2031 allocated growth as well as allocated growth for 2031 as identified in the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 document.

Please refer to **Figure No. LU-14** from **Appendix A-2** for the Township of Oro-Medonte current Land use designation map.

Table 4.9.2.2: Simcoe County Official Plan Projected Growth Rate - Township of Oro-Medonte

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
Town of Oro-Medonte	16,698	18,315	20,031	9.4%	1.9%	20,455	424	27,000	6,969	6,545	28,100	8,069	7,645

GENERAL NOTES:

1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.

4.9.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within the Township of Oro-Medonte. Given its proximity to the City of Barrie, and recreational areas such as Lake Simcoe, there is expected to be moderate growth within the Township. The Township of Oro-Medonte has the physical capability to grow beyond the population and household figures noted below but may be limited by constraints related to the continued expansion of the sewer and water systems. Due to its proximity to Lake Simcoe, consideration should be given with regards to projected population for the significant and increasing seasonal or non-permanent resident population that exists within the Township of Oro-Medonte and surrounding area.

Based on information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected populations for 2031 within this Township ranged from 27,000 people based on the proposed provincial allocation and 28,100 people based on the Simcoe County's Official Plan. From a base population of 20,031 in 2006 the population difference by 2031 ranges from 6,969 to 8,069, respectively. This equates to an average annual increase of between 279 to 323 people.

Settlement Areas of Craighurst and Horseshoe Valley

The Settlement Areas of Craighurst and Horseshoe Valley are both identified in the Township of Oro-Medonte Official Plan and the County of Simcoe Official Plan as Settlement Areas. A Secondary Plan (OPA 27) was approved by the Township for the Craighurst Settlement Area as this is identified in the Township Official Plan as one of the primary locations for future growth. The development proposed at both Craighurst and Horseshoe Valley Settlement Areas would be contained within the allocations currently identified in Growth Plan Amendment No. 1 for Oro-Medonte (or the 2031 proposed growth). The proposed Skyline Development is located in Craighurst/Horseshoe Valley Settlement Area.

The Edgar Special Policy Area was the subject of an Official Plan Amendment (OPA 5 attached) which recognized the potential redevelopment of the former Edgar Occupational centre. This property, located at Line 3 and the Bass Lake Side Road was approved to redevelop for residential purposes utilizing full private services to the capacity of the existing sewage MOE Certificate of Approval.

4.9.4. Projected Employment Growth

Through information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected employment growth for 2031 ranges between

approximately 1,300 and 1,500 jobs. This equates to an additional equivalent population of between 650 and 750 that will require water and wastewater servicing.

Employment Service Population Assumptions:

Section 5.5.2.1 within the *Guidelines for the Design of Sanitary Sewage Systems (MOE 2008)* indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the *Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems* notes that the average daily flows generated within an employment environment ranged from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent employment growth population (positions). Projected employment growth for Township of Oro-Medonte is presented in **Table 4.9.4.1**.

Table 4.9.4.1: Simcoe County Official Plan Projected Employment Growth Rate – Township of Oro-Medonte

Town/Township	EMPLOYMENT GROWTH										
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031	Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
Town of Oro-Medonte	4,700	6,200	6,000	31.9%	27.7%	1.3%	1.1%	1,500	1,300	750	650

GENERAL NOTES:
 1. Based on Employment Growth obtained through Simcoe County's Official Plan and the Greater Golden Horseshoe Growth Plan 2011

4.9.5. Water Supply

Please refer to **Figure No. WAT-14** from **Appendix A-4** for the Township of Oro-Medonte current water servicing plan.

The Township of Ore-Medonte uses twelve (12) groundwater wells which connect into twelve (12) municipal water systems. These twelve systems are as follows:

1. Canterbury
2. Cedarbrook
3. Craighurst
4. Harbourwood

-
5. Horseshoe Highlands
 6. Lake Simcoe Regional Airport
 7. Maplewood
 8. Medonte Hills
 9. Robincrest
 10. Shanty Bay
 11. Sugarbush
 12. Warminster

Canterbury

The Canterbury well supply and treatment system consists of two (2) ground water source wells. The distribution system consists of 334 m of 150 mm watermain, 52m of 300 mm contact main which supplies 17 homes and 1 Community Hall which equates to approximately 44 people (assuming 2.6 people/unit). Water is pumped by submersible well pumps to the pump house located off Somerset Blvd. and is treated with sodium hypochlorite and then enters into the distribution system. This facility has a maximum rated capacity of 209 m³/day.

Cedarbrook

The Cedarbrook well supply and treatment system consists of two (2) ground water source wells. The distribution system consists of 470 m of 150 mm watermain supplying 24 homes which equates to approximately 62 people (assuming 2.6 people/unit). Water is pumped by submersible well pumps to the pump house and is treated with sodium hypochlorite and then enters into the distribution system. This facility has a maximum rated capacity of 208 m³/day.

Craighurst

The Craighurst well supply and treatment system consists of three (3) ground water source wells. The distribution system consists of 990 m of 150 mm watermain supplying 51 homes which equates to approximately 133 people (assuming 2.6 people/unit). Water is pumped to the pump house and is treated with sodium hypochlorite and then enters into the distribution system. This facility has a maximum rated capacity of 433 m³/day.

Harbourwood

The Harbourwood well supply and treatment system consists of two (2) ground water source wells. The distribution system consists of 3,251 m of 150 mm watermain supplying 133 homes which equates to approximately 346 people (assuming 2.6 people/unit). Water is pumped to the pump house located at 38

Shelswell Blvd. and is treated with sodium hypochlorite then enters into the distribution system. This facility has a maximum rated capacity of 1,842 m³/day.

Horseshoe Highlands

The Horseshoe Highlands well supply and treatment system consists of two (2) ground water source wells. The distribution system consists of 8,131 m of 300 mm and 150 mm watermain and supplies 582 houses, which includes Carriage Hills and Carriage Ridge Resorts. This equates to approximately 1,513 people being serviced (assuming 2.6 people/unit). Untreated water enters into the pump house and is treated with sodium hypochlorite prior to entering the chlorine contact chamber to the water tower which is located on Highland Drive. This facility has a maximum rated capacity of 3,898 m³/day.

Lake Simcoe Regional Airport

The Lake Simcoe Regional Airport well supply and treatment system consists of two (2) ground water source wells. The distribution system consists of 29 m of 450 mm and 546 m of 150 mm watermain and supplies the airport as well as a few commercial buildings. Water that is pumped to the pump house is treated with sodium hypochlorite and then enters into the distribution system. This facility has a maximum rated capacity of 72 m³/day.

Maplewood

The Harbourwood well supply and treatment system consists of one (1) ground water source well which supplies untreated water to the pumping station located at 40 Maplewood Parkway. Untreated water enters the pump house and is treated with sodium hypochlorite then goes to a two-celled, 20,000 Gallon reservoir. Three in-line aerators are placed on the well line to remove sulphur gases. The distribution system consists of 1,069 m of 150 mm watermains supplying 51 homes which equates to approximately 133 people (assuming 2.6 people/unit). This facility has a maximum rated capacity of 164 m³/day.

Medonte Hills

The Medonte Hills well supply and treatment system consists of two (2) ground water source wells which supplies untreated water to the pumping station located at 5341 Line 7. The distribution system consists of 4,990 m of 50 mm, 75 mm and 150 mm watermains, 100 m of 300 mm contact main that supplies 141 houses which equates to approximately 367 people (assuming 2.6 people/unit). Untreated water is pumped to the pump house is treated with sodium hypochlorite and then enters into the distribution system. This facility has a maximum rated capacity of 720 m³/day.

Robincrest

The Robincrest well supply and treatment system consists of two (2) ground water source wells which supplies untreated water to the pumping station. Untreated water enters the pump house and is treated with liquid chlorine then goes into two (2) above ground storage reservoirs. The distribution system consists 3,701 m of 150 mm and 1,340 m of 200 mm watermains supplying water to 161 homes and the Moonstone Public School which equates to approximately 419 people (assuming 2.6 people/unit) excluding the school. This facility has a maximum rated capacity of 1,418 m³/day.

Shanty Bay

The Shanty Bay well supply and treatment system consists of three (3) ground water source wells which supplies untreated water to the pumping station. Untreated water is pumped from the wells to the pump house, treated with liquid chlorine then goes to a 534 m³ stand pipe (water tower) located behind the pump house at 1950 Gowan Road. The distribution system consists of 5,500 m of 150 mm and 875 m of 200 mm watermains servicing 183 homes and the Shanty Bay School which equates to approximately 476 people (assuming 2.6 people/unit) excluding the school. This facility has a maximum rated capacity of 1,220 m³/day.

Sugarbush

The Sugarbush well supply and treatment system consists of two (2) ground water source wells each well equipped with its own pumping station, a booster station and a reservoir with a capacity of approximately 300,000 L. The distribution system consists of 10,758 m of watermains ranging in size from 50 mm to 350 mm servicing 344 homes which equates to approximately 894 people (2.6 people/unit). Untreated water is pumped to the pump house is treated with sodium hypochlorite and then enters into the distribution system. This facility has a maximum rated capacity of 2,485 m³/day.

Warminster

The Warminster well supply and treatment system consists of one (1) ground water source well and is equipped with its own pumping station, a booster station and a reservoir with a capacity of approximately 136 m³. The distribution system consists of 8,826 m of 50 mm and 150 mm watermains which supplies 206 homes, Warminster Public School and Warminster Legion which equates to approximately 536 people (assuming 2.6 people/unit) excluding the school and legion building. Untreated water is pumped to the pump house is treated with sodium hypochlorite

and then enters into the distribution system. This facility has a maximum rated capacity of 890 m³/day.

It was assumed that the remaining population within the Township of Oro-Medonte is presently being serviced by privately owned wells or private communal water systems.

4.9.6. Wastewater Treatment

Please refer to **Figure No. SAN-14** from **Appendix A-5** for the Township of Oro-Medonte current wastewater servicing plan.

The Township of Oro-Medonte currently does not own or operate any other municipal class wastewater treatment plants. It is assumed that all residents within this Township are serviced by private septic systems or communal wastewater treatment systems.

4.9.7. Additional Water and Wastewater Systems

Non-Municipal Communal Water or Wastewater System (Township of Oro-Medonte)

The following properties/communities are using a combination of communal water and/or septic systems to service their current population. These properties/communities are as follows:

1. **Big Cedar:** This property has a private wastewater system that consists of a Lagoon and spray fields. The water servicing system(s) for this property are unknown at this time.
2. **Horseshoe Valley:** This property uses a private wastewater treatment plant to service its wastewater. The water servicing system(s) for this property are unknown at this time.
3. **Skyline:** This property uses a private communal type septic system with a corresponding tile field for wastewater service. The water servicing system(s) for this property are unknown at this time.
4. **Fergus Hill:** This property uses a private communal type water supply system for water servicing. The wastewater servicing system(s) for this property are unknown at this time.
5. **Hawkestone (Ukrainian Camp):** This property uses a private communal type

water supply system for water servicing. Individual septic systems are used for wastewater servicing system(s) for this property.

It should be noted an existing subsurface disposal wastewater system exists at the former Edgar Occupational Centre. This property, located at Line 3 and the Bass Lake Side Road, has an existing certificate of approval for waste water with a capacity of 62,500 gallons per day (285 m³/day). Development of the subject lands to the capacity of the existing system MOE Certificate of Approval will be permitted.

Please note that additional communal water and/or septic systems may be present within the Township of Oro-Medonte.

External Water and Wastewater Connections

Based on information provided through the Township Public Works Department, no external water and/or wastewater servicing connections from surrounding Towns/Townships exist within the Township of Oro-Medonte.

4.9.8. Extent of Water and Wastewater Infrastructure

The Township of Oro-Medonte has mapping of existing serviced areas but is not available at this time. Through discussion with the Township, digital mapping of the water and wastewater serviced areas can be made available at a later time.

4.9.9. Projected Servicing Gap

Based upon information obtained as part of this Study, a servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This is presented in **Table 4.9.9.1** below and includes both an assessment of the County OP and Provincial (Growth Plan) population projections for 2031:

Servicing Gap General Assumptions:

1. Townships historical per capita average daily flows and per capita maximum daily flows were based on information provided the 2009 Annual Operation Reports provided through the Township of Oro-Medonte.
2. 2009 Serviced Population was based on information provided the 2009 Annual Operation Reports provided through the Township of Oro-Medonte.
3. 2009 Water Servicing Population was determined based on the 2009 Annual Water Reports provided through the Township of Oro-Medonte's municipal website.
4. Additional Population Potential (APP) was based upon the Simcoe County's

Official Plan.

5. It was assumed that all future (2031) growth would be fully serviced.

Based on projected growth provided through Simcoe County's Official Plan, the 2031 population of Oro-Medonte was determined to be approximately 28,100 people. Based on this additional population potential, no servicing gaps are expected to occur for future water servicing demands. Since there are no municipal wastewater treatment systems in the Township at this time, it is expected the wastewater servicing gap presented in **Table 4.9.9.1** will be addressed through private individual septic systems, private communal wastewater systems or new municipal systems.

Table 4.9.9.1: Township of Oro-Medonte Servicing Gap Analysis

Town of Oro-Medonte																													
Water Supply Systems																													
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps													
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)									
Canterbury	209	175	50	46	150	209	279	33	44	235	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time										
Craighurst	458	312	184	138	150	433	626	92	133	493																			
Horseshoe Highlands	3,370	1,141	3,706	1,380	-	250	3,898	6,779	870	1,513										5,266									
Maplewood	164	126	150	127	-	-	164	358	61	133										225									
Robin Crest	850	373	503	243	150	1,418	2,652	224	419	2,233																			
Sugarbush	2,485	2,054	956	869	1,200	2,485	4,581	485	894	3,687																			
Cedarbrook	196	135	86	65	50	208	274	47	62	212																			
Harbourwood	922	574	517	354	200	1,842	1,914	333	346	1,568																			
Lake Simcoe Regional Airport	73	167	21	53	100	73	73	30	30	43																			
Medonte Hills	393	379	346	367	-	720	1,652	160	367	1,285																			
Shanty Bay	1,220	857	391	302	550	1,220	903	643	476	427																			
Warminister	600	487	605	540	-	50	890	1,459	327	536										923									
Total	10,940	6,780	7,515	4,484	2,250	13,560	21,549	3,305	4,953	16,596										-	7,645	750	8,201	5,472	-	6,545	650	9,401	6,273

Town of Oro-Medonte																				
Wastewater Treatment Systems																				
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
N/A	No WWTP Data Available					No WWTP Data Available					Data not available at this time					Data not available at this time				
Total	-	-	-	-	-	-	-	-	-	-	-	7,645	750	8,395	NA	-	6,545	650	7,195	NA

GENERAL NOTES
 Per capita demand and flow rates based upon 2009 data in table
 Serviced Population for 2009 was based on 2009 Annual Water Reports.
 2009 Rated Capacity data was obtained through the Township of Oro-Medonte's website.
 2009 Equivalent Population was based on 2009 design per capita flows and demands.

4.10. Town of Penetanguishene Servicing Gap Analysis

4.10.1. Town of Penetanguishene Supporting Documentation

The following information and data was reviewed specific to The Town of Penetanguishene and was presented within this Study. The information obtained for the Town of Penetanguishene to-date is listed as follows:

1. Lepage Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
2. Payette (Penetanguishene) Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
3. Town of Penetanguishene Public Works Department 2009 Annual Report.
4. Penetanguishene Wastewater Treatment Capacity Upgrade Class EA Addendum, May 2010.
5. Additional information provided by the Town of Penetanguishene.

4.10.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the Town for 2006 was 9,354. Based on the 12.5% growth between 2001 and 2006, the estimated 2009 population was determined to be approximately 10,055 people (growth of 701 people). This was compared with the Town of Penetanguishene building permits from the past three years.

Based on Residential building permits obtained through Simcoe County, the total number of Residential units for the Town of Penetanguishene from 2006 - 2009 was 140 units which equates to 364 people (assuming 2.6 people/unit) additional population. Based on information provided through the Town of Penetanguishene Planning Department, the approximate population growth from 2006 to 2009 was in the range of 600-700 people. As such, the estimated population growth of 701 people will be used for this study. Current and projected populations for the Town of Penetanguishene are presented in **Table 4.10.2.1**. Projected populations are based on proposed County Official Plan 2031 allocated growth as well as allocated growth for 2031 as identified in the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 document.

Please refer to **Figure No. LU-15** from **Appendix A-2** for the Town of Penetanguishene current land use designation map.

Table 4.10.2.1: Simcoe County Official Plan Projected Growth Rate – Town Penetanguishene

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
Town of Penetanguishene	7,291	8,316	9,354	12.5%	2.5%	10,055	701	11,000	1,646	945	12,300	2,946	2,245

GENERAL NOTES:

1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.

4.10.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within the Town of Penetanguishene. Given its proximity to the City of Barrie, and recreational areas such as Georgian Bay, there is expected to be some growth within the Town of Penetanguishene. The Town of Penetanguishene has the physical capability to grow beyond the population and household figures noted herein but may be limited by constraints related to the continued expansion of the sewer and water systems. Due to its proximity to Georgian Bay, consideration should be given with regards to projected population for the significant and increasing seasonal or non-permanent resident population that exist within the Town of Penetanguishene and surrounding area.

Based on information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected populations for 2031 within this Town ranged from 11,000 people based on the proposed provincial allocation and 12,300 people based on the Simcoe County's Official Plan. From a base population of 9,354 in 2006 the population difference by 2031 ranges from 945 to 2,946, respectively. This equates to an average annual increase of between 38 to 117 people.

Town of Penetanguishene Growth Management Study

In 2008, the Town of Penetanguishene acquired McNair & Marshall to undertake a growth management study which evaluated the Town's future employment and population growth until the year 2031. Based on this study, the following information was concluded:

1. The long term growth from 2006 – 2031 forecasted by the Town (approximately 3,050 people) was similar to Simcoe County's population allocation growth of 2,946 people.
2. 1,800 new jobs are expected within the Town.
3. The Town has also proposed that the designated Greenfield density should be a minimum 40 people per hectare.
4. Major infrastructure projects relating to water and wastewater servicing will be required to accommodate the additional growth within the Town at an estimated cost of over \$30 million.

Based on information provided by the Town, all new growth within the Town of Penetanguishene will be fully serviced and metered.

The Simcoe County projected 2031 growth was used for the purpose of this study.

4.10.4. Projected Employment Growth

Through information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected employment growth for 2031 ranges between approximately 700 jobs forecast by the province, and 1,700 jobs forecast by the County. This equates to an additional equivalent population of between 350 and 850 that will require water and wastewater servicing.

Employment Service Population Assumptions:

Section 5.5.2.1 within the Guidelines for the Design of Sanitary Sewage Systems (MOE 2008) indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems notes that the average daily flows generated within an employment environment ranged from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent employment growth population (positions). Projected employment growth for the Town of Penetanguishene is presented in **Table 4.10.4.1**.

Table 4.10.4.1: Simcoe County Official Plan Projected Employment Growth Rate - Town of Penetanguishene

Town/Township	EMPLOYMENT GROWTH										Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031			
Town of Penetanguishene	5,300	7,000	6,000	32.1%	13.2%	1.3%	0.5%	1,700	700	850	350	

GENERAL NOTES:

1. Based on Employment Growth obtained through Simcoe County's Official Plan and the Greater Golden Horseshoe Growth Plan 2011

4.10.5. Water Supply

Please refer to **Figure No. WAT-15** from **Appendix A-4** for the Town of Penetanguishene current water servicing plan.

There are two (2) groundwater systems that currently act as the Town's primary water supply. These two systems are as follows:

1. Payette (Penetanguishene) Well Supply System
2. Lepage Subdivision Well Supply System

Payette (Penetanguishene) Well Supply System

The Payette system is comprised of three (3) wells, a chlorination system, and three (3) reservoirs that act as the Town's primary water system. The system has a maximum rated capacity of 11,000 m³/day. Based on information provided by the Town's Public Works Department, there are 2,856 water servicing connections in the Payette water distribution system, as of 2009. This equates to approximately 7,426 people (assuming 2.6 people/unit) being serviced. In 2009, the maximum day demand was approximately 54.7% (6,014.2 m³/day) of the systems rated capacity.

At this time, the Town has retained AECOM to conduct a Class EA for the Payette Well Supply System. This Class EA will be predominately focusing on the Town's water storage capacity needs as opposed to water production. At this time, the Payette distribution system consists of three (3) reservoirs, including:

1. Payette In-Ground Reservoir
2. Robert Street West In-Ground Reservoir
3. Elevated Storage Tank – Centennial Drive

Two (2) of these reservoirs (Payette and Robert Street Reservoirs) are 1,100 m³ in-ground reservoirs. The above ground reservoir is located on Centennial Drive and is comprised of a 5000 m³ elevated storage tank. The in-ground storage reservoir at the Payette Well Facility currently acts as the chlorine contact chamber for the entire Payette Water System. This reservoir is approximately 100 years old and due to the age of the building, the Town is presently looking at additional options for new/additional water storage.

Robert Street West Wells

There are two (2) production wells at the Robert Street West facility which were shut down in 1992 due to contamination and are not currently in service. The Town continues to maintain its permits to take water at Robert Street West and seeks

permission from MOE to retest the water approximately every 5 years. The Town has also completed preliminary engineering designs for systems to remove the contaminants from the groundwater but the identified works have not been constructed due to high capital and ongoing maintenance costs. The Robert Street West area is currently serviced by the Payette Water System.

The Lepage Subdivision Well Supply System is comprised of two (2) wells and a chlorination system located at 45A Lepage Drive. The Lepage Subdivision Water System has a maximum rated capacity of 432 m³/day. Based on information provided by the Town's Public Works Department, there are 22 water servicing connections that are connected in the Lepage water distribution system, as of 2009. This equates to approximately 57 people (assuming 2.6 people/unit) being serviced. In 2009, the maximum day demand was approximately 8.8% (38.2 m³/day) of the systems rated capacity. Raw water is pumped to the pump house and is disinfected with sodium hypochlorite prior to entering the distribution system.

It was assumed that the remaining population within the Town of Penetanguishene is serviced by private wells.

4.10.6. Wastewater Treatment

Please refer to **Figure No. SAN-15** from **Appendix A-5** for the Town of Penetanguishene current wastewater servicing plan.

Currently, there are two (2) wastewater treatment facilities located within the Town of Penetanguishene to service the population and are as follows:

1. Main Street Wastewater Treatment Facility
2. Fox Street Wastewater Treatment Facility

The Main Street Wastewater Treatment Facility is a Class 4 type WWTP while the Fox Street Wastewater Treatment Facility is a Class 3 type WWTP. Both of the treatment facilities discharge into the Penetanguishene Bay and are capable of servicing the Town's current needs. The sanitary distribution system within the Town of Penetanguishene is comprised of approximately 48 km of sanitary sewer of varying in size.

Fox Street Sanitary Treatment Plant

The current maximum rated capacity for the Fox Street Sanitary Treatment Plant is 1,515 m³/day. The average daily flow (ADF) of this facility is 735 m³/day based on the Town's Public Works 2009 Annual Report.

Main Street (Philip H. Jones) Sanitary Treatment Plant

The current maximum rated capacity for the Main Street Sanitary Treatment Plant is 4,545 m³/day. The average daily flow (ADF) of this facility is 3,514 m³/day based on the Town's Public Works 2009 Annual Report Certificate of Approval.

There are three (3) non-compliance criteria at both sewage treatment plants. These criteria are phosphorous, suspended solids and B.O.D. These three non-compliance criteria are regulated by concentration mg/L and loading kg/year or kg/day. The concentration limits are the same for both plants but the loading limits are different because the plants have different plant capacities. Biosolid storage has been an issue with both of these facilities and future solutions are being considered by the Town.

In 2005, the Town of Penetanguishene completed a Municipal Class Environmental Assessment (EA) to address future demands for the Main Street WWTP. As of 2010, this Class EA has been amended to update planned wastewater treatment capacity and biosolids management improvements at the Main Street (Philip H. Jones) Pollution Control Plant. Based on this Class EA, the following recommendations were made regarding this facility:

1. Expand the existing facility to a rated capacity of 5,250 m³/day. In addition, this facility is to expand its current biosolids storage facility and replace the existing outfall due to its condition.
2. An Auto Thermal Thermophilic Aerobic Digestion (ATAD) system has been selected as the preferred solids stabilization process for this facility.
3. An ultimate expansion of the facility was also presented within the Class EA which will provide a rated capacity of 6,750 m³/day.

The construction tender for the Main Street STP updates was awarded in July of 2011 and construction is scheduled for completion in 2013. This project will increase capacity to 5,250m³/day and facilitate a future expansion to 6,750 m³/day.

For the purpose of the study, it was assumed that the remaining population within the Town of Penetanguishene was serviced by private or communal septic systems.

4.10.7. Extent of Water and Wastewater Infrastructure

The Town of Penetanguishene has provided mapping of existing serviced areas. As municipal servicing expands, these maps will be required to be updated. Expansion of systems has various levels of approval through the Town of Penetanguishene.

4.10.8. Additional Water and Wastewater Systems

Non-Municipal Water and Wastewater Systems (Town of Penetanguishene)

The following properties/communities are using a combination of communal water and/or wastewater treatment systems to service their current population. These properties/communities are as follows:

1. Waypoint Centre for Mental Health Care

Presently this facility uses an on-site activated sludge plant to service this facility's wastewater production. We understand that this facility has a rated capacity of 565 m³/day and operated at approximately 50 percent of its rated capacity. The plant services the Provincial facility (hospital) and Waypoint Centre. Treated wastewater is then discharged into the outer Penetanguishene Harbour. It should also be noted that this wastewater treatment plant is owned by the Province of Ontario and operated by OCWA. The plant is not owned or operated by the hospital.

The Province through Infrastructure Ontario is reviewing the plant and future upgrades to meet current standards are anticipated. This upgrade could possibly facilitate a regional partnership for waste treatment at this facility (e.g. septage).

2. Discovery Harbour

The King's Wharf Theatre and adjacent businesses are serviced by a sanitary drainage system that is collected and pumped off-site into the municipal sanitary system on Jury Drive.

The Discovery Harbour officer quarters, visitor centre, and maintenance centre are located adjacent to the Mental Health Centre Facility and is currently serviced by the Mental Health Centre Facility's sanitary sewer system and treated by this facility's wastewater treatment plant.

3. CCL Container

Located on 163 Robert Street East, this aluminum production facility presently uses a microfiltration and sludge dewatering system to treat its wastewater prior to being discharged into the municipal sanitary sewer system. The pre-treatment system is designed to treat the facilities projected future flows of 200 m³/day.

Based on information provided through the Town's Public Works Department, there are no known additional communal type water and wastewater treatment systems within the jurisdiction of the Town of Penetanguishene.

External Water and Wastewater Connections

Based on information provided through the Town Public Works department, no external water and/or wastewater servicing connections between surrounding Towns/Townships exist within the Town of Penetanguishene.

4.10.9. Projected Servicing Gap

Based upon information obtained as part of this study, a servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This can be seen in **Table 4.10.9.1** below and includes both an assessment of the County OP and Provincial (Growth Plan) population projections for 2031.

Servicing Gap General Assumptions:

1. Per capita water maximum daily demand (MDD) for 2009 data was determined based on Town's Public Works 2009 Annual Report.
2. Per capita wastewater average daily flow (ADF) for 2009 was determined based on Town's Public Works 2009 Annual Report.
3. 2009 water serviced population was based on information provided through the Town's Public Works Department.
4. 2009 wastewater serviced population was based in part on 2006 Data obtained through "The County of Simcoe Growth Management Study" completed by Ainley & Associates Limited.
5. 2009 wastewater servicing population was determined assuming that all approved population growth within this area would be fully serviced (i.e. 2006 servicing population + change in population from 2006 – 2009).
6. Additional Population Potential (APP) was based upon the adopted Simcoe County's Official Plan.
7. It was assumed that all future growth will be fully serviced.

Based on projected growth provided through Simcoe County's Official Plan, the 2031 population of Penetanguishene was determined to be approximately 12,300 people. Based on this additional population potential, no major servicing gaps are expected to occur on the basis that the Main Street Wastewater Treatment Plant is being upgraded.

Table 4.10.9.1: Town of Penetanguishene Servicing Gap Analysis

Town Penetanguishene																				
Water Supply Systems																				
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
Payette	11,000	8,057	8,316	6,700	1,350	11,000	13,583	6,014	7,426	6,157	Data unavailable at this time					Data unavailable at this time				
Lepage	432	349	53	64	300	432	648	38	57	591	Data unavailable at this time					Data unavailable at this time				
Total	11,432	8,406	8,369	6,764	1,650	11,432	14,231	6,052	7,483	6,748	-	2,245	850	3,652	2,954	-	945	350	5,452	4,410

Town Penetanguishene																						
Wastewater Treatment Systems																						
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps						
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)		
Main Street	4,545	5,183	3,851	4,831	350	4,545		3,514			Data not available at this time					Data not available at this time						
Fox Street	1,500	1,556	1,024	1,169	350	1,500		735			Data not available at this time					Data not available at this time						
Total	6,045	6,739	4,875	6,000	700	6,045	9,533	4,249	6,701	2,832	-	2,245	850	-	263	-	167	-	945	350	1,537	975

GENERAL NOTES

Per capita demand and flow rates based upon 2009 data in table
 Serviced Population for 2009 was obtained by the Town.
 2009 Rated Capacity data was obtained through the Town of Penetanguishene.
 Assumed expansion of Main Street WWTP to a rated capacity of 5,250 m³/day.
 Total Serviced Population for 2009 assumed that all new growth within this Town would be fully serviced.

4.11. Township of Ramara Servicing Gap Analysis

4.11.1. Township of Ramara Supporting Documentation

The following information and data was reviewed specific to Ramara and was presented within this study. The information obtained for the Township of Ramara to-date is listed as follows:

1. Bayshore Well Supply System 2009 Annual Report, C.C. Tatham and Associates Ltd.
2. Park Lane Well Supply System 2009 Annual Report, C.C. Tatham and Associates Ltd.
3. Brechin/Lagoon City Well Supply System 2009 Annual Report, C.C. Tatham and Associates Ltd.
4. Davy Drive Well Supply 2009 Annual Report, C.C. Tatham and Associates Ltd.
5. South Ramara Treatment Plant 2009 Annual Report, C.C. Tatham and Associates Ltd.
6. Val Harbour Well Supply System 2009 Annual Report, C.C. Tatham and Associates Ltd.
7. 2009 Drinking Water Inspection Report, Bayshore Village Subdivision Well Supply, Township of Ramara.
8. 2009 Drinking Water Inspection Report, Park Lane Subdivision Well Supply, Township of Ramara.
9. Brechin/Lagoon City Sewage Works 2009 Annual Report, C.C. Tatham and Associates Ltd.
10. Bayshore Village Sewage Works 2009 Annual Report, C.C. Tatham and Associates Ltd.
11. Additional information within this document was obtained through the Township of Ramara's Municipal website and interviews with the County conducted as part of this study.

4.11.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the Township for 2006 was 9,435. Based on the 9.5% growth between 2001 and 2006, the estimated 2009 population was determined to be approximately 9,974 people (growth of 539 people). This was compared with the Township of Ramara building permits from the past three (3) years.

Based on residential building permits obtained through Simcoe County, the total number of residential units for the Township of Ramara from 2006 - 2009 was 145 units which equates to 361 people (assuming 2.49 people/unit based on the Township of Ramara's projected average population of 2.49 people per dwelling) additional population.

Based on information provided through the Township of Ramara, an additional 2,000 seasonally occupied units and approximately 5,000 seasonal residents reside within the Township. For the purpose of this study, the Census growth of 539 people used to evaluate the 2009 estimated population in the Township of Ramara.

Current and projected populations for the Township of Ramara are presented in **Table 4.11.2.1**. Projected populations are based on proposed County Official Plan 2031 allocated growth as well as allocated growth for 2031 as identified in the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 document.

Table 4.11.2.1: Simcoe County Official Plan Projected Growth Rate - Township of Ramara

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
Township of Ramara	7,812	8,615	9,435	9.5%	1.9%	9,974	539	13,000	3,565	3,026	15,500	6,065	5,526

GENERAL NOTES:

1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.

4.11.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within the Township of Ramara. Given its proximity to the City of Orillia, and recreational areas such as Lake Simcoe, there is expected to be some growth within the Township. The Township of Ramara has the physical capability to grow beyond the population and household figures noted below but may be limited by constraints related to the continued expansion of the sewer and water systems. Due to its proximity to Lake Simcoe, consideration should be given with regards to projected population for the significant and increasing seasonal or non-permanent resident population that exist within the Township of Ramara and surrounding area.

Based on information provided through the *Simcoe County Official Plan* and the Places to Grow Act, the projected populations for 2031 within this Township ranged from 13,000 people based on the proposed provincial allocation and 15,500 people based on the Simcoe County's Official Plan. From a base population of 9,435 in 2006 the population difference by 2031 ranges from 3,565 to 6,065. This equates to an average annual increase of between 143 to 243 people.

Please refer to **Figure No. LU-16** from **Appendix A-2** for the Township of Ramara current land use designation map.

4.11.4. Projected Employment Growth

From information provided through the *Simcoe County Official Plan* and the Places to Grow Act, the projected employment growth for 2031 ranges between approximately 300 jobs forecast by the Province, and 600 jobs forecast by the County. This equates to an additional equivalent population of between 150 and 300 that will require water and wastewater servicing. Through conversation with the Township of Ramara, additional employment is expected to exist within the Rama Road Corridor, Atherley Village and within the Brechin Business Park. For the purposed of this study, employment projections from the Simcoe County will be used for this study.

Employment Service Population Assumptions:

Section 5.5.2.1 within the *Guidelines for the Design of Sanitary Sewage Systems (MOE 2008)* indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the *Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems* notes that the average daily flows generated within an employment environment ranged from 75 to

275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent employment growth population (positions). Projected employment growth for Township of Ramara is presented in **Table 4.11.4.1**.

Table 4.11.4.1: Simcoe County Official Plan Projected Employment Growth Rate - Township of Ramara

Town/Township	EMPLOYMENT GROWTH										
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031	Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
Township of Ramara	1,900	2,500	2,200	31.6%	15.8%	1.3%	0.6%	600	300	300	150

GENERAL NOTES:
 1. Based on Employment Growth obtained through Simcoe County's Official Plan and the Greater Golden Horseshoe Growth Plan 2011

4.11.5. Water Supply

Please refer to **Figure No. WAT-16** from **Appendix A-4** for the Township of Ramara current water servicing plan.

The Township of Ramara consists of seven (7) water systems to service their current demands. These water supply systems are as follows:

1. Bayshore Village Well Supply
2. Park Lane Well Supply
3. Brechin/Lagoon City Water Treatment Plant
4. Davy Drive Well Supply
5. South Ramara Treatment System
6. Val Harbour Well Supply
7. Somerset/Knob Hill (Distribution System)

Two (2) of these systems (Lagoon City and South Ramara) are surface water systems that draw in a permitted maximum combined 4,543 m³/day (4,000 m³/day to Lagoon City and 543 m³/day to South Ramara) of water from Lake Simcoe. The remainder of these systems use groundwater wells as their water source.

Bayshore Village Well Supply

The Bayshore Village Well Supply services the Bayshore Village residential community, which consists of 382 residential lots of which 306 were occupied in 2009. This facility consists of three (3) ground water wells. Untreated water is pumped to the pump house and is treated with sodium hypochlorite before entering the 112 m³ water reservoir located under the water works building. The treated water is pumped from the reservoir via three (3) vertical turbine pumps to the distribution system. The distribution system is comprised of approximately 7,200 m of 150 mm dia. watermain. The total estimated population currently connected to the water system is 796 residents based on information provided through the Township. This facility has a maximum rated capacity of 1,244 m³/day. The maximum daily demands for 2007, 2008 and 2009 from this facility were 713 m³/day, 479 m³/day and 542 m³/day, respectively. This equates to an average maximum daily demand of approximately 578 m³/day which was used as the MDD for this study.

Park Lane Well Supply

Park Lane Subdivision is located in the northwest portion of Ramara Township. The 19 lot subdivision currently consists of approximately 17 homes located on Park Lane Crescent, which equates to approximately 44 people (assuming 2.6 people/unit). Drinking water is supplied from two (2) drilled production wells, one (1) duty and one (1) on standby. Treatment consists of green sand filters for iron/manganese removal and disinfection with chlorine, prior to being distributed. The distribution system consists of approximately 125 m of 50 mm diameter watermain.

No Permit to Take Water exists as the maximum rated capacity of this facility is 50 m³/day. The maximum daily demands for 2007, 2008 and 2009 from this facility were 40 m³/day, 28 m³/day and 24 m³/day, respectively. This equates to an average maximum daily demand of approximately 31 m³/day which was used as the MDD for this study.

Lagoon City

Lagoon City WTP is a surface water treatment facility that draws water from Lake Simcoe. Three (3) vertical turbine pumps draw water from Lake Simcoe to a low lift pumping station which is located within this facility. The water intake line is equipped with manually cleaned screens. This facility consists of a pre-chlorination system, coagulation with alum, flocculation system, filtration system and a post-chlorination system that uses sodium hypochlorite for treatment.

The treated water is stored in a 1,091 m³ well located under the facility. Treated water from this well is fed to the distribution system by five (5) vertical turbine pumps. The water distribution system also includes a 945 m³ standpipe which is located in the community of Brechin. As of 2009, this system services approximately 1,254 units. 1,108 units of these connections are located in Lagoon City and the remaining 146 units are located in Brechin. This equates to an approximate serviced population of 2,596 people. The maximum rated capacity of this facility is 4,000 m³/day.

The maximum daily demands for 2007, 2008 and 2009 from this facility were 2,174 m³/day, 1,633 m³/day and 1,632 m³/day, respectively. This equates to an average maximum daily demand of approximately 1,818 m³/day which was used as the MDD for this study.

Davy Drive Well Supply

The Davy Drive well supply services the Riverleigh Woods Subdivision which consists of 42 residential units, of which 32 are currently occupied. The total estimated population is 83 residents based on the Township of Ramara's 2009 Annual Water Reports. The rated capacity of the system is 75.7 m³/day. Treatment consisting of green sand filters for iron/manganese and chlorine for disinfection with a 50 mm distribution main. The maximum rated capacity of this facility is 76 m³/day. The maximum daily demand as of 2009 is 29 m³/day.

South Ramara Treatment System

This facility consists of a surface water treatment plant (WTP), with reservoir storage and distribution main, which connects to the Heritage Farm and Mara Shore Subdivisions. The Heritage Farm distribution system supplies water to 76 lots in the Heritage Farm subdivision. The Mara Shores Estates distribution system supplies water to the 36 houses at the Mara Shores Estates Subdivision located on Lot 15, Concession C, and 8 lots on Furniss Crescent. As of 2009, 91 of these residential units were occupied which equated to a serviced population of approximately 237 people. The maximum rated capacity of this facility is 387 m³/day. The maximum daily demands for 2007, 2008 and 2009 from this facility were 287 m³/day, 195 m³/day and 187 m³/day, respectively. This equates to an average maximum daily demand of approximately 223 m³/day which was used as the MDD for this study.

Val Harbour Well Supply

The Val Harbour Well Supply system services the Val Harbour Subdivision. The development consists of 74 residential lots, of which 62 are currently occupied. The total estimated population currently connected to the water system is 161 residents

(assuming 2.6 people/unit) being serviced. The area is serviced by two (2) active ground water wells, a treatment plant consisting of chlorination, reservoir storage and 150 mm distribution main. The combined hydraulic capacity for the two (2) wells at this facility is approximately 207 m³/day which also equates to the facility's rated capacity. The distribution system consists of approximately 1,700 m of 100 mm diameter watermain.

The maximum daily demands for 2007, 2008 and 2009 from this facility were 138 m³/day, 114 m³/day and 93 m³/day, respectively. This equates to an average maximum daily demand of approximately 115 m³/day which was used as the MDD for this study.

It was assumed that the remaining population within the Township of Ramara is presently being serviced by privately owned wells or private communal water systems.

4.11.6. Wastewater Treatment

Please refer to **Figure No. SAN-16** from **Appendix A-5** for the Township of Ramara current wastewater servicing plan.

The majority of the Township of Ramara is currently not being serviced with respect to municipal wastewater treatment systems. There are only two (2) communities currently being fully serviced by Township of Ramara; Lagoon City and Bayshore Village.

Bayshore Village

The Bayshore Village sewage works services the Bayshore Village residential community consisting of 382 lots located on Lots 21 and 26 in Concession VI of which 306 units are connected to the municipal sanitary sewer and treatment system. Based on the facility's C of A (3-1337-81-968), the rated capacity of this facility is 399 m³/day. The total estimated population connected to the sewer system is 796 residents based on the Township of Ramara's 2009 Annual Water Reports. This system consists of two (2) pumping stations, force main, and a 200 mm collection main sewer system.

The treatment system consists of two (2) stabilization ponds with a combined effective volume of 131,521 m³ and a 23 ha spray irrigation system which is located adjacent to the two (2) lagoons. As of 2008, the average daily flow for this facility was 366 m³/day. This equates to approximately 91% of the facility's current rated capacity.

In September 2010, the Township of Ramara retained C.C. Tatham & Associates to conduct a Class Environmental Assessment (EA) study to consider an expansion to this facility's effluent spray irrigation system to provide spare spray irrigation land. The rated capacity of the sewage treatment and disposal system is not proposed to be increased.

Lagoon City

The Lagoon City wastewater treatment plant treats sewage generated in Lagoon City. As of 2009, the number of service connections is estimated to be equivalent to 1,155 single family houses. 1,009 of these units service Lagoon City which has an estimated serviced population of 2,018 people assuming a population density of 2.0 based on the Township of Ramara's 2009 Annual Operation Reports. The remaining 146 units service the community of Brechin and have an estimated service population of 365 people assuming a population density of 2.5 people/unit based on the Township of Ramara's 2009 Annual Operation Reports. This facility has a maximum rated capacity of 2,273 m³/day based on the facility's Certificate of Approval (CofA 1114-745MQT). As of 2009, the average daily flow from this facility was 1,496 m³/day.

This treatment system consists of eight (8) pumping stations, a force main, a 200 mm collection system, and an extended aeration treatment system with an activated sludge treatment plant. Biosolids generated within this facility are transported to John Ayers Farm, an organic soil conditioning area which is owned and operated by Wessuc Inc.

It is assumed that all remaining residents within the Township of Ramara are serviced by private septic systems or communal wastewater treatment systems.

4.11.7. Extent of Water and Wastewater Infrastructure

The Township of Ramara has mapping of existing serviced areas but is not available at this time. Through discussion with the Township, digital mapping of the water and wastewater serviced areas will be available upon request.

4.11.8. Additional Water and Wastewater Systems

The following properties/communities are using a combination of communal water and/or wastewater treatment systems to service their current population. These properties/communities are as follows:

1. Lakepoint Development: The first phase of this 300-unit residential subdivision is under construction. It is serviced by non-municipal communal

-
- water and wastewater systems.
2. Numerous camps and resorts including: Geneva Park, Ontario Education Leadership Camp, Camp Wahanowin, Camp Couchiching, Fern Resort, and Hammock Resort, are serviced by private communal water supplies and/or wastewater treatment and effluent disposal systems.
 3. The Somerset/Knob Hill subdivision, a 20-lot residential community, is serviced with a municipal water supply from the Town of Washago in the Township of Severn, and with individual septic systems.

4.11.9. Projected Servicing Gap

Based upon information obtained through this study, a servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This is presented in **Table 4.11.9.1** and includes both an assessment of the County OP and Provincial (Growth Plan) population projections for 2031:

Servicing Gap General Assumptions:

1. The Township's historical per capita average daily flows and per capita maximum daily flows were obtained through Township's water and wastewater 2009 Annual Reports.
2. 2009 Water and Wastewater Servicing Populations were determined based on the 2009 Annual Reports provided through the Township of Ramara.
3. Additional Population Potential (APP) was based upon the Simcoe County Official Plan.
4. It was assumed that all future (2031) growth within the Township of Ramara will be fully serviced.

For projected growth provided through Simcoe County's Official Plan, the 2031 population of Ramara was determined to be approximately 15,500 people.

Based on this additional population potential, servicing gaps are expected to occur for future water and wastewater servicing which will need to be addressed. Population growth is expected to occur within the Brechin/Lagoon City and Rama Road area. As such, an expansion of the Lagoon City sewage treatment plant will be required as stated within the Township's 2004 Master Servicing Plan Update.

Table 4.11.9.1: Township of Ramara Servicing Gap Analysis

Township of Ramara																						
Water Supply Systems																						
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps						
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)		
Bayshore Village	1,244	1,109	688	675	450	1,244	1,713	578	796	917	Data unavailable at this time	300	-	1,329	-	948	-	3,026	150	1,321	943	
Park Lane	50	44	44	43	-	50	71	31	44	27												
Lagoon City/Brechin	4,000	4,281	2,584	3,000	1,300	4,000	5,712	1,818	2,596	3,116												
Davy Drive	76	108	51	80	50	76	218	29	83	135												
South Ramara	387	205	365	213	-	387	411	223	237	174												
Val Harbour	207	153	172	140	-	207	290	115	161	129												
Total	5,964	5,900	3,904	4,151	1,800	5,964	8,415	2,794	3,917	4,498	-	5,526	300	-	1,329	-	948	-	3,026	150	1,321	943

Township of Ramara																					
Wastewater Treatment Systems																					
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps					
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	
Lagoon City	1,713	2,650	1,356	2,308	350	2,273	3,621	1,496	2,383	1,238	Data not available at this time	300	-	4,517	-	2,646	-	3,026	150	1,867	1,093
Bayshore Village	399	813	295	661	150	399	868	366	796	72											
Total	2,112	3,463	1,651	2,969	500	2,672	4,488	1,862	3,179	1,309											

GENERAL NOTES

Per capita demand and flow rates based upon 2009 data in table
 Water and Wastewater Serviced Population for 2009 was obtained from the Township of Ramara.
 2009 Rated Capacity data was obtained through the Township of Ramara.
 2009 Equivalent Population was based on 2009 Design per capita flows and demands.

4.12. Township of Severn Servicing Gap Analysis

4.12.1. Township of Severn Supporting Documentation

The following information and data was reviewed specific to the Township of Severn and is included within this Study. The information obtained for the Township of Severn to-date is listed as follows:

1. Severn Estates Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
2. Bass Lake Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
3. Sandcastle Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
4. Washago Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
5. Coldwater Highlands Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
6. West Shore Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
7. Additional information within this document was obtained through the Township of Severn's Municipal website and during project interviews conducted as part of this study.

4.12.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the Township for 2006 was 12,500. Based on information provided through the Township of Severn's Planning Department, the population increase from 2007 to 2009 was determined to be approximately 350 people. This was compared with the Township of Severn building permits from the past three (3) years. Based on residential building permits obtained through Simcoe County, the total number of residential units for the Township of Severn from 2006 - 2009 was 184 units which equates to 497 people (assuming 2.7 people/unit) additional population.

The approximate population growth from 2006 to 2009, as provided from the Township of Severn's Planning Department, was in the range of 400 to 500 people. As such, the estimated population growth of 497 people for the will be used for this study. Current and projected populations for the Township of Severn are presented in **Table 4.12.2.1**.

Table 4.12.2.1: Simcoe County Official Plan Projected Growth Rate - Township of Severn

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
Town of Severn	10,257	11,135	12,500	12.3%	2.5%	12,997	497	17,000	4,500	4,003	20,200	7,700	7,203

GENERAL NOTES:

1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.

Projected populations are based on proposed County Official Plan 2031 allocated growth as well as allocated growth for 2031 as identified in the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 document.

4.12.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within the Township of Severn. Given its proximity to the City of Orillia, and recreational areas such as Lake Simcoe and Georgian Bay, there is expected to be moderate growth. The Township of Severn has the physical capability to grow beyond the population and household figures noted below, but may be limited by constraints to the continued expansion of the sewer and water systems. Adjustments may be made to the projections as part of any review of the Plan. Due to its proximity to Lake Simcoe, consideration should also be taken into account with regards to projected population for the significant and increasing seasonal or non-permanent resident population that exist within the Township of Severn and surrounding area.

Based on information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected populations for 2031 within this Township ranged from 17,000 people based on the proposed provincial allocation and 20,200 people based on the Simcoe County Official Plan. From a base population of 12,500 in 2006 the population difference by 2031 ranges from 4,500 to 7,700, respectively. This equates to an average annual increase of between 180 to 308 people.

Please refer to **Figure No. LU-17** from **Appendix A-2** for the Township of Severn current land use designation map.

4.12.4. Projected Employment Growth

Through information provided in the Simcoe County Official Plan and the Places to Grow Act, the projected employment growth for 2031 ranged between approximately 500 jobs projected by the Province, and 1,400 jobs projected by the County. This equates to an additional equivalent population of between 250 and 700 that will require water and wastewater servicing. The equivalent service population was determined based on the following assumptions and calculations:

Employment Service Population Assumptions:

Section 5.5.2.1 within the Guidelines for the Design of Sanitary Sewage Systems (MOE 2008) indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems notes that the

average daily flows generated within an employment environment ranged from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent employment growth population (positions). Projected employment growth for Township of Severn is presented in **Table 4.12.4.1**.

Table 4.12.4.1: Simcoe County Official Plan Projected Employment Growth Rate – Township of Severn

Town/Township	EMPLOYMENT GROWTH										
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031	Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
Town of Severn	3,900	5,300	4,400	35.9%	12.8%	1.4%	0.5%	1,400	500	700	250

GENERAL NOTES:
 1. Based on Employment Growth obtained through Simcoe County's Official Plan and the Greater Golden Horseshoe Growth Plan 2011

4.12.5. Water Supply

Please refer to **Figure No. WAT-17** from **Appendix A-4** for the Township of Severn current water servicing plan.

Currently, the Township of Severn utilizes six (6) water supply systems to service the present demands within the Township. These facilities are as follows:

1. Severn Estates
2. Bass Lake Woodlands
3. Sandcastle Estates
4. Washago
5. Coldwater
6. West Shore

Three (3) of the systems have surface water supplies (Sandcastle Estates, Washago, and West Shore) and the remainder are groundwater supply systems.

Severn Estates

Severn Estates subdivision supply system consists on one (1) active groundwater well which is located within the Severn Estates pump house at 4532 Trent Trail. The water is treated using sodium hypochlorite for disinfection and for iron precipitation. It is then filtered using a two (2) train ceramic filter system for iron removal. Filtered water is stored in a 13.6 m³ underground storage reservoir. It is transported to the distribution system by two (2) high lift pumps and pressure is maintained by three (3) hydro pneumatic pressure tanks. The Severn Estates water system services 23 homes located on Trent Trail, which equates to approximately 62 people (base on 2.7 cap/unit). This facility has a maximum rated capacity of 109 m³/day and a maximum daily demand of approximately 31.20% of the rated capacity in 2009.

Bass Lake Woodlands

Bass Lake Woodlands supply system consists of three (3) active groundwater wells which are located on Ridley Boulevard, east of Glen Oak Lane. Groundwater is treated using sodium hypochlorite and then travels through a 32 m³ chlorine contact tank before being stored in a 136 m³ underground storage reservoir. The Bass Lake Woodlands water system services 161 residential homes which equates to approximately 327 residents (based on 2.7 cap/unit) in the community of Bass Lake Woodlands. This facility has a maximum rated capacity of 818 m³/day and a maximum daily demand of approximately 24.45% of the rated capacity in 2009.

Sandcastle Estates

Sandcastle Estates Water Treatment Plant is pumped from Lake Couchiching to a water treatment plant located on Sandcastle Court. Untreated water is treated using sodium hypochlorite and then travels through a series of filters before being stored in a 43 m³ settling tank. The Sandcastle Estates water system services 65 homes or a total of 176 residents (based on 2.7 cap/unit) located in the community of Sandcastle Estates Subdivision. This facility has a maximum rated capacity of 389 m³/day and a maximum daily demand of approximately 17.75% of the rated capacity in 2009.

Washago

The Washago Water Treatment Plant pumps surface water from Lake Couchiching to a water treatment plant located on Quetton Street. Untreated water is treated using sodium hypochlorite and then travels through a series of filters before being stored in a 257 m³ storage reservoir. The Washago water system services 80 residential units and 22 commercial units located in the Village of Washago. Based on information provided by the Township, one (1) seniors' home, with a service

population of 10 people, is considered to be one of the commercial units. One multi residential unit with a service population of 6 to 8 people exists within the community of Washago.

An additional 20 households or approximately 52 people in the neighbouring Township of Ramara are also being serviced by this facility. This facility has a maximum rated capacity of 544 m³/day and a maximum daily demand of approximately 29.23% of the rated capacity in 2009.

Coldwater

The Coldwater water supply system consists of three (3) active groundwater wells. Two (2) of these wells are located on the pump house property and the third is across the street from the pumping station and reservoir on Sheridan Drive. The water is treated using sodium hypochlorite and is then filtered using a two (2) train ceramic filter system. Filtered water is stored in a 1,612 m³ two (2) cell, underground reservoir below the pump house underground storage reservoir. It is transported to the distribution system by two (2) high lift pumps and pressure is maintained by three (3) hydro pneumatic pressure tanks. This facility has a maximum rated capacity of 2,138 m³/day and a maximum daily demand of approximately 27.92% of the rated capacity in 2009.

This facility has 473 residential and 67 commercial service connections. Based on information provided by the Township, one (1) seniors' home with a service population of 60 people is considered to be one (1) of the commercial units. Two (2) multi residential units with a service population of 6 to 8 people exist within the community of Coldwater.

West Shore

The West Shore Water Treatment Plant pumps from Lake Couchiching to a water treatment plant located on 3333 New Brailey Line. Untreated water is treated using sodium hypochlorite and then travels through a series of filters before being stored in a 1,860 m³ storage reservoir. The West Shore water system services 782 residential and 20 commercial units which equates to approximately 2,200 people. This facility has a maximum rated capacity of 2,780 m³/day and a maximum daily demand of approximately 35.5% of the rated capacity in 2009.

It was assumed that the remaining population within the Township of Severn is presently being serviced by privately own wells or private communal water systems.

4.12.6. Wastewater Treatment

Please refer to **Figure No. SAN-17** from **Appendix A-5** for the Township of Severn current wastewater servicing plan.

The Township of Severn has three (3) wastewater treatment facilities that are currently being used for wastewater servicing. Two (2) of these systems (Coldwater and West Shore) are Class 2 facilities and one (1) of these systems (Washago) is considered to be a Class 1 facility.

Washago WWTP

The lagoon type wastewater treatment facility is located on the west side of Highway 11 approximately two (2) kilometres northwest of Washago. This facility has a rated capacity of 228 m³/day based on its C of A No. 3-1081-83-006. As of 2008, the average daily flow for this facility was approximately 203 m³/day or 89.23% of the rated capacity.

Coldwater WWTP

Recently an expansion of the Coldwater WWTP has been completed with a rated capacity of 375 m³/day to add to the existing wastewater treatment plant rated capacity of 546 m³/day which equates 921 m³/day based on its C of A (No. 3832-6S2QCH). This new facility is located 35 m southwest of the existing facility located on County Road 17. As of 2008, the average daily flow for this facility was approximately 489 m³/day or 53.1% of the rated capacity.

West Shore WWTP

The West Shores Wastewater Treatment Plant is a Class 2 facility that currently services the residential and commercial development along the west shore of Lake Couchiching within the Township of Severn. This facility consists of gravitational sewers, seven (7) sewage pumping stations, and a sewage force main. This facility has a rated capacity of 1,390 m³/day based on its C of A (6791-62EJW5). Treated effluent is discharged into Lake Couchiching. As of 2008, the average daily flow for this facility was approximately 455 m³/day or 32.7% of the rated capacity. It was assumed that the remaining population within the Township of Severn is presently being serviced by private individual or communal wastewater treatment systems.

4.12.7. Additional Water and Wastewater Systems

Non-Municipal Water and Wastewater Systems (Township of Severn)

The following properties/communities are using a combination of communal water and/or wastewater treatment systems to service their current population. These properties/communities are as follows:

1. **Killam Property Inc.:** This property is located north of Bass Lake within the Township of Severn. This property currently uses a private well system to service its population and a sewage lagoon for wastewater treatment.

Please note that additional communal water and/or septic systems may be present within the Township of Severn.

External Water and Wastewater Connections

Based on information provided through the Township Public Works Department, one (1) external water servicing connection exists within this Township. Approximately 20 residential units in the Township of Ramara are presently being serviced by the Washago water supply system. No additional external water and/or wastewater connections exist at this time.

4.12.8. Extent of Water and Wastewater Infrastructure

The Township of Severn has mapping of existing serviced areas but is not available at this time. Through discussion with the Township, digital mapping of the water and wastewater serviced areas was made available for the fall of 2010.

4.12.9. Projected Servicing Gap

Based upon information obtained through this study, a servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This is presented in **Table 4.12.9.1** below and includes both an assessment of the County OP and Provincial (Growth Plan) population projections for 2031:

Servicing Gap General Assumptions:

1. The Township's historical per capita average daily flows and per capita maximum daily flows were obtained through 2008 and 2009 Annual Inspection Reports.
2. 2009 Serviced Population was based in part on 2006 Data obtained through The County of Simcoe Growth Management Study completed by Ainley &

Associates Limited.

3. 2009 Wastewater Servicing Population was determined assuming that all approved population growth within this area would be fully serviced (i.e. 2006 Servicing Population + change in population from 2006 – 2009).
4. Additional Population Potential (APP) was based upon the adopted Simcoe County Official Plan.

Based on projected growth provided through Simcoe County's Official Plan, the 2031 population of Severn was determined to be approximately 20,200 people. Based on this additional population potential, there are no negative servicing gaps for the municipal water services. A negative wastewater treatment servicing gap exists for the 2031 Township of Severn population. It is expected the negative servicing gap will be addressed with current system upgrades, new municipal systems or private individual or communal systems.

Table 4.12.9.1: Township of Severn Servicing Gap Analysis

Town of Severn																				
Water Supply Systems																				
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
Severn Estates	109	131	47	62	50	109	199	34	62	137	Data unavailable at this time					Data unavailable at this time				
Bass Lake Woodlands	818	440	548	324	100	818	919	291	327	592										
Sancastle Estates	389	251	236	167	100	389	992	69	176	816										
Washago	544	716	252	365	350	544	1,040	191	365	675										
Coldwater	2,138	2,020	1,377	1,430	600	2,138	3,849	816	1,469	2,380										
West Shore	2,780	2,746	No Data	2,250	500	2,780	6,331	988	2,250	4,081										
Total	6,778	6,304	2,460	4,598	1,700	6,778	13,330	2,389	4,649	8,681										

Town of Severn																						
Water Supply Systems																						
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps						
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)		
Washago	228	712	92	318	400	228	410	203	365	45	Data not available at this time					Data not available at this time						
Coldwater	545	1765	371	1323	450	921	2,767	489	1,469	1,298												
West Shore	1390	3089	No Data	2250	850	1,390	6,617	455	2,166	4,451												
Total	2,163	5,566	463	3,891	1,700	2,539	9,794	1,147	4,000	5,794	-	7,203	700	-	2,109	-	605	-	4,003	250	1,541	442

GENERAL NOTES

Per capita demand and flow rates based upon 2009 data in table
 Total Serviced Population for 2009 assumed that all new growth within this Township would be fully serviced.
 2009 Rated Capacity data was obtained through the Township of Severn's website.
 2009 Equivalent Population was based on 2006 Design per capita flows and demands.

4.13. Township of Springwater Servicing Gap Analysis

4.13.1. Township of Springwater Supporting Documentation

The following information and data was reviewed specific to Springwater and was presented within this Study. The information obtained for the Township of Springwater to-date is listed as follows:

1. Anten Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
2. Del Trend Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
3. Elmvale Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
4. Hillsdale Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
5. Midhurst Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
6. Minesing Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
7. Phelpston Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
8. Snow Valley Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
9. Vespra Downs Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report.
10. Snow Valley Highlands Wastewater Treatment Plant Annual Operating Report.
11. Elmvale Wastewater Treatment Plant Annual Operating Report.
12. Snow Valley Lowlands Wastewater Treatment Plant Monthly Flow Report, OCWA, 2010.
13. Midhurst Secondary Plan, August 2008.
14. Hillsdale Secondary Plan, October 2008.
15. Class Environmental Study for the Midhurst Water, Wastewater and Transportation Master Plan Phase 1 and 2 Report, Ainley and Associates Limited, July 2009.
16. Additional information within this document was obtained through the Township of Springwater's Municipal website and interviews conducted with the County as part of this Study in July 2010 as well as October 2010.

4.13.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the Township for 2006 was 18,100. Based on the 12.4% growth between 2001 and 2006, the estimated 2009 population was determined to be approximately 19,446 people (growth of 1,346 people). This was compared with the Township of Springwater building permits from the past three years.

Based on residential building permits obtained through Simcoe County, the total number of residential units for the Township of Springwater from 2006 - 2009 was 343 which equates to 1,064 people (assuming 3.1 people/unit based on 2006 Census data) additional population. It was determined through discussions with the Township that a growth of approximately 1,350 people was a more realistic value. As such, a population growth of 1,346 people will be used within this Study.

Current and projected populations for the Township of Springwater are presented in **Table 4.13.2.1**. Projected populations are based on proposed County Official Plan 2031 allocated growth as well as allocated growth for 2031 as identified in the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 document.

Please refer to **Figure No. LU-18** from **Appendix A-2** for the Township of Springwater current Land use designation map.

Table 4.13.2.1: Simcoe County Official Plan Projected Growth Rate - Township of Springwater

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
Town of Springwater	14,793	16,104	18,100	12.4%	2.5%	19,446	1,346	24,000	5,900	4,554	26,500	8,400	7,054

GENERAL NOTES:

1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.

4.13.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within which Township of Springwater. Given its proximity to the City of Barrie and recreational areas such as Lake Simcoe and Georgian Bay, there is expected to be moderate growth within the Township. Due to its proximity to Lake Simcoe, consideration should be given with regards to projected population for the significant and increasing seasonal or non-permanent resident population that exist within the Township of Springwater and surrounding area.

Based on information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected populations for 2031 within this Township ranged from 24,000 people based on the proposed provincial allocation and 26,500 people based on the Simcoe County Official Plan. From a base population of 18,100 in 2006 the population difference by 2031 ranges from 5,900 to 8,400. This equates to an average annual increase of between 236 to 336 people.

Township of Springwater Proposed Growth

Based on information provided through the Township's Planning Department and through information presented within the Township's Official Plan, significant growth is expected to occur within this municipality by 2031 which is expected to exceed the population growth allocated through Simcoe County's Official Plan as well as the Province's Place to Grow Plan. Based on the Township's official plan, there are nine (9) urban settlement areas that are expecting growth by 2031. These areas are as follows:

1. Anten Mills
2. Centre Vespra
3. Elmvale
4. Hillsdale
5. Midhurst
6. Snow Valley

The settlement areas of Minesing, Orr Lake and Phelpston are anticipating no growth by 2031. Hillsdale, Anten Mills, Snow Valley and Centre Vespra are anticipating average growth. While the Communities of Elmvale and Midhurst are expecting a significant amount of growth due to their proximity to the City of Barrie and their accessibility to major transportation corridors such as the 400 highway. Based on information presented by the Township, over 10,000 new units are expected to be developed within the communities of Hillsdale (700), Centre Vespra (800), Snow Valley (250) and Midhurst (10,000) by 2031.

Community of Midhurst:

Due to its proximity to the City of Barrie, Midhurst is expected to have significant population growth. As a result of this, in 2008 the Township of Springwater retained Ainley and Associates to complete the Midhurst Secondary Plan Environmental Assessment to address future water, wastewater and transportation development within this community as a result of the projected population increase by 2031.

The Midhurst Secondary Plan area covers an area of approximately 3,500 hectares. The current population within the Midhurst community is approximately 3,500 people residing in 1,130 dwelling units. From this report, three (3) major areas of development within Midhurst were determined. These areas are as follows:

Development Area 1: Lands North of Doran Road – 2,379 residential units have been proposed at 13.33 units/ha at 40 persons/ha. This equates to a proposed population of approximately 7,137 people.

Development Area 2: Lands South of Doran Road - 2,920 residential units have been proposed at 13.33 units/ha at 40 persons/ha. This equates to a proposed population of approximately 8,760 people.

Development Area 3: Lands West of Midhurst on Carson Road - 2,559 residential units have been proposed at 13.33 units/ha at 40 persons/ha. This equates to a proposed population of approximately 7,677 people.

NOTE: Please refer to the Midhurst Secondary Plan for additional information regarding projected population growth within the Community of Midhurst.

Based on the significant proposed growth, water and wastewater infrastructure and additional treatment facilities will be required to accommodate for this additional population growth. Based on information presented within this Master Plan, the projected maximum daily demand (MDD) for water servicing was approximately 20,858.5 m³/day. With regards to wastewater servicing, the projected average daily flow generated as a result of this growth was determined to be approximately 12,314.3 m³/day. To accommodate for this additional water and wastewater servicing demands, Ainley has presented the following options considered as part of the environmental assessment which was completed.

Water Servicing

- Option A: Do nothing.
- Option B: Obtain water supply from the City of Barrie.
- Option C: Expand existing municipal well site capacities.

Option D: Develop new municipal wells on new sites, one (1) system.

Option E: Develop new municipal wells on new sites, four (4) separate systems.

Wastewater Servicing

Option A: Do nothing.

Option B: Convey wastewater to the City of Barrie via Highway 26/27.

Option C: Convey wastewater to Snow Valley WWTP and/or future Vespra Plant.

Option D: Single new wastewater treatment facility located on proposed development lands with one disposal site.

Option E: Single new wastewater treatment facility located on proposed development lands with multiple disposal sites.

Option F: Two (2) new wastewater treatment facilities located on proposed development lands with two (2) disposal sites.

As presented within this Class EA, the preferred solution with regards to future water servicing is as follows:

1. Develop new wells along Doran Road and Russell Road to provide additional water servicing within the proposed development area.
2. Construct a new water treatment facility with a corresponding standpipe. The final location of this proposed facility would be determined based on areas of future development.
3. Construct a raw water transmission from all existing wells to a treatment/storage facility.
4. Construct a treated watermain transmission from the proposed treatment facility to various areas where development occurs.
5. Construct an internal water distribution system to service a proposed development area.
6. Construct an in-ground water storage facility, complete with a pump station and emergency power supply for water distribution along Carson Road.

With regards to future wastewater servicing, the preferred solution is as follows:

1. Construct a new wastewater treatment facility with an approximately ADF of 10,600 m³/day.
2. This facility must be capable of future expansion to accommodate additional population growth.
3. The effluent discharge pipe is to be located at Willow Creek and will be sized to service all proposed growth as stated within the Midhurst Secondary Plan.

-
4. Construct a wastewater collection system within the areas of development with pump stations and forcemains as required.

As indicated by the Township's Public Works Department, this Class EA has been submitted to the MOE for review and comments. A notice of completion has been issued, the comment period has elapsed and the Town has responded to any comments that the MOE provided.

Community of Hillsdale:

Based on information provided within the Hillsdale Settlement Area Secondary Plan completed by Ainley and Associates Limited in 2008, the community of Hillsdale is expecting significant future growth. The community of Hillsdale is located within the northeast region of the Township of Springwater within close proximity to the Highway 400 corridor which bisects Highway 93 (Penetanguishene Road). The current population of the community is approximately 912 people with a projected population build-out of approximately 4,485 people. Based on information from the Hillsdale Settlement Area Secondary Plan, the following areas within the community are expecting to accommodate for this growth:

1. 120 residential units have been proposed along Concession Road 1.
2. 14 residential units subdivision have been proposed along Scarlett Line.
3. An estimated 173 residential units within a development area of 13 hectares has been proposed along Martin Street
4. An estimated 476 residential units and a seniors residence block has been proposed within a development area of 29 hectares has been proposed along Old Penetanguishene Road just north of the community.

Please note that specific land along Concession Road 1 have been set aside for a proposed business park.

The information presented herein and discussions with the Township of Springwater indicate that growth within this municipality is expected to exceed the Simcoe County and Provincial Approved population allocations. For the purposed of this study, population allocation data as presented within Simcoe County's Official Plan will be used when conducting the servicing gap analysis for the Township of Springwater.

4.13.4. Projected Employment Growth

Through information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected employment growth for 2031 ranges between approximately 600 jobs forecast by the Province, and 1,700 jobs forecast by the

County. This equates to an additional 300 to 850 people that will require water and wastewater servicing.

Employment Service Population Assumptions:

Section 5.5.2.1 within the *Guidelines for the Design of Sanitary Sewage Systems (MOE 2008)* indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the *Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems* notes that the average daily flows generated within an employment environment ranged from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent employment growth population (positions). Projected employment growth for Township of Springwater is presented in **Table 4.13.4.1**.

Table 4.13.4.1: Simcoe County Official Plan Projected Employment Growth Rate - Township of Springwater

Town/Township	EMPLOYMENT GROWTH										
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031	Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
Town of Springwater	5,000	6,700	5,600	34.0%	12.0%	1.4%	0.5%	1,700	600	850	300

GENERAL NOTES:
 1. Based on Employment Growth obtained through Simcoe County's Official Plan and the Greater Golden Horseshoe Growth Plan 2011

As indicated by the Township of Springwater, the Midhurst and Hillsdale Secondary Plans have additional information regarding employment growth which is not consistent with the employment allocated through Simcoe County's Official Plan. Similar to projected population growth, the Township of Springwater, based on their Official Plan is anticipating higher employment growth projections in comparison to the County's Official Plan. For the purpose of this study, projected employment growth as presented within Simcoe County's Official Plan will be used for this study.

4.13.5. Water Supply

Please refer to **Figure No. WAT-18** from **Appendix A-4** for the Township of Springwater's current water servicing plan.

The Township of Springwater has nine (9) existing groundwater supply systems that currently service the majority of the population for the Township of Springwater. As stated by the Township, all water servicing connections are metered. These facilities are as follows:

1. Anten Mills
2. Del Trend
3. Elmvale
4. Hillsdale
5. Midhurst
6. Minesing
7. Phelpston
8. Snow Valley
9. Vespra Downs

NOTE: Sodium Silicate is added to the Del Trend, Midhurst, Vespra Downs, and Snow Valley water systems for iron sequestration.

Anten Mills

The Anten Mills Water Treatment Plant is located at 35 Luella Blvd. in the community of Anten Mills. Untreated water is obtained from three (3) active groundwater wells located on site. Each well is equipped with a submersible well pump and flow meter. Sodium hypochlorite is injected into the raw header by one (1) of two (2) chemical feed pumps. If one pump fails, the additional pump is automatically initiated. Treated water then travels to a 318 m³ above ground storage tank where it achieves the required contact time. The maximum rated capacity of this facility is 1,558 m³/day and services approximately 480 people based on information provided through the Township.

Del Trend

The Del Trend Water Treatment Plant is located at 5 Paddy Dunn's Circle in the community of Midhurst. This facility services the Carson Ridge Estates and Springwater Country Estates subdivisions. Untreated water is supplied by three (3) active groundwater wells located on-site. Each well is equipped with a submersible well pump and flow meter. Untreated water is pumped to a common header where it is treated with sodium hypochlorite. Contact time is provided in two (2) underground double celled concrete reservoirs with a total capacity of 676.8 m³. This facility services approximately 358 people based on information provided through the Township.

Elmvale

The Elmvale Water Treatment Plant is located at 6 Shaw Street in the community of Elmvale. Untreated water is supplied by two active groundwater wells. Each of these wells is equipped with a vertical turbine pump and flow meter. The wells are each located within the pump house on the property. Untreated water is treated with sodium hypochlorite. A designated forcemain provides the appropriate contact time prior to entering the glass lined storage tanks located at the booster station at 11 William Street. The two (2) storage tanks have a combined capacity of 2,120 m³ and provide additional contact time. This facility services approximately 2,625 people based on information provided through the Township.

Hillsdale

The Hillsdale Water Treatment Plant is located at 140 Scarlett Line in the community of Hillsdale. Untreated water is supplied by three (3) active groundwater wells located on site. Each of these wells is equipped with a submersible well pump and flow meter. The untreated water is treated with sodium hypochlorite by one (1) main duty chemical metering pump. The distribution system is comprised of PVC piping and services over 333 units. Water is stored in a glass lined storage tank located on Mill Street West and has a rated capacity of 1,487 m³. This facility services approximately 1,176 people based on information provided through the Township.

Midhurst

The Midhurst well supply is comprised of three (3) plants: Idlewood, Greenpine and Carson treatment facilities. The Midhurst well system supply is comprised of four (4) active groundwater wells. Two (2) wells are located adjacent to the Idlewood pump house, one (1) well is located adjacent to the Greenpine pump house and one (1) well is located adjacent to the Carson pump house. Each well is equipped with a submersible well pump and flow meter. Untreated water is treated using Sodium hypochlorite and is injected at each pump house. Sodium silicate is injected for iron sequestration. This facility services approximately 2,867 people based on information provided through the Township.

Minesing

The Minesing Water Treatment Plant is located at 2347 Ronald Road in the community of Minesing. Untreated water is supplied from four (4) active groundwater wells through four (4) separate water headers. Each well is equipped with a submersible well pump and flow meter. Untreated water is pumped to the pump house where it is treated with sodium hypochlorite. There are two (2) storage tanks

in Minesing with a capacity of 600 cubic metres each. This facility services approximately 661 people based on information provided through the Township.

Phelpston

The Phelpston Water Treatment Plant is located at 2 Hall Street in the community of Phelpston. This facility exclusively services the Shamrock Meadows subdivision. Untreated water is supplied by two (2) active groundwater wells. Each of these wells is located on site and is equipped with a submersible well pump and flow meter. Untreated water is then treated using Sodium hypochlorite and is pumped to an underground dual-celled reservoir with a total volume of 635 m³. This facility services approximately 180 people based on information provided through the Township.

Snow Valley

The Snow Valley Water Treatment Plant is comprised of three (3) facilities located in Snow Valley. The 'old' Snow Valley plant is located at 2602 George Parkway, the 'Highlands' Snow Valley Plant is located at 15 Alpine Drive and the 'Booster Station' is located at 29A Eder Trail. Untreated water is supplied by four (4) active groundwater wells. Two (2) wells are located at the old plant and two (2) wells are located at the new booster station site. All four (4) wells are equipped with submersible well pumps and flow meters. Untreated water is treated using sodium hypochlorite and is pumped to three (3) storage systems, one (1) of which is located within the Snow Valley Lowlands and two (2) of which are located within the Snow Valley Highlands. This facility services approximately 1,141 people based on information provided through the Township. NOTE: This facility did have a re-chlorination facility located on Dobson Road which was decommissioned in 2008.

Vespra Downs

The Vespra Downs Water Treatment Plant is located at 13 Parr Blvd. and supplies water to homes along Parr Blvd. Untreated water is supplied by two (2) active groundwater wells. Each of these wells is located on site and is equipped with a submersible well pump and flow meter. Untreated water is then treated using sodium hypochlorite. This facility services approximately 135 people based on information provided through the Township.

As indicated by the Township, all residents presently being serviced by municipal water are fully metered. It was assumed that the remaining 2009 population within the Township of Springwater is serviced by private wells or communal water supply systems.

4.13.6. Wastewater Treatment

Please refer to **Figure No. SAN-18** from **Appendix A-5** for the Township of Springwater's current wastewater servicing plan.

Currently, the Township of Springwater has three (3) wastewater treatment facilities within the Township. These three (3) facilities are as follows:

Elmvale Wastewater Treatment Plant

The Elmvale WWTP is a Class 2 wastewater treatment facility within the Town of Elmvale. The maximum rated capacity of this system is approximately 1,800m³/day and services a population of approximately 2,600 people. Based on the 2009 Elmvale WWTP Annual Report, the sewage works provided adequate treatment within the required average daily flows for all seven (7) effluent parameters. The plant operated at, on average, 61.1% of its rated capacity. This facility services approximately 2,625 people based on information provided through the Township.

Snow Valley Highlands Wastewater Treatment Plant

The Snow Valley Highlands WWTP is a Class 1 wastewater treatment facility within the Township of Springwater. The maximum rated capacity of this system is approximately 180m³/day. Based on the 2009 Snow Valley WWTP Annual Report, the sewage works provide adequate treatment within the required average daily flows for all seven (7) effluent parameters. The plant operated at, on average, 34.4% of its rated capacity. This facility services approximately 595 people based on information provided through the Township.

Snow Valley Landing Wastewater Treatment Plant

The Snow Valley Landing WWTP which is also known as Royal Oak is a Class 1 wastewater treatment facility within the Township of Springwater. Based on information provided by the Township and the Ontario Clean Water Agency (OCWA), this facility has a rated capacity of 130 m³/day with approximately 20 lots presently being serviced. This equates to an approximate service population of approximately 62 people based on 3.1 people/household. Due to the fact that this facility has only been in operation since February 2010, there are no historical flows available. The average daily flow (ADF) from February to September 2010 is approximately 17.6 m³/day. Due to the lack of additional data available for this facility, the ADF for first half of 2010 will be used for the purpose of this study.

It was assumed that the remaining population within the Township of Springwater was serviced by private or communal septic/wastewater treatment systems.

4.13.7. Extent of Water and Wastewater Infrastructure

The Township of Springwater has provided a copy of the existing water and sewer mapping.

4.13.8. Additional Water and Wastewater Systems

Non-Municipal Communal Water and Wastewater Systems (Township of Springwater)

The following properties/communities are using a combination of private communal water and/or wastewater treatment systems to service their current population. These properties/communities are as follows:

- 1. New Development – Springwater Lakes Adult Life Style:** This proposed retirement complex will contain 700 to 800 condominium units, if constructed. This property will use a private well and communal type septic system to service its residents.
 - 2. To Jo Christian Family Campground:** This property is located on Rural Road 3 in the Community of Elmvale just outside of the Town of Wasaga Beach. The campground uses both private well and individual type septic systems to service the property.
 - 3. KOA Campground:** This property is located on Penetanguishene Road and uses both private well and individual type septic systems to service this property.
 - 4. Wasaga Pines Campground:** This property is located on River Road West just outside of the Town of Wasaga Beach. The campground currently uses both private well and individual type septic systems to service this property.
- Snow Valley Ski Resort:** This property is located on Vespra Valley Road within the community of Minesing and uses a private communal wastewater treatment system for wastewater servicing. Based on information provided through the Township, Snow Valley Ski Resort is serviced by municipal water.

Please note that additional communal water and/or septic systems may be present within the Township of Springwater. Additional information from the Township is required.

External Water and Wastewater Connections

Based on information provided through the Township, one (1) external servicing connection exists within the Township of Springwater. Five (5) to ten (10) lots located within the Township of Oro-Medonte are presently being serviced by the Hillsdale Water Supply System. No additional external water and/or wastewater servicing connections from surrounding Towns/Townships exist at this time.

4.13.9. Projected Servicing Gap

Based upon information obtained through the Township of Springwater, a servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This is presented in **Table 4.13.9.1** and includes both an assessment of the County OP and Provincial (Growth Plan) population projections for 2031.

Servicing Gap General Assumptions:

1. Township's historical per capita average daily flows and per capita maximum daily flows were obtained through the Township of Springwater.
2. 2009 water serviced population was obtained through the Township of Springwater.
3. 2009 wastewater servicing population was determined based on information from the WWTP 2009 Annual Operating Reports.
4. Additional population potential (APP) was based upon the Simcoe County Official Plan.
5. It was assumed that all future growth within the Township of Springwater would be fully serviced.

As presented in **Table 4.13.9.1**, there is sufficient water system capacity to accommodate the projected Simcoe County Official Plan growth (2031) in the Township. There is presently residual wastewater treatment capacity in the Township at the Elmvale and Snow Valley systems. As indicated within this Study, a Class EA has been completed, notice of completion issued, the comment period has elapsed and the Town has responded to any comments that the MOE has provided to ensure that the Township has the additional water and wastewater treatment capacity to accommodate all future growth within the Township.

Table 4.13.9.1: Township of Springwater Servicing Gap Analysis

Town of Springwater																				
Water Supply Systems																				
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
Anten Mills	1,558	1,259	363	348	900	1,558	1,074	696	480	594	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time
Del Trend	786	381	597	318	50	1,074	671	573	358	313										
Elmvale	4,546	4,490	2,038	2,289	2,200	4,546	9,870	1,209	2,625	7,245										
Hillsdale	1,185	1,053	601	1,068	-	1,434	2,170	777	1,176	994										
Mdhurst	6,850	5,580	3,241	2,904	2,700	6,479	5,774	3,217	2,867	2,907										
Miniseng	740	579	742	639	50	740	1,011	484	661	350										
Snow Valley	1,400	905	713	507	400	2,600	3,566	832	1,141	2,425										
Vespera Downs	169	83	127	69	-	169	140	163	135	5										
Phelpston	Unknown	Unknown	Unknown	Unknown	Unknown	1,202	1,195	181	180	1,015										
Total	17,234	14,330	8,422	8,142	6,200	19,802	25,472	8,132	9,623	15,849										

Town of Springwater																								
Wastewater Treatment Systems																								
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps								
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)				
Elmvale	1800	3425	1094	2289	1150	1,800	4,241	1,114	2,625	1,616	Data not available at this time	Data not available at this time	Data not available at this time	Data not available at this time	Data not available at this time	Data not available at this time	Data not available at this time	Data not available at this time	Data not available at this time	Data not available at this time				
Snow Valley Highlands	180	378	62	130	248	180	1,727	62	595	1,132														
Snow Valley Lowlands	N/A					120	413	18	62	351														
Total	1,980	3,803	1,156	2,419	1,398	2,100	6,382	1,194	3,282	3,100	-	7,054	850	-	4,804	-	1,748	-	4,554	300	-	1,754	-	638

GENERAL NOTES

Per capita demand and flow rates based upon 2009 data in table
 Serviced Population for 2009 was obtained through the Township of Springwater
 2009 Rated Capacity data was obtained through the Township of Springwater
 2009 Equivalent Population was based on 2009 Design per capita flows and demands.

4.14. Township of Tay Servicing Gap Analysis

4.14.1. Township of Tay Supporting Documentation

The following information and data was reviewed specific to The Township of Tay and is presented within this Study. The information obtained for the Township of Tay is listed as follows:

1. QMS Operational Plan: Victoria Harbour WTP and Rope WTP.
2. Victoria Harbour WWTP Class Environmental Assessment Study, Township of Tay: Public Information Centre No. 1.
3. Victoria Harbour Wastewater Treatment Plant: 2009 Capacity Report, R.J Burnside & Associates Limited.
4. Port McNicoll Wastewater Treatment Plant: 2009 Capacity Report, R.J Burnside & Associates Limited.
5. Additional information within this document was obtained through the Township of Tay's Municipal website and through project interviews with the County conducted as part of this study.

4.14.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the Township for 2006 was 10,100. With the 10.2% growth between 2001 and 2006 it was estimated the 2009 population was approximately 10,720 people (growth of 620 people). This was compared with the Township of Tay building permits from the past three (3) years.

Based on residential building permits obtained through Simcoe County, the total number of Residential units for the Township of Tay from 2006 - 2009 was 101 units which equates to 283 people (assuming 2.8 people/unit) additional population.

Based on information provided through the Township, the change in population from 2006 to 2009 was within the growth range of 250-300 people. As such, the estimated population growth of 283 people will be used for this study. Current and projected populations for the Township of Tay are presented in **Table 4.14.2.1**. Projected populations are based on proposed County Official Plan 2031 allocated growth as well as allocated growth for 2031 as identified in the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 document.

Please refer to **Figure No. LU-19** from **Appendix A-2** for the Township of Tay current land use designation map.

Table 4.14.2.1: Simcoe County Official Plan Projected Growth Rate - Township of Tay

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
Town of Tay	10,695	9,162	10,100	10.2%	2.0%	10,383	283	11,400	1,300	1,017	11,300	1,200	917
GENERAL NOTES:													
1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.													

4.14.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within the Township of Tay. Given its proximity to recreational areas such as Georgian Bay, there is expected to be some growth within the Township. The Township of Tay has the physical capability to grow beyond the population and household figures noted below, but may be limited by constraints to the continued expansion of the sewer and water systems. Due to its proximity to Georgian Bay, consideration should be given with regards to projected population for the significant and increasing seasonal or non-permanent resident population that exists within the Township of Tay and surrounding area.

Based on information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected populations for 2031 within this Township ranged from 11,400 people based on the proposed provincial allocation and 11,300 people based on the Simcoe County Official Plan. From a base population of 10,100 in 2006, the population difference by 2031 ranges from 1,300 to 1,200, respectively. This equates to an average annual increase of between 48 to 52 people.

The majority of future growth within the Township of Tay will be focusing within the Victoria Harbour and Port McNichol urban areas. As such, the Township has undertaken a Class Environmental Assessment to address the community of Victoria Harbour's future sanitary servicing demands.

The following proposed major developments have been considered in the Township of Tay:

Port McNicoll Development (Skyline)

As indicated by the Township of Tay, the proposed Port McNicoll Development developed by Skyline, has been proposed to the municipality. At this time, two (2) major developments by Skyline have been proposed within the Township of Tiny (Port McNicoll Development) and the Township of Oro-Medonte (Horseshoe Valley Development) which will encompass approximately 1,700 acres of land between both developments. Based on information provided by the Township of Tay, development of the Port McNicoll development has commenced with its first phase of construction to be completed in 2011. At this time, it is unclear on the magnitude of development expected to occur. Consequently, this proposed development will not be incorporated into this study.

Township of Tay Growth Projections

In 2008, a projected growth for the Township of Tay was performed by Watson & Associates Economists Ltd. to estimate future (2031) growth within the Township. Based on this report, projected population growth within the Township is illustrated in the following table:

Township of Tay Projected Growth (Watson 7 Associated, 2008)

Location	Timing	Permanent Units	Seasonal Units	Net Population Increase	Seasonal Population 50%	Total Population (People)	Employment Increase (People)
Port McNicoll	2008-2031	171	92	173	120	293	41
Victoria Harbour	2008-2031	471	92	891	120	1,011	247
Water Only	2008-2031	42	23	79	30	109	20
Rural Areas	2008-2031	167	23	282	30	312	120
Tay Township	2008-2031	851	230	1,425	300	1,725	428

These findings indicate that the projected growth forecasted by the Township, exceeds the population allocation provided through Simcoe County's Official Plan. For the purpose of this Study the Simcoe County projected 2031 growth was used.

4.14.4. Projected Employment Growth

Through information provided through the *Simcoe County Official Plan* and the Places to Grow Act, the projected employment growth for 2031 in the Township of Tay ranges between approximately 300 jobs forecast by the Province, and 500 jobs forecast by the County. This equates to an additional equivalent population of between 150 and 250 that will require water and wastewater servicing.

Employment Service Population Assumptions:

Section 5.5.2.1 within the *Guidelines for the Design of Sanitary Sewage Systems (MOE 2008)* indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the *Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems* notes that the average daily flows generated within an employment environment ranged from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent employment growth population. Projected employment growth for the Township of Tay is presented in **Table 4.14.4.1**.

Table 4.14.4.1: Simcoe County Official Plan Projected Employment Growth Rate - Township of Tay

Town/Township	EMPLOYMENT GROWTH										
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031	Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
Town of Tay	1,500	2,000	1,800	33.3%	20.0%	1.3%	0.8%	500	300	250	150

GENERAL NOTES:

1. Based on Employment Growth obtained through Simcoe County's Official Plan and the Greater Golden Horseshoe Growth Plan 2011

4.14.5. Water Supply

Please refer to **Figure No. WAT-19** from **Appendix A-4** for the Township of Tay's current water servicing plan.

The Township of Tay had four (4) surface water treatment systems in operation. As of 2009, the Midland Bay and Bayberry Estates water supply systems were eliminated and the Waubashene surface water system was decommissioned. As a result of these changes, the populations that were once serviced on these systems are now being serviced by the remaining two (2) surface water systems (Victoria Harbour/ Port McNicoll and Rope WTP). Both of these systems are capable of servicing the current water supply demands from the Township of Tay, but are not capable of servicing significant additional approved population growth. The Township has considered the implementation and installation of water meters on all individual connections to a centralized water supply system. The Township has also considered, where appropriate, the integration of water supply systems to improve the efficiency and operation of the systems.

Victoria Harbour/ Port McNicoll WTP

Victoria Harbour WTP and Infrastructure

The Victoria Harbour Water Treatment Plant draws its untreated source water from Midland Bay within Georgian Bay. The intake structure is located approximately 140 m from shore in approximately five (5) m of water. This intake structure connects to the intake pipe which is comprised of approximately 131 m of 400 mm pipe that extend to a low lift pump station.

A pre-chlorination system, used mainly for zebra mussel control, at the intake is situated within the low lift station and comprised of two (2) sodium hypochlorite solution day tanks and two (2) sodium hypochlorite metering pumps. The treatment system for this facility primarily uses a combination of ultraviolet (UV) irradiation and chlorination to treat its water prior to distribution. The maximum rated capacity of this system is approximately 7,850 m³/day.

This facility also contains a standpipe located on Jephson Street and has a maximum storage capacity of 4,500m³. The Victoria Harbour Water Treatment Plant drinking water system provides drinking water to approximately 2,830 units or an estimated population of 7,900 people (assume 2.8 people/unit based on 2006 Census Data). This includes all connections to Port McNicoll, Waubaushene and Victoria Harbour areas. This facility is capable of supplying a maximum population of 8,000 people.

As of June 2010, the Township issued a request for proposal with regards to a Class Environmental Assessment for the Victoria Harbour WTP. Through the completion of this Class EA, the Township hopes to obtain a preliminary design for the provision of additional treatment capacity within this facility to accommodate for the twenty (20) year forecasted growth within Victoria Harbour. At this time, no additional Class EAs have been initiated for this facility.

Port McNicoll Booster and Re-Chlorination Station

The Port McNicoll booster pumping and re-chlorination station is located on the southeast corner of the Talbot Street and Triple Bay Road. This facility directs and re-chlorinates treated water which provides water servicing to Bayberry Estates and Midland Bay Woods. Approximately 360 persons are serviced by this facility. This facility also consists of a standpipe located at Simcoe and Eighth Street and provides 2,375 m³ of storage for the community of Port McNicoll.

Waubashene Booster and Re-Chlorination Station

The Waubashene booster station pumping station and re-chlorination is situated within the former Waubashene Water Treatment Plant at the base of Pine Street in the community of Waubashene. The Waubashene booster pumping station and re-chlorination facility consists of a 200 mm diameter suction header appurtenances, connected to two (2) in-line booster pumps (one (1) duty and one (1) stand-by), each rated at a capacity of at least 14.2 L/s at a dynamic head (TDH) of 60 m, complete with pressure controls to operate the pumps in-line with the Waubashene standpipe. The Waubashene standpipe has a total storage volume of 1,500 m³ and can provide approximately 2.5 days of water servicing under the maximum daily demand. The Waubashene distribution system supplied by the booster station services a population of approximately 1,200 people. The serviced area is primarily a residential and cottage community, with a few commercial and small industrial operations.

Rope WTP

The Rope Water Treatment Plant provides treated water for the Rope Subdivision. This drinking water system includes a membrane filtration system with enhanced coagulation for particulate removal, ultraviolet irradiation for its primary treatment, and a sodium hypochlorite system for its secondary treatment. The filtration component of the works consist of two (2) membrane trains, each consisting of one (1) ZENON Environmental EC-04 enhanced coagulation skid and one (1) ZENON Environmental MDW-04 packaged membrane water treatment plant. This facility has a maximum rated capacity of 274 m³/day. The system presently serves a population of approximately 60 people.

It was assumed that the remaining population within the Township of Tay is presently being serviced by privately own wells.

4.14.6. Wastewater Treatment

Please refer to **Figure No. SAN-19** from **Appendix A-5** for the Township of Tay's current wastewater servicing plan.

The Township of Tay has two (2) Class 2 wastewater treatment plants. These two (2) facilities are as follows:

Victoria Harbour Wastewater Treatment Plant (WWTP)

The Victoria Harbour WWTP is an extended aeration facility which discharges to Sturgeon Bay. This facility has an approved maximum rated capacity of 2,364 m³/day. As of 2009, this system currently services approximately 3,964 people within the community of Victoria Harbour. Based on historical average daily flows (2006-2009) of 438 L/cap/day for Victoria Harbour, the mean average daily flow (ADF) was determined to be approximately 1,735 m³/day which will be used for the purpose of this study.

As of 2008, the Township of Tay had retained XCG Consulting to perform a Class Environmental Assessment Study for this facility which has been recently completed. It was determined that the serviced population for Victoria Harbour would be approximately 5,022 residents with an average daily flow of approximately 2,824 m³/day. As such, this study concluded that the existing wastewater treatment facility would need to be expanded to accommodate for the proposed additional growth.

Port McNicoll Wastewater Treatment Plant (WWTP)

The Port McNicoll WWTP is an extended aeration facility which discharges to Sturgeon Bay. This facility has an approved maximum rated capacity of approximately 1,918 m³/day in 2009. This system currently services approximately 1,855 people within the community of Port McNicoll. Based on information provided through the 2009 Capacity Report completed by R.J. Burnside and Associates. Based on historical average daily flows (2006-2009) of 689 L/cap/day for Port McNicoll, the mean average daily flow (ADF) was determined to be approximately 1,278 m³/day.

As of 2009 plans to upgrade this facility's capacity have commenced with support from the federal government in the form of \$2.7 million in federal funding. The total cost of this project is estimated to be approximately \$8.1 million of which a portion was funded through government grants. The proposed works involved changing the filtration membranes from Type A to Type C Zenon filters, and increase the number of Type C Zenon membranes that are in operation which will increase the rated capacity of the facility. This work also entails the construction of a 5,000 m³ equalization storage tank which is expected to be in operation by the fall of 2010. This system would enhance the facility's ability to manage its biosolids production.

Due to the forecasted development expected to occur within Port McNicoll, a Class EA has been considered by the Township to address the community's growing demand for wastewater servicing.

It was assumed that the remaining population within the Township of Tay is presently being serviced by privately owned septic systems or communal systems.

4.14.7. Additional Water and Wastewater Systems

Non-Municipal Communal Water and Wastewater Systems (Township of Tay)

The following properties/communities are using a combination of communal water and/or wastewater treatment systems to service their current population. These properties/communities are as follows:

1. **Trailer Parks:** At this time it is unknown which trailer parks have communal water and/or wastewater servicing systems. Further information from the Township is required.

External Water and Wastewater Servicing Connections

Based on information provided through the Township of Tay's Public Works Department, the following properties/communities are currently being or proposed to be serviced through an external Township/Town connection:

1. **Doral Marina:** Doral Marina is presently connected to the Town of Midland's water distribution system. It is unknown how this property services its wastewater.
2. **Ste. Marie Marina:** This marina is presently connected to the Town of Midland's water distribution system. It is unknown how this property services its wastewater.

4.14.8. Extent of Water and Wastewater Infrastructure

The Township of Tay has provided mapping of existing serviced areas. As municipal servicing expands, these maps will need to be updated. Expansion of systems has various levels of approval through the Township of Tay.

4.14.9. Projected Servicing Gap

Based upon information obtained as part of this study, a servicing gap analysis for both water and wastewater servicing was performed for the 2009 population for the Township of Tay. This information is presented in **Table 4.14.9.1** and includes both an assessment of the County OP and Provincial (Growth Plan) population projections for 2031:

Servicing Gap General Assumptions:

1. The Township's historical average daily flows were obtained through the Township.
2. Maximum daily flows were assumed to remain constant from 2006 to 2009.
3. 2009 serviced population was based in part on 2006 data obtained through The County of Growth Management Study prepared by Ainley and Associated Limited.
4. Additional population potential (APP) was based upon the Simcoe County Official Plan.
5. It was assumed that all future growth within the Township of Tay would be fully serviced.

Based on projected growth provided through Simcoe County's Official Plan, the 2031 population of the Township of Tay was determined to be approximately 11,300 people. Based on this additional population potential, no servicing gaps are expected to occur for future water and wastewater servicing demands.

Table 4.14.9.1: Township of Tay Servicing Gap Analysis

Town of Tay																				
Water Supply Systems																				
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
Victoria Harbour/Port McNicoll	7,845	8,787	6,007	7,590	1,150	7,848	9,917	6,252	7,900	2,017	Data unavailable at this time					Data unavailable at this time				
Rope	274	221	188	80	150	274	117	141	60	57	Data unavailable at this time					Data unavailable at this time				
Total	8,119	9,008	6,195	7,670	1,300	8,122	10,033	6,393	7,960	2,073	-	917	250	906	728	-	1,017	150	906	728

Town of Tay																				
Wastewater Treatment Systems																				
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
Victoria Harbour	4264	9515	2792	5475	4050	2,364	5,401	1,735	3,964	1,437	Data not available at this time					Data not available at this time				
Port McNicoll						1,918	2,784	1,278	1,855	929	Data not available at this time					Data not available at this time				
Total	4,264	9,515	2,792	5,475	4,050	4,282	8,185	3,013	5,819	2,366	-	917	250	1,199	621	-	1,017	150	1,199	621

GENERAL NOTES:

Per capita demand and flow rates based upon 2009 data in table
 Serviced Population for 2009 assumed that all new growth within this Township would be fully serviced.
 2009 Rated Capacity data was obtained through the Township of Tay's website.
 2009 Equivalent Population was based on 2009 design per capita flows and demands.

4.15. Township of Tiny Servicing Gap Analysis

4.15.1. Township of Tiny Supporting Documentation

In addition, the following information and data was reviewed specific to the Township of Tiny and was presented within this Study. The information obtained for the Township of Tiny to-date is listed as follows:

1. Perkinsfield Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report
2. Bluewater Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report
3. Georgian Bay Estates Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report
4. Georgian Sands Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report
5. LA Place Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report
6. Tee Pee Point Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report
7. Sand Castle Estates Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report
8. Vanier Woods Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report
9. Wyevale Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report
10. Cook's Lake Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report
11. Georgian Highlands Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report
12. Lefaive Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report
13. Pennorth Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report
14. Rayko Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report
15. Sawlog Bay Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report
16. Thunder Bay Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report
17. Whip-Poor-Will 2 Well Supply System Ontario Regulation 170/03 Section 11- 2009 Annual Report

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18. Woodland Beach Well Supply System Ontario Regulation 170/03 Section 11-2009 Annual Report
 19. Additional information within this document was obtained through the Township of Tiny's Municipal website.

4.15.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the Township for 2006 was 10,754. The 19.0% growth between 2001 and 2006 was used to estimate the 2009 population of approximately 11,454 people (growth of 700 people). This was compared with the Township of Tiny building permits from the past three (3) years.

Based on residential building permits obtained through Simcoe County, the total number of residential units for the Township of Tiny from 2006 - 2009 was 250 units which equates to 700 people (assuming 2.8 people/unit). Discussions with the Township indicated that the population growth from 2006 - 2009 was within the range of 600 to 700 people. As such, a population growth of 700 people or a 2009 population of 11,454 was used for this study. Current and projected populations for the Township of Tiny are presented in **Table 4.15.2.1**. Projected populations are based on proposed County Official Plan 2031 allocated growth as well as allocated growth for 2031 as identified in the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 document.

Please refer to **Figure No. LU-20** from **Appendix A-2** for the Township of Tiny current land use designation map.

Table 4.15.2.1: Simcoe County Official Plan Projected Growth Rate - Township of Tiny

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
Town of Tiny	8,644	9,035	10,754	19.0%	3.8%	11,454	700	12,500	1,746	1,046	13,900	3,146	2,446
GENERAL NOTES:													
1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.													

4.15.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within the Township of Tiny. Given its proximity to recreational areas such as Georgian Bay, there is expected to be some growth within the Township of Tiny. The Township of Tiny has the physical capability to grow beyond the population and household figures noted below but may be limited by constraints to the continued expansion of the sewer and water systems. Due to its proximity to Georgian Bay, consideration should be given with regards to projected population for the significant and increasing seasonal or non-permanent resident population that exists within the Township of Tiny and surrounding area.

Based on information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected populations for 2031 within this Township ranged from 12,500 people based on the proposed provincial allocation and 13,900 people based on the Simcoe County's Official Plan. From a base population of 10,754 in 2006 the population difference by 2031 ranges from 1,746 to 3,146. This equates to an average annual increase of between 40 to 126 people.

Based on information provided through the Township of Tiny's Planning Department, a population growth of 3,146 people was considered to be a more accurate estimation for a 2031 population growth. It was also stated that, the majority of population growth within this municipality will be a result of retirees resulting in a population density reduction to approximately 2.0 people per unit.

The following proposed "major" developments have been considered within the Township of Tiny:

1. **Bluewater Development:** At this time, no additional information regarding the servicing population is available.
2. **Toanche Development:** At this time, no additional information regarding the servicing population is available.

4.15.4. Projected Employment Growth

Through information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected employment growth for 2031 ranges between approximately 300 jobs forecast by the Province, and 500 jobs forecast by the County for the Township of Tiny. This equates to an additional equivalent population of between 150 and 250 that will require water and wastewater servicing.

Employment Service Population Assumptions:

Section 5.5.2.1 within the Guidelines for the Design of Sanitary Sewage Systems (MOE 2008) indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems notes that the average daily flows generated within an employment environment ranged from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent employment growth population. Projected employment growth for the Township of Tiny is presented in **Table 4.15.4.1**.

Table 4.15.4.1: Simcoe County Official Plan Projected Employment Growth Rate - Township of Tiny

Town/Township	EMPLOYMENT GROWTH										
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031	Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
Town of Tiny	1,400	1,900	1,700	35.7%	21.4%	1.4%	0.9%	500	300	250	150

GENERAL NOTES:
 1. Based on Employment Growth obtained through Simcoe County's Official Plan and the Greater Golden Horseshoe Growth Plan 2011

4.15.5. Water Supply

Please refer to **Figure No. WAT-20** from **Appendix A-4** for the Township of Tiny current water servicing plan.

The Township of Tiny has nineteen (19) groundwater supply systems with no additional treatment facilities which currently service its population. As of 2010, an additional water supply system known as Tiny Cove Estates (water supply system) has also been constructed to provide additional water capacity in the event that the Township requires this supply.

These water supply systems are as follows:

-
1. Bluewater Beach – Located south of Concession 4W
 2. Sand Castle – Located on Concession 17.
 3. Cook's Lake
 4. Georgian Bay Estates – Located on Champlain Road south of Kettle's Beach
 5. Georgian Sands - Located between Concession 15 and 17 W
 6. Lafontaine – Service parts of the Village of Lafontaine
 7. Lefaive - Located north of Concession 11 W
 8. Pennorth - Located north of Concession 13 W
 9. Perkinsfield – Service parts of the Village of Perkinsfield
 10. Rayko – Located south of Concession 6 W
 11. Sawlog Bay – Located off of Champlain Road
 12. TeePee Point - Peek-a-Boo Trail area
 13. Thunder Bay – Located near Thunder Bay Lane
 14. Vanier Woods - Located south of Concession 17 W
 15. Whip-poor-will – Located north of Concession 12 E
 16. Woodland Beach – Located north of Concession 3 W
 17. Wyevale – Services parts of the Village of Wyevale
 18. Georgian Highlands
 19. Tiny Cove Estates (Currently Not In Operation) in Concession 18.

Please note that all nineteen (19) of these systems predominately service single detached residential units and do not service any major commercial or industrial areas.

Bluewater Water System

The Blue Water - water system consists of two (2) pump houses and presently services 263 houses or a population of approximately 736 people. The two (2) pump houses are: Pine Forest Pump house and Bluewater Pump house. Pine Forests has one (1) active groundwater well and three (3) 454 litre pressure tanks that act as temporary storage. The Bluewater Pump House is comprised of two (2) active groundwater wells, one (1) 215 m³ two-compartment storage reservoir and seven (7) 454 litre pressure tanks. All untreated water is treated with a sodium hypochlorite solution for disinfection prior to entering the chlorine contact main, reservoir and distribution system.

Sand Castle

The Sand Castle water system presently services 43 connected houses or an approximate serviced population of 121 people. The system is comprised of one (1) pumping station, two (2) active groundwater wells and six (6) 454 litre pressure tanks. All untreated water is treated with a sodium hypochlorite solution for disinfection prior to entering the chlorine contact main and distribution system.

Cook's Lake

The Cooks Lake water system presently services approximately 89 connected houses which equates to a serviced population of 250 people. The system is comprised of one (1) pumping station with two (2) active groundwater wells and has a storage reservoir which consists of two (2) compartments with 100 m³ of storage located below the building (currently not in service). Currently the five (5) 454 litre pressure tanks located in the pump station provide the required storage for this facility. Untreated water produced by the wells is treated with a sodium hypochlorite solution for disinfection prior to entering the contact main and distribution system.

Georgian Bay Estates

The Georgian Bay Estates water system presently services 228 connected houses to a population of approximately 639 people. The system consists of one (1) pump house, three (3) active groundwater wells, one (1) ultraviolet treatment system, one (1) underground reservoir 600 m³ in size and seven (7) 454 litre pressure tanks. The supply is considered to be groundwater under the influence of surface water (GUDI). All untreated water is treated by an ultraviolet light system and further with a sodium hypochlorite solution for disinfection prior to entering the reservoir and distribution system.

Georgian Sands

The Georgian Sands water system is comprised of three (3) separate pumping stations, four (4) active groundwater wells, and a 1,293 m³ above ground reservoir and presently services 686 connected houses which equates to a serviced population of approximately 1,921 people. Pump House #1 consists of one (1) well and two (2) 454 litre pressure tanks. Pump House #2 consists of two (2) wells and two (2) 454 litre pressure tanks. Pump House #14 consists of one (1) well and two (2) 454 litre pressure tanks.

A 1,293 m³ reservoir and interconnecting supply lines are also located within this facility. Pump house #1 is a seasonal station and is shut down during the winter months. All production wells used are treated with a sodium hypochlorite solution for disinfection prior to entering the chlorine contact mains, distribution system and reservoir. Due to the high usage of this facility, a Class Environmental Assessment including engineering and test drilling is ongoing to find an alternate source of water for the system.

Lafontaine

The Lafontaine water system presently services 69 connected houses or an approximate serviced population of 194 people. The Lafontaine system consists of one (1) pumping station and two (2) active groundwater wells. Treated water is stored in an in-ground reservoir with a capacity of 108 m³ and four (4) 454 litre pre-charged pressure tanks. Untreated water from the active wells is treated with a sodium hypochlorite solution for disinfection prior to entering the chlorine contact main, reservoir and distribution system. A Class Environmental Assessment including Engineering and test drilling is ongoing to find an alternate source of water for the system.

Lefaive

The Lefaive water system presently services 67 connected houses which equates to an approximate serviced population of 188 people. The system is comprised of one (1) pump house and two (2) active groundwater wells. Treated water is stored in five (5) 454-litre pre-charged pressure tanks. Both production wells are treated with a sodium hypochlorite solution for disinfection prior to entering the contact main and distribution system.

Pennorth

The Pennorth water system presently services 32 connected houses or an approximate serviced population of 90 people. This facility is comprised of one (1) pump house, two (2) active groundwater wells and three (3) 454 litre pressure tanks. The current production wells are treated with a 12% sodium hypochlorite solution for disinfection prior to entering the chlorine contact main and distribution system. Recently, an engineering study was commissioned to have the rated capacity of the system increased for future demand.

Perkinsfield

The Perkinsfield water system is comprised of two (2) pumping stations and presently services 189 connected houses to a serviced population of approximately 530 people. All active wells are treated with a sodium hypochlorite solution for disinfection prior to entering the reservoirs for chlorine contact time.

A municipal Class Environmental Assessment is currently being undertaken by the Township to increase the maximum daily volume of water in which the system is allowed to produce. For the purpose of this study, it was assumed that the rated capacity of this system is the existing rated capacity.

Rayko

The Rayko water system was commissioned in 1970 and presently services 36 connected houses or an approximate serviced population of 101 persons. This facility is comprised of one (1) pump house, two (2) active groundwater wells and three (3) 454 litre pressure tanks. Untreated water is treated with a sodium hypochlorite solution for disinfection prior to entering the chlorine contact main and distribution system.

Sawlog Bay

The Sawlog Bay water system presently services 44 connected houses or an approximate serviced population of 124 people. This facility is comprised of one (1) pumping station, two (2) active wells, a two-compartment reservoir located below ground, which provides a total storage capacity of 100 m³, and eight (8) 454 litre pressure tanks. All untreated water is treated with a sodium hypochlorite solution for disinfection and a polyphosphate solution for iron sequestering, prior to entering the reservoirs and distribution system.

TeePee Point

The Tee Pee Point water system presently services 91 connected houses or an approximate serviced population of 255 people. This facility consists of one (1) pumping station, two (2) active wells and four (4) 450 litre pressure tanks used for storage. All untreated water is treated with a sodium hypochlorite solution for disinfection and a polyphosphate solution for iron sequestering, prior to entering the chlorine contact main and distribution system.

Thunder Bay

The Thunder Bay water system was commissioned in 1982 and presently services 23 connected houses or an approximate serviced population of 65 people. This facility consists of one (1) pumping station, two (2) active wells and eight (8) 454 litre pressure tanks also used for storage. All untreated well water is treated with a sodium hypochlorite solution for disinfection prior to entering the chlorine contact main and distribution system.

Vanier Woods

The Vanier Woods water presently services 58 connected houses or an approximate serviced population of 163 people. This facility consists of one (1) pumping station, two (2) active wells, an underground reservoir and two (2) 307 litre pressure tanks

also used for storage. Untreated well water is treated with a sodium hypochlorite solution for disinfection prior to entering the chlorine contact main and reservoir.

Whip-Poor-Will

The Whip-Poor-Will II water system was commissioned in 1993 and presently services 67 connected houses or an approximate serviced population of 188 people. This facility is comprised of one (1) pumping station, two (2) active wells, an underground reservoir and three (3) 450 litre pre-charged pressure tanks. All untreated well water is treated with a sodium hypochlorite solution for disinfection prior to entering the reservoir for chlorine contact time.

Woodland Beach

The Woodland Beach water system was commissioned in 1993 and presently services 29 connected houses or an approximate serviced population of 82 people. This facility is comprised of one (1) pump house, two (2) active wells and five (5) 454 litre pre-charged pressure tanks. All untreated well water is treated with a sodium hypochlorite solution for disinfection and a polyphosphate solution for iron sequestering, prior to entering the chlorine contact main and distribution system.

Wyevale

The Wyevale water system is comprised of three pumping stations and presently services 257 connected houses or a residential population of approximately 720 people.

Georgian Highlands

The Georgian Highlands water system presently services 89 connected houses or an approximate service population of 250 people. This facility is comprised of one (1) pump house with one well and an elevated underground storage reservoir with a capacity of 36.2 m³. The production well is treated with a sodium hypochlorite solution for disinfection prior to entering the chlorine contact main, distribution system and storage reservoir.

NOTE: The Georgian Highlands and Sandcastle Estates are connected with regards to their distribution systems but are separated by a set of valves which enable these systems to act as independent supply systems.

Tiny Cove Estates

This facility, located between Concession Road 18 and 19, within the Township of Tiny is not in operation. As stated by the Township of Tiny, this system will remain inactive until additional water capacities are required. This facility has a rated capacity of approximately 213.8 m³/day and currently services no residential or commercial units.

It was assumed that the remaining population within the Township of Tiny is presently being serviced by privately own wells.

4.15.6. Wastewater Treatment

Please refer to **Figure No. SAN-20** from **Appendix A-5** for the Township of Tiny current wastewater servicing plan.

The Township of Tiny does not currently own or operate wastewater treatment facilities. Based on information provided through the Township of Tiny, the entire municipality is serviced by private septic systems or communal wastewater treatment systems.

To ensure that all private sewage systems are operating properly, the Township has retained C.C Tatham & Associates to act as the approval agent for all sewage system related approvals. C.C. Tatham & Associates is also responsible for the septic system re-inspection program that is currently in place.

4.15.7. Additional Water and Wastewater Systems

Non-Municipal Communal Water and Wastewater Systems (Township of Tiny)

The following properties/communities are using a combination of communal water and/or septic systems to service their current population. These properties/communities are as follows:

1. **Awenda Provincial Park:** This Park is currently not connected to any municipally owned water or septic system, and uses private systems to service its user population. Due to the nature of this property, servicing population fluctuates tremendously as a result of the changing seasons.
2. **Lafontaine Camping:** This campground is located on Concession 17 within the Township of Tiny. It is unknown what the type of water and sanitary systems are in place.

-
3. **La Villiageois Retirement Home Community:** Consists of approximately 30 to 40 condominium units. This facility has a privately owned communal septic systems as well as communal water treatment and distribution system located on its property.
 4. **Condominium Complex located along Concession 5th:** It is unknown what type of water and sanitary systems are in place.
 5. **9 Residential and 3 Commercial Units:** These properties are located within the Village of Perkinsfield within the Township of Tiny. These units use privately owned communal water and septic systems to service its population.
 6. **Village of Lafontaine:** As indicated through the Township of Tiny, sections of Lafontaine individual private water and septic systems. Located within this Village are commercial buildings, a hardware store and a set of apartments which are overtopping the commercial buildings.

Please note that additional communal water and/or septic systems may be present within the Township of Tiny, but this information was unavailable at the time this Report was prepared.

External Water and Wastewater Connections

Based on information provided through the Township Public Works Department, no external water and/or wastewater servicing connections from surrounding Towns/Townships exist on Township of Tiny water systems.

4.15.8. Extent of Water and Wastewater Infrastructure

The Township of Tiny has provided mapping of existing serviced areas. As municipal servicing expands, these maps will need to be updated. The expansion of these systems will have various levels of approval through the Township of Tiny.

4.15.9. Projected Servicing Gap

Based upon information obtained as part of this study, a servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This information is presented in **Table 3.9.1** below and includes both an assessment of the County OP and Provincial (Growth Plan) population projections for 2031:

Servicing Gap General Assumptions:

1. The Township's historical per capita maximum daily flows were obtained from

-
- the Township of Tiny.
2. 2009 water and wastewater servicing population was determined based on information provided through the Township of Tiny.
 3. Additional population potential (APP) was based upon the Simcoe County's Official Plan.
 4. It was assumed that future (2031) population growth within this Township would have municipal water service.

Based on projected growth provided through Simcoe County's Official Plan, the 2031 population of Tiny was determined to be approximately 13,900 people. Due to the additional population potential, servicing gaps expected to occur for future water servicing demands as presented in **Table 4.15.9.1**.

Table 4.15.9.1: Township of Tiny Servicing Gap Analysis

Town of Tiny																				
Water Supply Systems																				
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
Perkinsfield	1,382	913	601	437	500	1,482	1,789	439	530	1,259										
Bluewater	836	498	936	614	- 100	817	1,445	416	736	709										
Georgian Bay Estates	949	746	647	559	200	949	1,424	426	639	785										
Georgian Sands	3,145	2,127	2,139	1,591	550	3,145	3,684	1,640	1,921	1,763										
LA Place	198	137	195	148	-	198	541	71	194	347										
TeePee Points	123	160	165	237	- 100	123	352	89	255	97										
Sand Castle Estates	490	331	112	83	250	490	741	80	121	620										
Vanier Woods	360	277	123	104	150	360	618	95	163	455										
Wyevale Central	920	588	732	515	50	1,182	3,834	222	720	3,114										
Cook's Lake	400	393	207	224	150	200	352	142	250	102										
Georgian Highlands	752	583	247	211	350	752	1,119	168	250	869										
Leflave	309	299	161	172	150	309	528	110	188	340										
Pennorth	61	49	95	83	- 50	201	61	295	90	29										
Rayko	194	120	123	83	- 50	194	265	74	101	164										
Sawlog Bay	189	119	131	91	50	261	277	117	124	153										
Thunder Bay	200	46	183	47	-	201	117	112	65	52										
Whip-Poor-Will 2	360	106	464	151	- 50	363	317	215	188	129										
Woodland Beach	170	39	196	49	-	294	117	206	82	35										
Tiny Cove Estates	518	NA	NA	NA	NA	518	625	NA	-	NA										
Total	11,556	7,531	7,457	5,399	2,050	12,039	18,206	4,917	6,617	10,964	-	2,446	250	8,268	6,144	-	1,046	150	9,768	7,258

Town of Tiny																				
Water Supply Systems																				
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
	NA		No WWTP				No WWTP													
Total	-	-	-	-	-	-	-	-	-	-	-	2,446	250	- 2,696	Unknown	-	1,046	150	- 1,196	Unknown

GENERAL NOTES:
 Per capita demand and flow rates based upon 2009 data in table
 Water Serviced Population for 2009 was obtained through 2009 Annual Water Reports.
 2009 Rated Capacity data was obtained through the Township of Tiny's website.
 2009 Equivalent Population was based on 2009 Design per capita flows and demands.

4.16. Town of Wasaga Beach Servicing Gap Analysis

4.16.1. Town of Wasaga Beach Supporting Documentation

The following information and data was reviewed specific to Wasaga Beach and is included within this Study. The information obtained for the Town of Wasaga Beach to-date is listed as follows:

1. Wasaga Beach Water Pollution Control Plant 2009 Annual Performance Report.
2. Wasaga Beach Well Supply System Ontario Regulation 170/03 Section 11-2009 Annual Report
3. Wasaga Beach 2009 Drinking Water Inspection Report.
4. Town of Wasaga Beach Water Supply and Water Pollution Control Plant Capacity Allocation Update 2009 Year End Report, Ainley & Associates Limited
5. Additional information was obtained through the Town of Wasaga Beach's municipal website and through information obtained through project interviews conducted with the County in July 2010.

4.16.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the Town for 2006 was 15,234. The 22.67% growth between 2001 and 2006 provided an estimated 2009 population of approximately 17,306 people – a growth of 2,072 people. This was compared with the Town of Wasaga Beach building permits from the past three (3) years. The total number of residential units for the Town of Wasaga Beach from 2006 – 2009, based upon residential building permits obtained through Simcoe County, was 868 units which equates to 1,823 people (assuming 2.1 people/unit). Current and projected populations for the Town of Wasaga Beach are presented in **Table 4.16.2.1**. Projected populations are based on proposed County Official Plan 2031 allocated growth as well as allocated growth for 2031 as identified in the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 document.

As stated by the Town of Wasaga Beach, the most appropriate population density for water and wastewater servicing populations is 2.1 people/unit. As such, the 2009 water and wastewater servicing populations were determined. With 11,386 water servicing connections, the 2009 water servicing population used for this Study was 23,911 people. The 2009 wastewater servicing population is 22,449 people with 10,690 serviced units connected.

Table 4.16.2.1: Simcoe County Official Plan Projected Growth Rate - Town of Wasaga Beach

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
Town of Wasaga Beach	8,698	12,419	15,234	22.7%	4.5%	17,306	2,072	27,500	12,266	10,194	35,000	19,766	17,694
GENERAL NOTES:													
1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.													

Please refer to **Figure No. LU-21** from **Appendix A-2** for the Town of Wasaga Beach current land use designation map

4.16.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within the Town of Wasaga Beach. Given its proximity the City of Barrie and to recreational areas such as Georgian Bay, intensified growth is expected intensified growth within the Town of Wasaga Beach. The Town has the physical capability to grow beyond the population and household figures noted below but may be limited by constraints of the current sewer and water systems.

Based on information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected populations for 2031 within this Town ranged from 27,500 people based on the proposed provincial allocation and 35,000 people based on the Simcoe County Official Plan. From a base population of 15,234 in 2006 the population difference by 2031 ranges from 12,266 to 19,766 which equates to an average annual increase of between 491 to 790 people. Due to its proximity to Georgian Bay, consideration should be given with regards to projected population for the significant and increasing seasonal or non-permanent resident population that exist within the Town of Wasaga Beach and surrounding area.

4.16.4. Projected Employment Growth

Through information provided through the Simcoe County Official Plan and the Places to Grow Act, the projected employment growth for 2031 ranges between approximately 400 jobs forecast by the Province, and 1,000 jobs forecast by the County. This equates to an additional equivalent population of between 200 and 500 people that will require water and wastewater servicing.

Employment Service Population Assumptions:

Section 5.5.2.1 within the Guidelines for the Design of Sanitary Sewage Systems (MOE 2008) indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems notes that the average daily flows generated within an employment environment ranged from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent

employment growth population (positions). Projected employment growth for Town of Wasaga Beach is presented in **Table 4.16.4.1**.

Table 4.16.4.1: Simcoe County Official Plan Projected Employment Growth Rate - Town of Wasaga Beach

Town/Township	EMPLOYMENT GROWTH										
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031	Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
Town of Wasaga Beach	3,100	4,100	3,500	32.3%	12.9%	1.3%	0.5%	1,000	400	500	200

GENERAL NOTES:

- Based on Employment Growth obtained through Simcoe County's Official Plan and the Greater Golden Horseshoe Growth Plan 2011
- Assume employment growth rate remains constant from 2016-2031.

4.16.5. Water Supply

Please refer to **Figure No. WAT-21** from **Appendix A-4** for the Town of Wasaga Beach current water servicing plan.

The Town of Wasaga Beach currently uses two (2) groundwater well fields to service its current population: Powerline Road Water Plant and Jenetta Well Site. These systems have a combined flow rate capacity of approximately 31,415 m³/day. The maximum daily flow for this facility in 2009 was 15,354 m³/day or approximately 49.0% of the maximum rated capacity. The historical maximum daily demand rates for each of the water supply systems within this municipality for 2007 and 2008 are 23,989 m³/day and 20,114 m³/day respectively. This equates to an average 2009 maximum daily demand (MDD) of approximately 19,819 m³/day. However, the 2008 water demand of 20,114 m³/day will be used as the MDD for this study. This rate may be higher than the current downward trend, but is considered to be reasonable as stated by the Town.

Based on information provided through the Town, the reason why the MDD has dropped so substantially is primarily due to the recent water metering of the entire Town which took effect in 2008. Based on information obtained through the 2008 Water Supply Works and Water Pollution Control Plant Capacity Allocation Report completed by Ainley and Associates Limited, the total number of municipal water service connections within the Town of Wasaga Beach was 11,212 units. The 2008 service population was determined to be approximately 23,545 people with a population density of 2.1 people/unit.

Powerline Road Water Plant

The Power Road Water Plant consists of four (4) active wells which are equipped with vertical turbine pumps, five (5) high lift vertical turbine pumps each rated at 1,200 GPM and a sodium hypochlorite feed system with three (3) chemical feed pumps which are used for primary treatment. The rated capacity for this water supply system is 10,908 L/min or 15,707.5 m³/day.

Jenetta Well Site

The Jenetta Well consists of three (3) active wells which are equipped with vertical turbine pumps, and two (2) storage reservoirs: one (1) underground reservoir with a capacity of 3,405 m³ and two (2) aboveground reservoirs with a capacity of 12,387.5 m³. The rated capacity for this water supply system is 10,908 L/min or 15,707.5 m³/day. Based on information provided by the Town's Public Works Department, a new well with a rated capacity of 60 L/s or 5,184 m³/day is expected to be completed and operational by the end of 2012.

It was assumed that the remaining population within the Town of Wasaga Beach is serviced by private wells.

4.16.6. Wastewater Systems

Please refer to **Figure No. SAN-21** from **Appendix A-5** for the Town of Wasaga Beach's current wastewater servicing plan.

According to the C of A (No. 9398-7PSLJW), the Town of Wasaga Beach currently uses a Class 3 wastewater treatment facility. This facility is operated by OCWA and currently services the majority of the population. All raw sewage is pumped to this wastewater treatment facility and is discharged to the Nottawasaga River. The maximum rated capacity of this facility is 15,433 m³/day.

The average daily flow for 2009 was determined to be approximately 5,723 m³/day or 37.0% of the maximum rated capacity for this facility. The 2007 and 2008 average daily flows (ADF) were determined to be approximately 5,035 m³/day and 6,093 m³/day, respectively. This equates to a 2009 average daily flow rate of approximately 5,617 m³/day. However, the 2008 flow of 6,093 m³/day will be used as the ADF for this study as requested by the Town of Wasaga Beach Public Works Department.

Based on information obtained through the 2008 Water Supply Works and Water Pollution Control Plant Capacity Allocation Report completed by Ainley and Associates Limited, the total number of municipal sewage service connections within

the Town of Wasaga Beach was approximately 10,513 units. Based on a population density of 2.1 people/unit, the 2008 service population was determined to be approximately 22,077 people.

Proposed External Wastewater Servicing

The municipality of Clearview has completed and received MOE approval of a municipal Class Environmental Assessment which recommended that treatment capacity for the Township of Clearview be expanded through the pumping of effluent through a forcemain system to the Town of Wasaga Beach Wastewater Treatment Plant. The municipality with support of the County has completed design of the system expansion, budgeted for the first phase of required capital works, and has entered into negotiations with Wasaga Beach for a total treatment capacity of 5,000 m³ this expansion will be implemented in two (2) 2,500 m³/day phases.

It was assumed that the remaining population within the Town of Wasaga Beach is presently being serviced by private or communal septic systems

4.16.7. Extent of Water and Wastewater Infrastructure

The Town of Wasaga Beach has provided mapping of existing serviced areas. As municipal servicing expands, these maps will be required to be updated. Expansion of systems has various levels of approval in the Town of Wasaga Beach.

4.16.8. Additional Water and Wastewater Systems

Non-Municipal Water and Wastewater Systems (Town of Wasaga Beach)

The following properties/communities are using a combination of communal water and/or septic systems to service their current population. These properties/communities are as follows:

1. **Woods of Wasaga Condo:** As stated by the Town of Wasaga Beach, this residential building currently uses a municipal water supply but operates a communal wastewater system to service its residents.

External Water and Wastewater Connections

Based on information provided through the Township Public Works Department, no external water and/or wastewater servicing connections from surrounding Towns/Townships exist within the Town of Wasaga Beach at this time. A forcemain system connecting Stayner to the Town of Wasaga Beach Wastewater Treatment Plant has been proposed, as presented herein, but has not been implemented at this time.

4.16.9. Projected Servicing Gap

Based upon information obtained through a servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This is presented in **Table 4.16.9.1** and includes both an assessment of the County OP and Provincial (Growth Plan) population projections for 2031.

Servicing Gap General Assumptions:

1. The Town's 2008 and 2009 average daily flows were obtained through the Wasaga Beach Water Pollution Control Plant Annual Performance Reports and were confirmed with the Town of Wasaga Beach.
2. The Town's 2008 and 2009 maximum daily demands were obtained through the Wasaga Beach Drinking Water Inspection Report and were confirmed with the Town of Wasaga Beach.
3. 2008 Served Population was based on information obtained through the Town of Wasaga Beach.
4. Additional population potential (APP) was based upon the adopted Simcoe County Official Plan.
5. It was assumed that all future population growth within the Town of Wasaga Beach would be fully serviced.

Based on the information provided, there will be no negative net wastewater servicing gaps for this Town due to the recent WWTP expansion. Moreover, there exists sufficient wastewater treatment capacity at the plant to accommodate the 2031 Town population as well as the first 2,500 m³/day flow phase from the Town of Stayner (Township of Clearview).

With respect to water servicing, a servicing gap is expected to occur. This servicing gap will be reduced once the proposed 5,184 m³/day capacity Jenetta Well No. 4 comes into operation. It is noted that a town-wide water well development study and environmental assessment is slated for 2012/2013 to evaluate water servicing opportunities and address the servicing gap.

Table 4.16.9.1: Town of Wasaga Beach Servicing Gap Analysis

Town of Wasaga Beach																						
Water Supply Systems																						
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps						
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)		
Wasaga Beach	31,415	27,929	19,990	19,549	8,400	31,415	37,345	20,114	23,911	13,434	Data unavailable at this time					Data unavailable at this time						
Total	31,415	27,929	19,990	19,549	8,400	31,415	37,345	20,114	23,911	13,434	-	17,694	500	-	4,760	-	4,004	-	10,194	200	3,040	2,557

Town of Wasaga Beach																				
Wastewater Treatment Systems																				
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
Wasaga Beach	15,433	52,896	4,093	15,433	37,450	15,433	56,861	6,093	22,449	34,412	Data not available at this time					Data not available at this time				
Total	15,433	52,896	4,093	15,433	37,450	15,433	56,861	6,093	22,449	34,412	-	17,694	500	16,218	4,402	-	10,194	200	24,018	6,519

GENERAL NOTES:

Per capita demand and flow rates based upon 2009 data in table
 Serviced Population for 2008 was based on information provided from the Town.
 2008 Rated Capacity Data was obtained through the Town of Wasaga Beach's website
 2008 Equivalent Population was based on 2008 Design per capita flows and demands.

4.17. City of Barrie Servicing Gap Analysis

4.17.1. City of Barrie Supporting Documentation

The following information and data was reviewed specific to Innisfil and is included within this Study. The information obtained for the City of Barrie to-date is listed as follows:

1. City of Barrie Drinking Water System 2009 Annual Report.
2. City of Barrie Staff Report CIA001-09.
3. City of Barrie Wastewater Pollution Control Pamphlet.
4. City of Barrie Sanitary Water Servicing for Bay Lane, Cottage Lane and Royal Oak Drive Municipal Class Environmental Assessment.
5. Additional information was obtained through the City of Barrie's municipal's website and during project interviews conducted with the County in July 2010.

4.17.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the City for 2006 was 133,500. With the 28.7% growth between 2001 and 2006. The 2009 population was initially estimated to be approximately 156,508 people (growth of 23,008 people) using the same growth rate. This was compared with the City of Barrie's building permits from the past three (3) years.

Based on residential building permits obtained through Simcoe County, the total number of residential units for the City of Barrie from 2006 - 2009 was 1,903 units. This equates to an additional 4,948 people (assuming 2.6 people/unit). Through discussions with the City of Barrie Planning Department, the population growth for 2006 to 2009 was approximately 5,000 people. As a result of these findings, a 4,948 population growth or a 2009 population of approximately 138,448 people was used for this study. Current and projected populations for the City of Barrie are presented in **Table 4.17.2.1**. Projected populations are based on the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 document.

Please refer to **Figure No. LU-2** from **Appendix A-2** for the City of Barrie's current land use designation map.

Table 4.17.2.1: Simcoe County Official Plan Projected Growth Rate – City of Barrie

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
City of Barrie	107,037	103,710	133,500	28.7%	5.7%	138,448	4,948	210,000	76,500	71,552	NA	NA	71,552

GENERAL NOTES:

1. 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.

4.17.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within the City of Barrie. Given its proximity to Highway 400 and to the Greater Toronto Area, there is expected to be intensified growth within the City. Barrie has the physical capability to grow beyond the population and household figures herein. Due to its proximity to Lake Simcoe, consideration should be given with regards to projected population for the significant and increasing seasonal or non-permanent resident population that exist within the City of Barrie and surrounding area.

The projected population for 2031 within the City of Barrie is 210,000 people (proposed provincial allocation). The Simcoe County Official Plan lumps the 2031 population from Barrie and Orillia together and as such a proposed population for Barrie from the County OP cannot be reported on at this time.

4.17.4. Projected Employment Growth

Through information provided through the *Proposed Provincial Allocation Plan* and the Places to Grow Act, the projected employment growth for 2031 is approximately 36,700 jobs. This equates to an additional equivalent population of 18,350 that will require water and wastewater servicing. The equivalent service population was determined based on the following assumptions and calculations:

Employment Service Population Assumptions:

Section 5.5.2.1 within the *Guidelines for the Design of Sanitary Sewage Systems (MOE 2008)* indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the *Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems* notes that the average daily flows generated within an employment environment ranged from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent employment growth population (positions). Projected employment growth for the City of Barrie is presented in **Table 4.17.4.1**.

Table 4.17.4.1: Proposed Provincial Allocation Projected Employment Growth Rate – City of Barrie

Town/Township	EMPLOYMENT GROWTH										
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031	Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
City of Barrie	64,300	101,000	101,000	57.1%	57.1%	2.3%	2.3%	36,700	36,700	18,350	18,350

GENERAL NOTES:
 1. Based on Employment Growth obtained through Places to Grow Act.

4.17.5. Water Supply

Please refer to **Figure No. WAT-2** from **Appendix A-4** for the City of Barrie’s current water servicing plan.

The City of Barrie currently uses fourteen (14) municipal groundwater wells for its primary water supply. This system also consists of three (3) storage reservoirs, and five (5) booster stations. Untreated water is treated with chlorine gas, UV and sodium silicate for iron sequestration prior to entering one of the three (3) storage reservoirs. This distribution system consists of approximately 610 km of watermain ranging in pipe diameters. Based on the current permit to take water, this facility has rated capacity of 118,446 m³/day with a 2009 service population of approximately 139,500 people.

The City of Barrie has also completed a Class Environmental Assessment with regards to a new surface water treatment plant with a low lift pump station. This facility was estimated to cost the City of Barrie approximately \$110 million dollars and has recently been completed. The surface water treatment facility has a rated capacity of 65,200 m³/day and will be predominately servicing the southern borders of Barrie where the majority of new growth is anticipated. Untreated surface water will be treated using Zenon ultra-filtration membranes. This plant also includes raw water dynamic mixers, flocculation tanks, secondary treatment membranes, and a high lift pumping station. The existing groundwater treatment facility will remain in operation with no future intentions of becoming decommissioned.

Based on information provided through the City of Barrie’s Public Works Department, the maximum daily demand (MDD) from 2007 to 2009 is as follows: 75,517 m³/day, 56,073 m³/day and 56,035 m³/day. This averages to a mean MDD of approximately 62,542 m³/day which will be used for the purposes of this study.

It was assumed that the remaining population within the City of Barrie is serviced by private wells or private water systems.

4.17.6. Wastewater Treatment

Please refer to **Figure No. SAN-2** from **Appendix A-5** for the City of Barrie's current wastewater servicing plan.

Presently, the City of Barrie uses a Class 4 wastewater treatment facility to service wastewater. This facility has a rated capacity of 57,100 m³/day and is capable of servicing a population of approximately 139,000 people.

Based on information provided through the City of Barrie's Public Works Department, the average daily flow (ADF) generated within this facility from 2007 to 2009 is as follows: 52,907 m³/day, 52,538 m³/day and 51,960 m³/day. For the purpose of this study, the 2009 ADF will be used for the City of Barrie's servicing gap analysis.

City of Barrie Class Environmental Assessments: Wastewater Treatment

City of Barrie Water Pollution Control Centre Expansion

The City of Barrie is presently undertaking an expansion of their wastewater treatment plant to a rated capacity of 76,000 m³/day to ensure that the City is capable of meeting its future needs. This would equate to a maximum service population of approximately 184,000 people. For long range planning purposes, the City has requested that this revised rated capacity be used.

The expansion was designed by CH2M Hill and is being constructed by Kenaidan Limited. It will be carried out in three (3) different areas of the plant which will include the expansion of the sludge processing system, secondary treatment and tertiary treatment system. A total of 16 process units are also being added including one (1) secondary clarifier, two (2) flash and flocculation tanks, and one (1) primary digester tank. This expansion also consists of the City's biosolid storage facility.

Based on information provided by the City of Barrie, an additional WWTP expansion will be required to accommodate for the future 2031 population growth. As this time, no Class Environmental Assessment has been performed for such expansion.

Sanitary Water Servicing for Bay Lane, Cottage Lane and Royal Oak Drive Municipal Class Environmental Assessment

In addition to the expansion of the WWTP, the City of Barrie has also conducted a Class EA with regards to extending water and wastewater services to unserved areas within the City. The City has undertaken this Class EA to address the extension of municipal infrastructure in the Bay Lane, Cottage Lane and Royal Oak Drive areas.

As result of this Class EA, the following alternatives were considered:

Sanitary Servicing Options

1. Option S1 - Septic Fields (Do Nothing)
2. Option S2 - Gravity Sewer Installed by Open Cut
3. Option S3 - Pump Station
4. Option S4 - Gravity Sewer Installed by Jack and Bore
5. Option S5 - Low Pressure Sanitary Sewer

Water Servicing Options

1. Option W1 - Watermain Installed by Open Cut
2. Option W2 - Watermain Installed by Open Cut and Jack and Bore
3. Option W3 - Watermain Installed by Directional Drilling

The preferred alternatives are as follows:

1. The Sanitary Alternative S4 - Gravity Sewer installed by Jack and Bore (Environmentally Sensitive areas) with the remainder installed by Open Cut.
2. Water Alternative W4 - Watermain installed by either Jack and Bore or Directional Drilling in Environmentally Sensitive area.
3. Acquire property for improvements as identified in the final municipal Class EA document.

It was assumed that the remaining population within the City of Barrie is serviced by private septic or communal wastewater treatment systems.

4.17.7. Additional Water and Wastewater Systems

Non-Municipal Water and Wastewater Systems (City of Barrie)

The following properties/communities are using a combination of communal water and/or wastewater treatment systems to service their current population. These properties/communities are as follows:

-
1. Through discussions with the City of Barrie, there is an unknown quantity of privately owned individual septic systems within the City's jurisdiction. There are no communal water and/or wastewater servicing systems within the City of Barrie at this time.

4.17.8. Extent of Water and Wastewater Infrastructure

The City of Barrie has provided mapping of existing serviced areas. As municipal servicing expands, these maps will need to be updated. The expansion of systems has various levels of approval in the City of Barrie.

4.17.9. Projected Servicing Gap

Based upon information obtained as part of this study, a servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This information is presented in **Table 4.17.9.1**.

Servicing Gap General Assumptions:

1. The City's historical per capita average daily flows (ADF) and per capita maximum daily demands (MDD) were obtained through the City of Barrie.
2. 2009 Serviced Population was based in part on 2006 data obtained through The County of Simcoe Growth Management Study completed by Ainley & Associates Limited.
3. 2009 servicing population was determined assuming that all approved population growth within this area would be fully serviced (i.e. 2006 Servicing population + change in population from 2006 – 2009).
4. 2006-2009 population growth within the City of Barrie was assumed to be approximately 4,948 people based on residential building permits provided by Simcoe County.
5. Additional population potential (APP) based upon the Provincial population allocation. The adopted Simcoe County Official Plan APP was not available for the draft of this document.
6. Expansion of the Water Pollution Control Centre was considered in the servicing gap analysis.
7. The recently constructed Surface Water Treatment plant was considered in the servicing gap analysis.
8. It was assumed that all new growth within the City of Barrie would be fully serviced.

Based on the information provided, there will be a residual servicing capacity for wastewater based on the 2031 projected growth within the City of Barrie. With regards to water servicing, a large residual capacity is expected as a result of the

new surface water treatment plant being on line. As stated by the City of Barrie's Infrastructure Planning Department, the City will not be decommissioning any of the wells in the existing system as a result of the plant coming online. The groundwater system will continue to service generally the north portion of the City while the SWTP will service the south portion of the City.

Table 4.17.9.1: City of Barrie Servicing Gap Analysis

City of Barrie																				
Water Supply Systems																				
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
City of Barrie Water Supply System	92,490	135,548	78,159	126,000	9,548	148,264	330,703	62,542	139,500	191,203	Data unavailable at this time					Data unavailable at this time				
Total	92,490	135,548	78,159	126,000	9,548	148,264	330,703	62,542	139,500	191,203	-	71,552	18,350	101,301	45,416	-	71,552	18,350	101,301	45,416

City of Barrie																				
Wastewater Treatment Systems																				
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
City of Barrie	57,100	128,350	47,036	116,300	12,050	76,000	203,310	51,960	139,000	64,310	Data not available at this time					Data not available at this time				
Total	57,100	128,350	47,036	116,300	12,050	76,000	203,310	51,960	139,000	64,310	42,484	71,552	18,350	16,892	6,315	42,484	71,552	18,350	16,892	6,315

GENERAL NOTES:

Per capita demand and flow rates based upon 2009 data in table
 Serviced Population for 2009 was provided by the City of Barrie.
 2009 Rated Capacity data was obtained through the City of Barrie's website and confirmed through the City of Barrie.
 Population Growth from 2006-2009 was estimated to be approximately 4,948 people.
 2009 Equivalent Population was based on 2009 Design per capita flows and demands.

4.18. City of Orillia Servicing Gap Analysis

4.18.1. City of Orillia Supporting Documentation

The following information and data was reviewed specific to Orillia and is included within this Study. The information obtained for the City of Orillia to-date is listed as follows:

1. City of Orillia Drinking Water System 2009 Annual Report.
2. City of Orillia Municipal Profile 2010.
3. City of Orillia – QMS Operational Plan 2009.
4. Additional information was obtained through the City of Orillia last updated on November 2010.

4.18.2. Current Population

Based on information provided through Census Canada 2006 Data, the total population of the City for 2006 was 30,259. From the 3.9% growth between 2001 and 2006, the 2009 population was estimated to be approximately 31,363 people (growth of 1,104 people). This was compared with the City of Orillia building permits from the past three (3) years.

Based on information provided by the City of Orillia, the 2009 population was determined to be approximately 31,221 people (growth of 962 people). Considering that both projected populations are similar, a 2009 population of 31,221 people was used for the purpose of this study.

Current and projected populations for the City of Orillia are presented in **Table 4.18.2.1**. Projected populations are based on the Province of Ontario's Growth Plan for the Golden Horseshoe January 2012 document.

Please refer to **Figure No. LU-13** from **Appendix A-2** for the City of Orillia's current land use designation map.

Table 4.18.2.1: Simcoe County Official Plan Projected Growth Rate – City of Orillia

Town/Township	PROJECTED POPULATION GROWTH												
	1996 Census Population (Persons)	2001 Census Population (Persons)	2006 Census Population (Persons)	2001 to 2006 Population Change (%)	2001 to 2006 Annual Population Growth Rate (%)	Estimated 2009 Population (Persons)	Difference in Population 2006-2009	2031 Population: Proposed Provincial Allocation (Persons)	Provincial Projected Population Growth 2006-2031	Provincial Population Difference 2009-2031	2031 Population: Simcoe County Official Plan (Persons)	Simcoe County Projected Population Growth 2006-2031	Simcoe County Population Difference 2009-2031
City of Orillia		29,121	30,259	3.9%	0.8%	31,221	962	41,000	10,741	9,779	Not Available	Not Available	9,779

GENERAL NOTES:

- 2031 Provincial Population Allocation is from the Province of Ontario's Growth Plan for the Greater Golden Horseshoe – Office of Consolidation January 2012, Schedule 7.

4.18.3. Projected Population Growth

The 2031 population and household projections help constitute guidelines for the development within the City of Orillia. Given its proximity to Highway 400 and to the City of Barrie Area, there is expected to be moderate growth within the City of Orillia. The City has the physical capability of growing beyond the population and household figures presented herein. Due to its proximity to Lake Simcoe, consideration should be given with regards to projected population for the significant and increasing seasonal or non-permanent resident population that exist within the City of Orillia and surrounding area.

Based on information provided through the Places to Grow Act, the projected populations for 2031 within this City was determined to be approximately 41,000 people. From a base population of 30,259 in 2006, the population difference by 2031 is approximately 10,741. This equates to an average annual increase of 430 people.

4.18.4. Projected Employment Growth

Through information provided through the *Simcoe County Official Plan* and the Places to Grow Act, the projected employment growth for 2031 is approximately 1,300 jobs for the City of Orillia. This equates to an additional equivalent population of 650 that will require water and wastewater servicing.

Employment Service Population Assumptions:

Section 5.5.2.1 within the *Guidelines for the Design of Sanitary Sewage Systems (MOE 2008)* indicates the average daily domestic flows (exclusive of extraneous flows) range from 225 to 450 L/cap/day which equates to an average of approximately 337.5 L/cap/day. Section 9.3.22 within the *Manual of Policy Procedures and Guidelines for Private Sewage Disposal Systems* notes that the average daily flows generated within an employment environment ranged from 75 to 275 L/cap/day. This equates to a mean employment average daily flow of approximately 175 L/cap/day.

From these two (2) average daily flow water demands, the employment equivalent service population value was determined to be approximately 50% of the equivalent employment growth population (positions). Projected employment growth for the City of Orillia is presented in **Table 4.18.4.1**.

Table 4.18.4.1: Projected Employment Growth Rate – City of Orillia

Town/Township	EMPLOYMENT GROWTH										
	2006 Employment Population (Positions)	2031 Simcoe County Population (Positions)	2031 Provincial Projected Population (Positions)	2006 to 2031 County Employment Change (%)	2006 to 2031 Provincial Employment Change (%)	2006 to 2031 County Annual Employment Growth Rate (%)	2006 to 2031 Provincial Annual Employment Growth Rate (%)	County Employment Growth 2006 - 2031	Provincial Employment Growth 2006 - 2031	Estimated 2031 County Employment Equivalent Service Population (Persons)	Estimated 2031 Provincial Employment Equivalent Service Population (Persons)
City of Orillia	19,700	21,000	21,000	6.6%	6.6%	0.3%	0.3%	1,300	1,300	650	650

GENERAL NOTES:
 1. Based on Employment Growth obtained through Places to Grow Act.

4.18.5. Water Supply

Please refer to **Figure No. WAT-13** from **Appendix A-4** for the City of Orillia current water servicing plan.

The City of Orillia’s water supply uses a combination of surface and two (2) groundwater sources to supply its water filtration plant. Untreated water is obtained by a surface source (Lake Couchiching) and from two (2) groundwater sources.

Water Sources

Lake Couchiching is considered to be a shallow lake with an average depth of 6 m. The intake for the plant is located approximately 374 m from shore and 3.3 m below the surface of the water. The surface water intake pipe, approximately 85 m long, extends into Lake Couchiching. The surface water supply system has a rated capacity of 27,280 m³/day.

Two (2) groundwater wells, Well #1 and Well #2 are located 160 m off the shore of Lake Couchiching and have a combined capacity of 5,762 m³/day. Although the treated water showed levels not in exceedance of the Ontario Drinking Water Standards Maximum Acceptable Concentration of 50 ug/L, levels of trichloroethylene in the water obtained from the wells ranged from 16.0 to 66.7 ug/L during the 2000-2001 sampling events. As a result of this, in 2008 a new groundwater treatment building was constructed which houses a new air stripping facility used to process and remove concentrations of trichloroethylene (TCE) and tetrachloroethylene (PCE) from the groundwater supply. The West Orillia Well is an additional water supply source which has a rated capacity of 6,550 m³/day and is operated as part of the water distribution system. Based on the information provided above, the City of

Orillia has a combined rated capacity of approximately 39,592 m³/day with a service population of approximately 31,129 people as of 2009.

Water Treatment

Raw water from both surface and groundwater sources is pumped to the Orillia Water Filtration System.

Raw water from the surface water source is pre-chlorinated for zebra mussel control and flows by gravity to the wet well of the low lift pumping station in the plant. This facility consists of three (3) gas chlorinators (two (2) active units and one (1) for back up) with individual discharge lines which are connected to the raw water sources and two (2) post-post chlorinators exist for final distribution system control. In addition, three (3) flow-through ultraviolet (UV) reactors (two (2) active and one (1) back up) are used for additional water treatment.

The distribution system consists of approximately 160 km of various sized piping comprising of: cast iron, ductile iron, PVC and concrete pressure piping. There are three (3) aboveground standpipe facilities located within the City of Orillia which are as follows: Harvie Hill Reservoir and the Rosemary Road Reservoirs. The Harvie Hill Reservoir consists of one (1) reinforced concrete reservoir located on Harvie Road adjacent to Highway 11. This tower has a maximum storage capacity of 7,900 m³. The Rosemary Road Reservoirs consists of two (2) reinforced concrete cylindrical reservoirs located on Rosemary Road. These reservoirs have storage capacities of 1,363 m³ and 9,090 m³ respectively.

Based on information provided by the City of Orillia's Public Works Department, the maximum daily demand (MDD) from 2007 to 2009 was 19,679 m³/day, 14,871 m³/day, 13,935 m³/day respectively. This equates to a mean MDD of approximately 16,162 m³/day. The drop in MDD from 2007 to 2009 was most likely as a result of the City's water efficiency program which has been implemented by the City. For the purpose of this study, a MDD of 16,162 m³/day was used.

It was assumed that the remaining population within the City of Orillia is serviced by private wells.

City of Orillia's Water Efficiency Program

At this time the City of Orillia has developed a water efficiency program in order to avoid future expansions of their water and wastewater treatment facilities as a result of future growth. This program aims to accomplish the following:

1. Increased public and corporate awareness of the value of water;

-
2. Improved environment from reduced use; and
 3. Deferral of costly plant expansions due to reduced peak demand.

Based on information from the City of Orillia's municipal website, the programs will accomplish the goal in reducing water consumption through a wide range of methods. Some of the methods considered by the City are as follows:

1. Universal water metering;
2. Replacement of existing water meters;
3. Elementary school education program;
4. General public information, primarily with respect to lawn watering and outdoor water use;
5. Monitor and track water supply and loss;
6. Repair of water system breaks and leaks as a high priority;
7. Reduce open loop cooling water in City buildings and Commercial/Industrial buildings;
8. Water fixture rebates for replacement of high water using fixtures (discontinued in July 2007);
9. Review of current policies and investigation of a seasonal pricing policy;
10. Promoting and subsidizing the use of rain barrels;
11. Performing industrial, commercial and institutional water audits;
12. Continued auditing of authorized unmetered use;
13. Retrofitting of City facilities.

4.18.6. Wastewater Treatment

Please refer to **Figure No. SAN-13** from **Appendix A-5** for the City of Orillia current wastewater servicing plan.

Presently, the City of Orillia uses a Class 3 wastewater treatment facility to services the City's wastewater. Based on information provided through the City of Orillia's Public Works Department, this facility has a rated capacity of 27,300 m³/day with a service population of approximately 31,420 people. As of 2009, the average daily flow (ADF) for this facility was approximately 72% of the facility's rated capacity. This equates to approximately 19,656 m³/day.

It was assumed that the remaining population within the City of Orillia is serviced by private wastewater treatment systems.

4.18.7. Additional Water and Wastewater Systems

Non-Municipal Communal Water and Wastewater Systems (City of Orillia)

Based on information provided through the City of Orillia's Public Works Department, there are no private communal water and/or wastewater treatment systems located within the City's jurisdiction.

4.18.8. Extent of Water and Wastewater Infrastructure

The City of Orillia has provided mapping of existing serviced areas. As municipal servicing expands, these maps will need to be updated. The expansion of systems will require various levels of approval in the City of Orillia.

4.18.9. Projected Servicing Gap

Based upon information obtained as part of this study, a servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This information is presented in **Table 4.18.9.1**.

Servicing Gap General Assumptions:

1. City's historical per capita average daily flows and per capita maximum daily flows were provided by the City of Orillia.
2. 2009 wastewater and water servicing populations were provided by the City of Orillia's Public Works.
3. Additional population potential (APP) was based upon the Places to Grow Act.

As presented in **Table 4.18.9.1** present below, no negative servicing gaps are expected within the City of Orillia based on 2031 population and employment projections as presented within the Province of Ontario's Simcoe Area: A Strategic Vision for Growth document. This is mainly a result of substantial water and wastewater servicing capacities found in the City's current systems.

Table 4.18.9.1: City of Orillia Servicing Gap Analysis

City of Orillia																				
Water Supply Systems																				
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
City of Orillia	39,502	48,768	21,086	30,039	18,729	39,592	76,257	16,162	31,129	45,128	Data unavailable at this time					Data unavailable at this time				
Total	39,502	48,768	21,086	30,039	18,729	39,592	76,257	16,162	31,129	45,128	-	9,779	650	34,699	18,015	-	9,779	650	34,699	18,015

City of Orillia																				
Water Supply Systems																				
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
City of Orillia	27,300	42,055	16,768	28,414	13,641	27,300	43,639	19,656	31,420	12,219	Data not available at this time					Data not available at this time				
Total	27,300	42,055	16,768	28,414	13,641	27,300	43,639	19,656	31,420	12,219	-	9,779	650	1,790	1,120	-	9,779	650	1,790	1,120

GENERAL NOTES:

Per capita demand and flow rates based upon 2009 data in table
 Serviced Population for 2009 was provided by the City of Orillia Public Works.
 2009 Rate Capacity data was obtained through the City of Orillia's website.
 2009 Equivalent Population was based on 2009 Design per capita flows and demands.

4.19. CFB Borden Servicing Gap Analysis

4.19.1. CFB Borden Supporting Documentation

The following information and data was reviewed specific to Canadian Forces Base (CFB) Borden and is included within this study. The information obtained for CFB Borden to-date is listed as follows:

1. Water and Wastewater Operations Report provided by CFB Borden, August 2010.
2. Additional information provided to the County during Project Interviews conducted in August 2010.

4.19.2. Current Population

Given the nature of training within this facility, the population within Canadian Forces Base (CFB) Borden greatly varies on a seasonal basis. As such, an average permanent population for 2009 will be used for the purpose of this study. Based on information provided through CFB Borden, the following population data was utilized when determining an average permanent population for this facility:

1. In 2008, there were a total of slightly over 3,000 civilian employees and military members posted, or working at CFB Borden.
2. An additional 1,500 to 2,000 dependants living in the PMQs.
3. Between 800 to 1,200 personnel awaiting training.
4. Between 500 to 3,500 members undergoing training.
5. At the peak of the summer training months, approximately 2,200 cadet and C/C personnel were living at Blackdown Cadet Camp.

Based on this information above, the minimum population in 2008 was calculated to be approximately 5,800 and the maximum daily population 11,900 persons. This equates to an annual average population of approximately 8,000 people which will be used for the purpose of this study.

Please refer to **Figure No. LU-5** from **Appendix A-2** for CFB Borden's current land use designation map.

4.19.3. Projected Population/Employment Growth

As stated by Simcoe County, CFB Borden was not considered when the County was creating the Simcoe County Official Plan. Based on information provided through CFB Borden, the best projection for a permanent population is approximately an

average of 6,500 which equates to a decline in population of approximately 2,000 people by 2031. Due to the degree of uncertainty with regards to future populations within this facility, it was assumed that a population of approximately 8,000 people will remain consistent up to the year 2031.

4.19.4. Water Supply

Please refer to **Figure No. WAT-5** from **Appendix A-4** for CFB Borden's current water servicing plan.

CFB Borden consists of one (1) Class 1 water supply system which presently services the entire base. Based on the facility's C of A, the rated capacity of the water supply system totals 2,722.5 GPM which equates to approximately 14,840 m³/day. The distribution system consists of approximately 40 km of watermain of various pipe sizes with one (1) standpipe with a capacity of 3,632 m³ which acts as the Base's primary water storage reservoir. The mean 2007-2009 maximum daily demands (MDD) generated within this facility was determined to be approximately 5,198 m³/day. For the purpose of this study, it has been assumed that all of CFB Borden's population is being serviced through the on-site water supply system.

4.19.5. Wastewater Treatment

Please refer to **Figure No. SAN-5** from **Appendix A-5** for CFB Borden's current wastewater servicing plan.

CFB Borden uses a Class 3 wastewater treatment system to service its current wastewater treatment requirements. The sanitary conveyance system is comprised of 14 lift stations and various sized sanitary sewers including forcemains. As stated through this facility's C of A (#1994), this facility has a maximum rated capacity of 4,093 m³/day which services all residents/workers that reside within this facility. The mean 2007-2009 average daily flows (ADF) generated within this facility was determined to be approximately 2,962 m³/day. As stated by CFB Borden, the Base's treatment facility effluent results from 2007 to 2009 are presented within **Table 4.19.5.1**.

Table 4.19.5.1: CFB Borden's Effluent Concentrations

Effluent Parameters	CFB Borden	Federal Effluent Limits
BOD Concentration (mg/l)	4.1	20
TSS Concentration (mg/l)	4.6	25
TP Concentration (mg/l)	0.12	1.0

As indicated within **Table 4.19.5.1**, current effluent limits are well below the Federal effluent concentration limits. For the purpose of this study, it has been assumed that all of CFB Borden's population is being serviced through the on-site wastewater treatment system.

4.19.6. Additional Water and Wastewater Systems

Communal Water and Wastewater Systems (CFB Borden)

Through information provided by CFB Borden, all facilities located at CFB Borden are presently being serviced by the onsite water and wastewater treatment facilities.

External Water and Wastewater Connections

As stated by members of CFB Borden, this property does not have any external water and/or wastewater servicing connections to neighbouring communities or properties.

4.19.7. Projected Servicing Gap

A servicing gap analysis for both water and wastewater servicing was performed for the 2009 population. This information is presented in **Table 4.19.7.1**.

Servicing Gap General Assumptions:

1. Facility's historical per capita average daily flows (ADF) and per capita maximum daily flows (MDD) were obtained through the water and wastewater operations documentation provided by CFB Borden.
2. 2009 Servicing Population was based on the water and wastewater operations documentation provided by CFB Borden.
3. Rated capacities for the water systems were obtained through the water and wastewater operations documentation provided by CFB Borden.
4. It was assumed that 2031 population growth would remain unchanged from the Base's current population.

Based on projected growth provided through CFB Borden, future (2031) population at the Base is expected to remain consistent with the 2008 population. As such the current water and wastewater facilities located on-site of CFB Borden will be adequate to accommodate the future growth in the Facility.

Table 4.19.7.1: CFB Borden's Servicing Gap Analysis

CFB Borden																				
Water Supply Systems																				
Water Supply System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	MDD (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
CFB Borden	NA	NA	NA	NA	NA	14,840	22,840	5,198	8,000	14,840	Data unavailable at this time					Data unavailable at this time				
Total	-	-	-	-	-	14,840	22,840	5,198	8,000	14,840	-	-	-	14,840	9,642	-	-	-	14,840	9,642

CFB Borden																				
Wastewater Treatment Systems																				
Wastewater Treatment System	2006 Ainley Data					2009 Data					County OP Servicing Gaps					Provincial Plan Servicing Gaps				
	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Rated Capacity (m ³ /day)	Equivalent Population (Persons)	ADF (m ³ /day)	Serviced Population (Persons)	Existing Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)	Committed Capacity Increase (Persons)	Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Servicing Gap (Persons)	Servicing Gap (m ³ /day)
CFB Borden	NA	NA	NA	NA	NA	4,060	10,966	2,962	8,000	2,966	Data not available at this time					Data not available at this time				
Total	-	-	-	-	-	4,060	10,966	2,962	8,000	2,966	-	-	-	2,966	1,098	-	-	-	2,966	1,098

GENERAL NOTES:
 Maximum Daily Demand (MDD) per capita for 2009 data was obtained through CFB Borden.
 Average Daily Flow (ADF) per capita for 2009 data was obtained through CFB Borden.
 Serviced Population for 2009 was based on information provided through CFB Borden.
 2009 Rate Capacity data was obtained through the CFB Borden.
 2009 Equivalent Population was based on 2009 Design per capita flows and demands.

4.20. Rama Mnjikaning First Nation Community Servicing Gap Analysis

No information with regards to the Rama Mnjikaning First Nation Community's water and/or wastewater treatment facility is available at this time. The community has been contacted by both Greenland and a representative from Simcoe County. At this time, information could not be obtained from this community. As such, a servicing gap analysis was not performed for this community.

4.21. Beausoleil First Nation Community Servicing Gap Analysis

No information with regards to the Beausoleil First Nation Community's water and/or wastewater treatment facility is available at this time. The community has been contacted by both Greenland and a representative from Simcoe County. At this time, information could not be obtained from this community. As such, a servicing gap analysis was not performed for this community.

4.22. Private Septic Wastewater Systems

Groundwater pollution from private septic systems has recently become a concern within more isolated, rural areas of Simcoe County. Historically, high concentrations of organic contaminants generated by septic systems have been a major contributor to groundwater contamination within the Province of Ontario. Problems with septic systems effluent are of greater concern when communities rely on private wells for drinking water.

At this time, limited information exists regarding the quantity and current operability of private existing septic and/or wastewater treatment systems that are located within the Simcoe area. For the purpose of this study, the number of active private systems was estimated and is illustrated in **Table 4.22.1**.

The estimated quantity of private septic/wastewater treatment systems found within the Simcoe area used both the 2009 municipal population as well as the 2009 municipal wastewater servicing population to determine the total population found within Simcoe County which relies on private and/or communal type septic systems. Based on data presented within **Table 4.22.1**, it was determined that over 130,000 people within Simcoe County rely on private and/or communal type wastewater treatment systems for servicing. Once this value was determined, the estimated number of private systems within Simcoe County was calculated based upon the average number of persons that inhabit a single dwelling (PPU) for each of the

municipalities found within the study area. As detailed in **Table 4.22.1**, there are approximately 50,000 private wastewater treatment systems and/or private communal wastewater systems located in the County of Simcoe and cities of Barrie and Orillia.

Table 4.22.1 Estimated Quantity of Septic Systems within Simcoe County, Barrie and Orillia

	Town/Township	Estimated Septic Systems: Simcoe Area					Estimated Number of Private Septic Systems (Units)
		2009 Population (Persons)	2009 Municipal Wastewater Servicing Population (Persons)	2009 Septic Service Population (Persons)	2009 Septic Service Population (Persons)	Persons Per Unit (PPU)	
Simcoe County	Township of Adjala-Tosorontio	11,085	300	10,785	10,785	3.00	3,595
	Town of Bradford West Gwillimbury	26,871	18,575	8,296	8,296	3.10	2,676
	Township of Clearview	15,111	5,971	9,140	9,140	2.80	3,264
	Town of Collingwood	18,462	18,048	414	414	2.60	159
	Township of Essa	18,886	7,247	11,639	11,639	2.70	4,311
	Town of Innisfil	34,932	24,148	10,784	10,784	3.00	3,595
	Town of Midland	17,329	14,429	2,900	2,900	2.70	1,074
	Town of New Tecumseth	31,398	23,050	8,348	8,348	2.80	2,981
	Township of Oro-Medonte	20,455	0	20,455	20,455	2.60	7,867
	Town of Penetanguishene	10,055	6,701	3,354	3,354	2.60	1,290
	Township of Ramara	9,974	3,179	6,795	6,795	2.49	2,729
	Township of Severn	12,997	4,000	8,997	8,997	2.70	3,332
	Township of Springwater	19,446	3,282	16,164	16,164	2.80	5,773
	Township of Tay	10,383	5,819	4,564	4,564	2.80	1,630
	Township of Tiny	11,454	0	11,454	11,454	2.80	4,091
Town of Wasaga Beach	17,306	22,449	0	0	2.10	0	
	Total	286,142	157,198	134,088	134,088	2.72	48,367
Other	City of Barrie	138,448	139,000	1,560	1,560	2.60	600
	City of Orillia	31,221	31,420	715	715	2.60	275
	First Nations	NA	NA	NA	NA	NA	NA

4.23. Landfill Leachate Analysis

4.23.1. Background Information

The most common source of landfill leachate is a result of precipitation filtering down through a landfill site and becoming potentially impacted as a result of the percolation process. Landfill leachate varies in strength, depending upon the characteristics of the materials that are being land filled at the landfill site. Typically, landfill leachate has high concentrations of nitrogen, iron, organic carbon, manganese, chloride and phenols. Other chemicals including pesticides, solvents and heavy metals may also be present.

Leachate collection systems are required by the MOE for any new landfill and have been installed in some of the existing landfill sites throughout the County. A leachate collection system typically consists of a collection pipe network located on top of the landfill's liner. This collection pipe network collects and transports the leachate through a drainage layer to a collection sump where it is removed for treatment and/or disposal.

4.23.2. Leachate Generation in Simcoe County

Based on information provided through Simcoe County, there are six (6) County owned and operated landfills which have leachate collection systems. These sites are as follows:

1. **Site 4 (Essa):** Located in the Township of Essa
2. **Site 10 (Nottawasaga):** Located in Stayner within the Township of Clearview
3. **Site 11(Oro):** Located in Edgar within the Township of Oro-Medonte
4. **Site 13 (Adjala-Tosorontio):** Located in Everett within the Township of Adjala-Tosorontio.
5. **Site 15 (Wasaga Beach):** Located in the Town of Wasaga Beach
6. **Site 16(Bradford West Gwillimbury):** Located in the Town of Bradford. Please note that this landfill acts a temporary transfer station.

Landfill sites located within Simcoe County are illustrated in **Figure 4-1**.



Figure 4-1: Leachate Generation Sites in Simcoe County

4.23.3. 2009 Leachate Production (Volumes)

The 2009 leachate production within Simcoe County was assessed for each of the six (6) landfill sites on a monthly basis. Data provided through the County of Simcoe is illustrated in **Figure 4-2** and in **Table 4.23.3.1**.

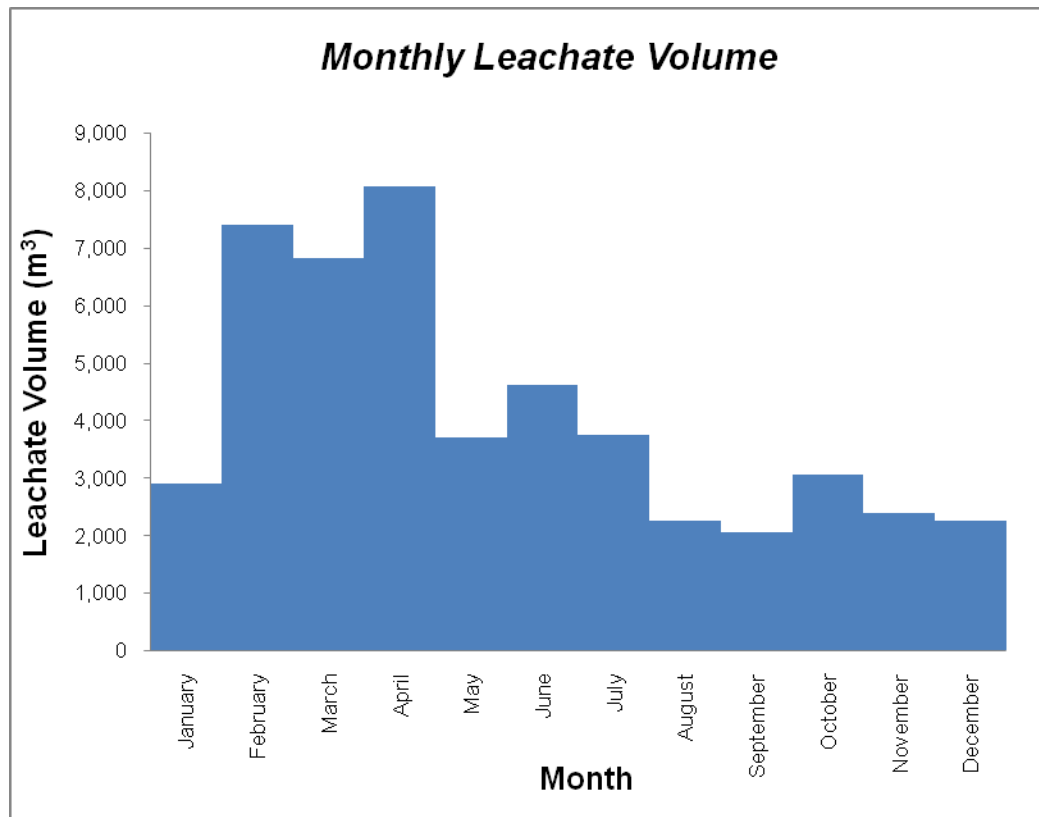


Figure 4-2: Monthly Leachate Volume Generation for 2009

Based on **Table 4.23.3.1** and **Figure 4-2**, the majority of leachate is produced in the spring (February to April) when snowmelt and the bulk of storm events take place. In addition, the majority (approximately 40%) of leachate annually produced in Simcoe County is generated from Site 11 or the Oro Landfill Site.

Landfill	Location	2009 LEACHATE VOLUME PRODUCTIONS (m ³)												
		January	February	March	April	May	June	July	August	September	October	November	December	Total
Site 4 (Essa)	Part Lot 13, Concession 5, Essa	363	642	535	466	258	387	86	129	129	43	165		3,203
Site 10 (Nottawasaga)	5715 30-31 Sideroad, Stayner		760	1,129	1,205	1,444	602	237	93	72	183	131	88	5,943
Site 11 (Oro)	610 Old Barrie Road West, Edgar	2,018	2,013	2,929	3,534	147	1,548	1,973	989	1,118	1,763	1,376	1,070	20,478
Site 13 (Adjala Tosorontio)	6815 Concession Road 4, Everett		936	703	1,161	1,039	704	676	581	406	636	287	705	7,834
Site 15 (Wasaga Beach)	Part Lot 21, Concession 9, Wasaga Beach	324	2,715	1,191	1,548	602	1,032	344	301	129	215	258	238	8,897
Site 16 (Bradford West Gwillimbury)	2960 Line 12, Bradford	211	334	344	172	215	346	430	172	215	215	172	167	2,993
Total		2,916	7,401	6,830	8,085	3,704	4,618	3,746	2,265	2,069	3,055	2,389	2,268	49,347

Table 4.23.3.1: Simcoe County 2009 Landfill Sites and Leachate Volume Productions

4.23.4. Leachate Expenses

Leachate Treatment and Disposal

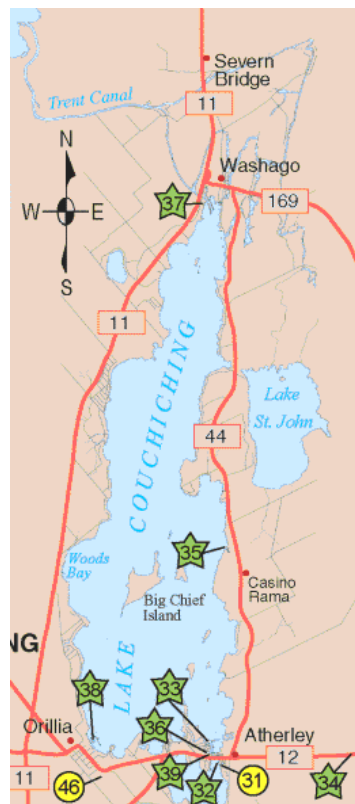
As of 2009, the majority of leachate generated within the five (5) active landfill sites and the Bradford transfer station is being transported to outside sources for the primary treatment and disposal. Two (2) treatment systems accept leachate from these landfill sites. These facilities are the City of Barrie and the Town of The Blue Mountains. Please note that a few of the landfills located within Simcoe County are pre-treated on site prior to disposal. For example, Site 10 (Nottawasaga) presently uses a Waterloo Bio-Filtration System for its pre-treatment.

2009 Leachate Expenses

Based on information obtained through the County of Simcoe, leachate transportation and disposal expenses for 2009 were in the range of approximately \$720,000. Based on a transportation and disposal fees, over 50 percent of the annual leachate disposal cost was related to leachate transportation.

Location	Marina	Docks/Slips
2	City of Barrie Marina	398
22	Brentwood Marine	130
28	Lake Simcoe Marine Ltd.	92
5	South Simcoe Marina	80
6	Crate's Lagoon City Marina	277
7	Kon Tiki Marine Ltd.	200
40	Cooks Bay Marina Inc.	155
11	Lefroy Harbour Resorts Inc.	300
12	Monto Reno Marina Ltd.	110
13	Marina Del Rey	160
15	Starport Landing	207
16	Missing data	-
29	Missing data	-

Figure 4-4 Marinas located within Lake Couchiching



Location	Marina	Docks/Slips
38	Port of Orillia	200
33	Bridge Port Marina	102
36	Mariposa Landing	170
32	Blue Beacon Marina	85
39	Crate's Lake Country Boats Inc.	22
35	Ojibway Bay Marina	150
37	McGregor On The Water	56

Figure 4-5 Marinas located within Nottawasaga Bay/Port Severn/Coldwater



Location	Marina	Docks/Slips
1	Cranberry Yacht Club	130
38	Wasaga Marine (1996) Limited	36
58	Missing	-
57	Missing	-
23	A. C. Marina	90

5. OPPORTUNITIES AND CONSTRAINTS

5.1. Water and Wastewater Servicing Opportunities and Constraints

5.1.1. General

Based on the Servicing Gap Analysis which is presented in **Chapter 4.0**, this chapter summarizes the water and wastewater servicing opportunities and constraints by municipality, identified in this Background Information Brief.

5.1.2. Servicing Gap Summary

Servicing gap analysis was completed for each of the individual municipalities within the County of Simcoe, Federal Lands within Simcoe County as well as the cities of Barrie and Orillia. It should be noted that 2031 servicing gap analysis assumed that those residents that are presently serviced by private water and wastewater treatment systems would continue to be serviced by these systems. In addition, the servicing gap analysis assumed that all new growth proposed in the study area would be directed to existing water supply and wastewater treatment systems. A summary of this servicing gap analysis is presented within **Table 5.1.2.1**.

Table 5.1.2.1: County of Simcoe and Surrounding Areas Water and Wastewater Servicing Gap Analysis Summary											
Municipality/ Federal Properties	2009 Data					2031 Data				Servicing Gaps	
	Water/Wastewater Facilities	Estimated 2009 Population (Persons)	2009 Served Population (Persons)	2009 Rated Capacity Equivalent Population (Persons)	2009 Existing Residual Capacity (Persons)	2031 Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Estimated 2009-2031 Served Population Increase (Persons)	2031 Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Servicing Gap (Persons)
Township of Adjala- Tosorontio	Water Treatment Facilities	11,085	2,868	11,646	8,778	14,200	250	3,115	5,413	-	5,413
	Wastewater Treatment Facilities	11,085	300	709	409	14,200	250	3,115	2,955	-	2,955
Town of Bradford West Gwillimbury	Water Treatment Facilities	26,871	21,718	33,430	11,712	49,700	4,100	22,829	3,446	9,332	5,886
	Wastewater Treatment Facilities	26,871	18,575	44,722	26,147	49,700	4,100	22,829	783	-	783
Township of Clearview	Water Treatment Facilities	15,111	7,501	13,370	5,869	26,000	700	10,889	5,721	-	5,721
	Wastewater Treatment Facilities	15,111	5,971	8,616	2,645	26,000	700	10,889	8,945	-	8,945
Town of Collingwood	Water Treatment Facilities	18,462	24,013	26,512	2,499	30,200	1,800	11,738	11,040	-	11,040
	Wastewater Treatment Facilities	18,462	18,048	25,562	7,514	30,200	1,800	11,738	6,024	-	6,024
Township of Essa	Water Treatment Facilities	18,886	8,692	24,590	15,898	22,900	1,300	4,014	10,584	-	10,584
	Wastewater Treatment Facilities	18,886	7,247	15,450	8,203	22,900	1,300	4,014	2,889	-	2,889
Town of Innisfil	Water Treatment Facilities	34,932	21,418	49,200	25,052	65,000	3,700	30,068	8,716	-	8,716
	Wastewater Treatment Facilities	34,932	24,148	37,122	12,974	65,000	3,700	30,068	20,794	-	20,794
Town of Midland	Water Treatment Facilities	17,329	17,129	23,106	5,977	2,800	2,000	2,371	1,606	-	1,606
	Wastewater Treatment Facilities	17,329	14,429	23,755	9,326	2,800	2,000	2,371	4,955	-	4,955

Table 5.1.2.1: County of Simcoe and Surrounding Areas Water and Wastewater Servicing Gap Analysis Summary

Municipality / Federal Properties	2009 Data					2031 Data				Servicing Gaps	
	Water/Wastewater Facilities	Estimated 2009 Population (Persons)	2009 Served Population (Persons)	2009 Rated Capacity Equivalent Population (Persons)	2009 Existing Residual Capacity (Persons)	2031 Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Estimated 2009-2031 Served Population Increase (Persons)	2031 Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Servicing Gap (Persons)
Town of New Tecumseth	Water Treatment Facilities	31,398	23,050	52,675	29,625	51,300	3,400	19,902	6,323	-	6,323
	Wastewater Treatment Facilities	31,398	23,050	49,767	26,716	51,300	3,400	19,902	3,414	-	3,414
Township of Oro-Medonte	Water Treatment Facilities	20,455	4,953	21,549	16,596	28,100	750	7,645	8,201	-	8,201
	Wastewater Treatment Facilities	20,455	-	-	-	28,100	750	7,645	8,395	-	8,395
Town of Penetanguishene	Water Treatment Facilities	10,055	7,483	14,231	6,748	12,300	850	2,245	3,652	-	3,652
	Wastewater Treatment Facilities	10,055	6,701	9,533	2,832	12,300	850	2,245	263	-	263
Township of Ramara	Water Treatment Facilities	9,974	3,917	8,415	4,498	15,500	300	5,526	1,329	-	1,329
	Wastewater Treatment Facilities	9,974	3,179	4,488	1,309	15,500	300	5,526	4,517	-	4,517
Township of Severn	Water Treatment Facilities	12,997	4,649	13,330	8,681	20,200	700	7,203	778	-	778
	Wastewater Treatment Facilities	12,997	4,000	9,794	5,794	20,200	700	7,203	2,109	-	2,109
Township of Springwater	Water Treatment Facilities	19,446	9,623	25,472	15,849	26,500	850	7,054	7,945	-	7,945
	Wastewater Treatment Facilities	19,446	3,282	6,382	3,100	26,500	850	7,054	4,804	-	4,804
Township of Tay	Water Treatment Facilities	10,383	7,960	10,033	2,073	11,300	250	917	906	-	906
	Wastewater Treatment Facilities	10,383	5,819	8,185	2,366	11,300	250	917	1,199	-	1,199
Township of Tiny	Water Treatment Facilities	11,454	6,617	18,206	10,964	13,900	250	2,446	8,268	-	8,268
	Wastewater Treatment Facilities	11,454	-	-	-	13,900	250	2,446	2,696	-	2,696
Town of Wasaga Beach	Water Treatment Facilities	17,306	23,911	37,345	13,434	35,000	500	17,694	4,760	-	4,760
	Wastewater Treatment Facilities	17,306	22,449	56,861	34,412	35,000	500	17,694	16,218	-	16,218

Table 5.1.2.1: County of Simcoe and Surrounding Areas Water and Wastewater Servicing Gap Analysis Summary

Municipality / Federal Properties	2009 Data					2031 Data				Servicing Gaps	
	Water/Wastewater Facilities	Estimated 2009 Population (Persons)	2009 Served Population (Persons)	2009 Rated Capacity Equivalent Population (Persons)	2009 Existing Residual Capacity (Persons)	2031 Simcoe County Official Plan APP (Persons)	2031 Projected Employment Growth (Equivalent Persons)	Estimated 2009-2031 Served Population Increase (Persons)	2031 Residual Capacity (Persons)	Committed Capacity Increase (Persons)	Servicing Gap (Persons)
City of Barrie	Water Treatment Facilities	138,448	139,500	330,703	191,203	210,000	18,350	71,552	101,301	-	101,301
	Wastewater Treatment Facilities	138,448	139,000	203,310	64,310	210,000	18,350	71,552	- 25,592	42,484	16,892
City of Orillia	Water Treatment Facilities	31,221	31,129	76,257	45,128	41,000	650	9,779	34,699	-	34,699
	Wastewater Treatment Facilities	31,221	31,420	43,639	12,219	41,000	650	9,779	1,790	-	1,790
CFB Borden	Water Treatment Facilities	8,000	8,000	22,840	14,840	8,000	-	-	14,840	-	14,840
	Wastewater Treatment Facilities	8,000	8,000	10,966	2,966	8,000	-	-	2,966	-	2,966

5.1.3. Servicing Gap Opportunities and Constraints by Municipality

The following subsection summarizes the water and wastewater servicing opportunities and constraints by Municipality.

Township of Adjala-Tosorontio

- The Township of Adjala-Tosorontio has a future (2031) surplus water capacity of 5,413 people, due primarily to the residual capacities at the Everett, Lisle and Weca systems. The other four (4) systems at Colgan, Loretto Heights, Rosemount and Hockley represent only 10% of the residual system capacity.
- In the Township of Adjala-Tosorontio, approximately 8,217 people are serviced by private water systems as of 2009.
- The Township of Adjala-Tosorontio is almost exclusively serviced by private wastewater treatment systems. The exception is the New Horizon system which services a subdivision and has a residual capacity of 406 people. As such, with a proposed 2031 population in the Township of Adjala-Tosorontio of 3,115 people and employment growth of an equivalent 250 people, there is a wastewater servicing gap of 2,955 people in the Township which cannot be serviced by municipal wastewater treatment systems.
- There is an opportunity to investigate the potential for utilizing the residual water capacity in the municipal systems in the Township of Adjala-Tosorontio.
- Unless there is a new wastewater servicing solution(s) proposed for the Township of Adjala-Tosorontio, growth above current system capacities within the Township will be limited by the type new development and locations for new development to those areas that can support private wastewater treatment systems (e.g. septic systems).

Town of Bradford West Gwillimbury

- The Town of Bradford West Gwillimbury presently has a water servicing residual capacity of approximately 11,713 people. However, due to the significant growth proposed in the Town of Bradford West Gwillimbury by the year 2031 (22,829 people plus 4,100 employment equivalent in persons), the Town would experience a water servicing gap of 5,886 people, even with a proposed increase in the water delivered to the Town of Bradford West Gwillimbury from the Innisfil to Bradford West Gwillimbury transmission main under Phase 2 of the Alcona Water Treatment Plant improvements. With the

proposed Phase 3 expansion of the Alcona WTP in Innisfil, it is expected that the Town of Bradford West Gwillimbury water servicing requirements for 2031 will be met.

- In the Town of Bradford West Gwillimbury, approximately 5,153 people are serviced by private water systems as of 2009.
- The Town of Bradford West Gwillimbury presently has a wastewater servicing residual capacity of 26,147 people. Again due to the significant growth proposed in the Town of Bradford West Gwillimbury by the year 2031, the Town would experience a wastewater servicing gap of 783 people. The 2031 wastewater servicing gap is based on the facility's hydraulic capacity. With the introduction of the Lake Simcoe Protection Act, the phosphorus loading concentration discharge limit from the Town of Bradford West Gwillimbury WWTP has been reduced from 0.3 mg/L to 0.1 mg/L. As such, upgrades will be required at the WWTP to take advantage of the existing available hydraulic capacity of the WWTP. Moreover, in order to address the 2031 wastewater servicing gap, hydraulic capacity improvements will be required at the WWTP.
- In the Town of Bradford West Gwillimbury, approximately 8,295 people are serviced by private wastewater treatment systems.
- As detailed herein, the Town of Bradford West Gwillimbury proposes to utilize the existing Bradford West Gwillimbury -Innisfil water transmission main and the proposed improvements at the Alcona WTP to address its 2031 water servicing gap.
- In order to address the water quality discharge and hydraulic capacity improvement needed at the Town of Bradford West Gwillimbury WWTP, the Town has initiated a Class Environmental Assessment to upgrade its existing wastewater treatment infrastructure to facilitate the proposed 2031 growth.
- As detailed in the phosphorus loading analysis completed as part of the preparation of this Background Information in **Section 5.2.5**, there is an opportunity to reduce point source and non-point source loading of the Holland River (location of WWTP discharge), to use as off-sets facilitated by this investment to mitigate other watershed impacts.

Township of Clearview

- As of 2009, the Township of Clearview has a residual water servicing capacity of approximately 5,867 people. This is mainly due the residual capacity at the New Lowell, Stayner and Creemore water supply systems.

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- McKean, Colling-Woodlands, and Buckingham Woods represent only 13.9% of the residual water system capacity for 2009 in the Township.
 - In the Township of Clearview, approximately 7,610 people are serviced by private water systems as of 2009.
 - The Township of Clearview has a future (2031) water capacity servicing gap of approximately 5,722 people, due primarily to the significant amount of population and employment growth proposed within the Township.
 - The Township of Clearview is primarily serviced by private wastewater treatment systems. The exception being the communities of Stayner and Creemore where the wastewater treatment systems in these communities service a combined population of approximately 5,971 people. As such, with a proposed 2031 population in the Township of Clearview of 10,889 people and employment growth of an equivalent 700 people, there is a 2031 wastewater servicing gap of 10,020 people in the Township.
 - In the Township of Clearview, approximately 9,140 people are serviced by private wastewater treatment systems.
 - There is an opportunity to investigate potential water servicing solutions within the Township. Unless there is a new water serving solution(s) proposed for the Township, growth above current system capacities within the Township will be limited with respect to the type and areas for new development that can support private well systems.
 - Similarly, unless there is a new wastewater servicing solution(s) proposed for the Township of Clearview, growth will be limited with respect to the type and areas for new development that can support private wastewater treatment systems (e.g. septic systems).
 - A Class EA has been completed which recommends that the future wastewater servicing requirements for the community of Nottawa by the Town of Collingwood WPCP, via a forcemain to the Town's collection system in the south end.
 - An agreement and Class EA have been initiated between the Township of Clearview and the Town of Wasaga Beach to facilitate the 2031 wastewater treatment servicing requirement for the Community of Stayner by conveying sewage flows from Stayner to the Town of Wasaga Beach wastewater treatment system.

Town of Collingwood

- The Town of Collingwood presently has water servicing residual capacity of approximately 2,499 people at its supply and treatment facility. However, due to the significant growth proposed in the Town of Collingwood by the year 2031 (11,122 people plus 1,800 employment equivalent in persons), the Town would experience a water servicing gap of 11,040 people.
- Please note that a larger water servicing gap may occur in the event that additional water is utilized from the existing Collingwood to Alliston watermain from neighbouring municipalities.
- Due to seasonal variability, it is unknown how many people are serviced by private water systems within the Town of Collingwood.
- The Town of Collingwood presently has a wastewater servicing residual capacity of 7,514 people at its WWTP. Again due to the significant growth proposed in the Town of Collingwood by the year 2031, the Town would experience a wastewater servicing gap of 6,024 people.
- In the Town of Collingwood, approximately 1,030 people are serviced by private wastewater treatment systems.
- As detailed herein, the Town of Collingwood proposes to expand the Town's water treatment system to address its 2031 negative water servicing gap. Due to its proximity to surface water sources (Nottawasaga Bay) and the size of the facility's water intake pipe, there is an opportunity for this facility to be expanded significantly. The Town's WTP water intake system is composed of a 1,067 mm intake pipe which is capable of supplying the treatment facility with up to 60,000 m³/day. In addition, this facility was designed to be expandable up to 60,000 m³/day with the addition of treatment units.
- In order to address the future wastewater servicing gap with regards to the Town of Collingwood's WWTP, the Town has initiated a Class Environmental Assessment to improve its existing wastewater treatment infrastructure to facilitate the proposed 2031 growth.

Township of Essa

- The Township of Essa has a future (2031) surplus water capacity 15,898 people, due primarily to the residual capacities at the Angus water supply system which represents approximately 98% of the Township's residual capacity. The other two (2) systems at Thornton-Glen and Baxter represent only 2% of the residual water supply and treatment system capacity. Including

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- the Township's proposed 2031 growth there is a residual capacity in the Township's existing water supply systems of 10,584 people.
- In the Township of Essa, approximately 10,195 people are serviced by private water systems as of 2009.
 - The Township of Essa is almost exclusively serviced by private wastewater treatment systems. The exception is the Angus WWTP which services the Community of Angus. As such, even with a proposed 2031 population in the Township of Essa of 3,824 people and employment growth of an equivalent 1,300 people, there is a positive wastewater servicing gap of 2,889 people in the Township, primarily at the Angus WWTP.
 - In the Township of Essa, approximately 11,829 people are serviced by private wastewater treatment systems.
 - There is an opportunity to investigate the potential for utilizing the residual water capacity in the municipal systems in the Township of Essa.
 - Unless there is a new wastewater servicing solution proposed for the Township of Essa, growth above current system capacities within the Township will be limited by the type and areas for new development that can support private wastewater treatment systems (e.g. septic systems), with the exception of the Community of Angus.

Town of Innisfil

- The Town of Innisfil presently has water servicing residual capacity of approximately 25,052 people. However, due to the significant growth proposed in the Town of Innisfil by the year 2031 (30,068 people plus 3,700 employment equivalent in persons), the Town would experience a water servicing gap of 8,716 people with the existing systems by 2031.
- In the Town of Innisfil, approximately 11,829 people are serviced by private water systems as of 2009.
- The Town of Innisfil presently has a wastewater servicing residual capacity of 12,991 people from both the Cookstown WWTP as well as the Alcona Lakeshore WWTP. Approximately 96% of the residual wastewater capacity is presently from the Alcona Lakeshore WWTP, while the remaining 4% capacity is at the Cookstown WWTP.
- Due to the significant growth proposed in the Town of Innisfil by the year 2031, the Town would experience a wastewater servicing gap of 20,794 people.

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- In the Town of Innisfil, approximately 10,784 people are serviced by private wastewater treatment systems.
 - As detailed herein, the Town of Innisfil has proposed to expand the Town's Alcona Lakeshore water treatment system to address its 2031 negative water servicing gap. A Class EA has been completed in this regard.
 - As detailed herein, the Town of Innisfil has proposed to expand the Town's Alcona Lakeshore WWTP to address its 2031 wastewater servicing gap. A Class EA has been completed in this regard.

Town of Midland

- The Town of Midland presently has water servicing residual capacity of approximately 5,977 people. With respect to growth proposed in the Town of Midland by the year 2031 (2,371 people plus 2,000 employment equivalent in persons), the Town would continue to experience a residual water servicing capacity of 1,606 people.
- In the Town of Midland, approximately 200 people are serviced by private water systems as of 2009.
- The Town of Midland presently has a wastewater servicing residual capacity of 9,326 people from its wastewater treatment facility.
- With respect to growth proposed in the Town of Midland by the year 2031, the Town would continue to have a residual wastewater treatment system capacity of 4,955 people.
- In the Town of Midland, approximately 2,900 people are serviced by private wastewater treatment systems.
- There is an opportunity to investigate the potential for utilizing the residual water and wastewater capacity in the municipal systems in the Town of Midland.

Town of New Tecumseth

- The Town of New Tecumseth presently has water servicing residual capacity of approximately 29,627 people from their water supply systems. Significant growth is proposed in the Town of New Tecumseth by the year 2031 (17,602 people plus 3,400 employment equivalent in persons). However, due to the significant residual capacity presented in both water supply systems, the Town will continue to have water servicing residual capacity of 8,625 people.

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- In the Town of New Tecumseth, approximately 8,623 people are serviced by private water systems as of 2009.
 - The Town of New Tecumseth presently has a wastewater servicing residual capacity of 26,717 people generated from the Tottenham, Regional and Alliston WWTPs. Approximately 69% of the residual wastewater capacity is at the Regional WWTP, while the remaining 31% capacity available at the Tottenham and Alliston WWTPs.
 - Due to the significant residual wastewater servicing capacity, mainly due to the recently expanded Regional WWTP, the Town of New Tecumseth will have a residual wastewater servicing capacity of 5,714 people, based on the 2031 proposed growth in the Town. Please note that this facility has a C of A capacity of 7,595 m³/day even though the facility has the ability to treat up to 11,400 m³/day, based on the facility's C of A. The rated capacity based on the C of A will not be expanded until required.
 - In the Town of New Tecumseth, approximately 8,348 people are serviced by private wastewater treatment systems.
 - As detailed herein, the Town of New Tecumseth has completed a Class EA to address its future wastewater servicing demands. At this time no options have been selected for implementation.
 - There is an opportunity to investigate the potential for utilizing the residual water and wastewater capacity in the municipal systems in the Town of New Tecumseth.

Township of Oro-Medonte

- The Township of Oro-Medonte has a 2031 surplus water capacity of 8,198 people, due primarily to the residual capacities at the Horseshoe Valley, Sugarbush, Robincrest and Harbourwood systems. The other eight (8) systems at Canterbury, Craighurst, Maplewood, Cedarwood, Lake Simcoe Regional Airport, Medonte Hills, Shanty Bay, and Warminster represent only 23% of the residual system capacity.
- In the Township of Oro-Medonte, approximately 15,503 people are serviced by private water systems as of 2009.
- The Township of Oro-Medonte is exclusively serviced by private wastewater treatment systems. As such, with a proposed 2031 population in the Township of Oro-Medonte of 7,645 people and employment growth of an equivalent 750 people, there is a 2031 wastewater servicing gap of 8,395 people in the Township.

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- There is an opportunity to investigate the potential for utilizing the residual water capacity in the municipal systems in the Township of Oro-Medonte.
 - Unless there is a new wastewater servicing solution proposed for the Township of Oro-Medonte, growth above current system capacities within the Township will be limited by the type and areas for new development that can support private wastewater treatment systems (e.g. septic systems).
 - Please note that a large development proposal from Skyline developments has been proposed within this Township. Consequently, population growth within the Township could be higher than the projected value if this development does occur. The primary growth node in the Township is the Craighurst/Horsehoe Valley settlement areas, which includes the proposed Skyline development.

Town of Penetanguishene

- The Town of Penetanguishene presently has water servicing residual capacity of approximately 6,743 people generated by the two (2) water supply systems within the Town. Payette water supply system generates approximately 91% of the Town's residual water capacity.
- As a result of the level of growth proposed in the Town of Penetanguishene by the year 2031 (2,245 people plus 850 employment equivalent in persons), the Town would experience 2031 residual water servicing capacity of 3,652 people.
- In the Town of Penetanguishene, approximately 2,572 people are serviced by private water systems as of 2009.
- The Town of Penetanguishene presently has a wastewater servicing residual capacity of 2,832 people from the Main and Fox Street WWTPs.
- As a result of the level of growth proposed in the Town of Penetanguishene by the year 2031, the Town would experience a small wastewater treatment servicing gap of 263 people in 2031. This servicing gap will however be resolved by the optimization of the Main Street STP under construction which will provide additional capacity for future growth.
- In the Town of Penetanguishene, approximately 2,900 people are serviced by private wastewater treatment systems.
- There is an opportunity to investigate the potential for utilizing the residual water capacity in the municipal systems in the Town of Penetanguishene as well as the existing Way Point facility on Provincial lands (hospital grounds).

Township of Ramara

- The Township of Ramara presently has water servicing residual capacity of approximately 4,497 people, mainly due to the residual capacities in the Lagoon City/Brechin and Bayshore Village water supply systems. These two (2) systems represent approximately 88% of the Township's residual water servicing capacity. The remaining four (4) water supply systems (Park Lane, Davy Drive, South Ramara and Val Harbour systems) represent the remaining 12% of the Township's residual water capacity.
- Due to the moderate growth proposed in the Township of Ramara by the year 2031 (5,532 people plus 300 employment equivalent in persons), the Township would experience a water servicing gap of 1,329 people.
- In the Township of Ramara, approximately 6,051 people are serviced by private water systems as of 2009.
- The Township of Ramara presently has a wastewater servicing residual capacity of 1,205 people from the Lagoon City and Bayshore Village WWTPs.
- Due to the moderate growth proposed in the Township of Ramara by the year 2031 as well as the low residual capacity from the Township's WWTPs, the Township would experience a wastewater treatment servicing gap of 4,517 people.
- In the Township of Ramara, approximately 6,789 people are serviced by private wastewater treatment systems.
- Unless there is a new water serving solution(s) proposed for the Township, growth above current system capacities within the Township will be limited by the type and areas of new development that can support private water supply systems
- Unless there is a new wastewater servicing solution proposed for the Township of Ramara, growth above current system capacities within the Township will be limited by the type and areas of new development that can support private wastewater treatment systems (e.g. septic systems).

Township of Severn

- The Township of Severn presently has water servicing residual capacity of approximately 8,677 people, mainly due to the large residual capacities in the Coldwater and West Shore water supply systems. These two (2) systems represent approximately 75% of the Township's residual water servicing capacity. The remaining four (4) water supply systems (Severn Estates, Bass

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- Lake Woodlands, Sandcastle Estates and Washago water supply systems) represent the remaining 25% of the Township's residual water capacity.
- Due to the moderate growth proposed in the Township of Severn by the year 2031 (7,203 people plus 700 employment equivalent in persons) and the significant residual water servicing capacity, the Township would have a 2031 residual water servicing capacity of 778 people.
 - In the Township of Severn, approximately 8,349 people are serviced by private water systems as of 2009.
 - The Township of Severn presently has a wastewater servicing residual capacity of 5,800 people from the Washago, Coldwater and West Shore WWTPs.
 - Due to the moderate growth proposed in the Township of Severn by the year 2031, the Township would experience a wastewater servicing gap of approximately 2,109 people.
 - In the Township of Severn, approximately 8,997 people are serviced by private wastewater treatment systems.
 - Unless there is a new wastewater servicing solution is proposed for the Township of Severn, growth above current system capacities within the Township will be limited by the type and areas of new development that can support private wastewater treatment systems (e.g. septic systems).

Township of Springwater

- The Township of Springwater presently has a water servicing residual capacity of approximately 15,849 people, mainly due to the large residual capacities in the Elmvale, Midhurst and Snow Valley water supply systems. These three (3) systems represent approximately 79% of the Township's residual water servicing capacity. The remaining six (6) water supply systems represent the remaining 21% of the Township's residual water capacity.
- Due to the moderate growth proposed in the County's Official Plan within the Township of Springwater by the year 2031 (7,054 people plus 850 employment equivalent in persons) as well as the significant residual water servicing capacity, the Township would have a 2031 residual water servicing gap of 7,945 people.
- In the Township of Springwater, approximately 9,823 people are serviced by private water systems as of 2009.

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- The Township of Springwater presently has a wastewater servicing residual capacity of 3,111 people from the Elmvale, Snow Valley Highlands and Snow Valley Lowlands WWTPs.
 - Due to the moderate growth proposed in the Township of Springwater by the year 2031, the Township would experience a wastewater servicing gap of approximately 4,804 people.
 - In the Township of Springwater, approximately 16,164 people are serviced by private wastewater treatment systems.
 - Unless there is a new wastewater servicing solution proposed for the Township of Springwater, growth above current system capacities within the Township will be limited by the type and areas of new development that can support private wastewater treatment systems (e.g. septic systems).
 - As detailed herein, a Class EA has been completed to address future water and wastewater servicing demands within the Township. Any deficiencies with respect to 2031 servicing growth would be met with the implementation of this Class EA.

Township of Tay

- The Township of Tay presently has water servicing residual capacity of approximately 2,073 people, mainly due to the large residual capacity in the Victoria Harbour/Port McNicoll water supply system. This system represents approximately 97% of the Township's residual water servicing capacity. The Rope water supply system generates the remaining 3% of the Township's residual water capacity.
- Due to the level of growth proposed in the Township of Tay by the year 2031 (917 people plus 250 employment equivalent in persons) according to the County's Official Plan, as well as the significant residual water servicing capacity, the Township will have a water servicing residual capacity of 906 people.
- In the Township of Tay, approximately 2,423 people are serviced by private water systems as of 2009.
- The Township of Tay presently has a wastewater servicing residual capacity of 2,366 people from the Victoria Harbour and Port McNicoll WWTPs.
- Due to the level of growth proposed in the Township of Tay by the year 2031 according to the County's Official Plan, the Township will have residual wastewater servicing capacity of approximately 1,199 people.

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- In the Township of Tay, approximately 4,564 people are serviced by private wastewater treatment systems.
 - Please note that a large development proposal from Skyline developments has been proposed within this Township. Consequently, population growth above current system capacities within the Township will be higher than the projected value if this development does occur to its full extent by 2031.

Township of Tiny

- The Township of Tiny presently has water servicing residual capacity of approximately 10,972 people, mainly due to the large residual capacity in the Perkinsfield, Georgian Sands, Wyevale Central and Georgian Highlands water supply systems. These systems represent approximately 64% of the Township's residual water servicing capacity. The remaining 36% of the Township's residual water capacity is available at the remaining fifteen (15) Township water supply systems.
- Due to the limited growth proposed in the Township of Tiny by the year 2031 (2,446 people plus 250 employment equivalent in persons) in the County's Official Plan, as well as the significant residual water servicing capacity in the Township, the Township would have a 2031 residual water servicing capacity of 8,268 people.
- In the Township of Tiny, approximately 4,837 people are serviced by private water systems as of 2009.
- The Township of Tiny is exclusively serviced by private wastewater treatments. As such, with a proposed 2031 population in the Township of Tiny of 2,446 people and employment growth of an equivalent 250 people, there is a wastewater servicing gap of 2,696 people.
- In the Township of Tiny, approximately 4,564 people are serviced by private wastewater treatment systems.
- There is an opportunity to investigate the potential for utilizing the residual water capacity in the municipal systems in the Township of Tiny.
- Unless there is a new wastewater servicing solution proposed for the Township of Tiny, growth above current system capacities within the Township will be limited by the type and areas of new development that can support private wastewater treatment systems (e.g. septic systems).

Town of Wasaga Beach

- The Town of Wasaga Beach presently has water servicing residual capacity of approximately 13,233 people in the Town's water supply systems.
- Due to the significant growth proposed in the Town of Wasaga Beach by the year 2031 (17,615 people plus 500 employment equivalent in persons), the Town would experience a water servicing gap of 4,965 people.
- The Town of Wasaga Beach presently has a wastewater servicing residual capacity of 33,842 people. Due to the significant amount of residual wastewater servicing capacity within the Town of Wasaga Beach's WWTP, the Town would have a 2031 residual wastewater treatment system capacity of 15,648 people based on the 2031 proposed growth.
- There is an opportunity to investigate the potential for utilizing the residual wastewater capacity in the municipal systems in the Town of Wasaga Beach.
- As detailed herein, a Class EA was completed by the Township of Clearview to connect the community of Stayner (Township of Clearview) to the Town of Wasaga Beach's WWTP, utilizing some of the available residual capacity in this system.
- Unless there is a new water servicing solution(s), including expansion of existing systems, proposed for the Town of Wasaga Beach, some of the growth above current system capacities within the Town will be limited.

City of Barrie

- The City of Barrie presently has water servicing residual capacity of approximately 191,203 people. This large residual water capacity is primarily as a result of the recently commissioned, surface water treatment facility in the City that has a rated capacity of 65,200 m³/day and a total based on the City's permits to take water of 148,264 m³/day. It should be noted that not all the water facilities are operated at the full PPTW capacity; therefore, the net equivalent population is reduced.
- Significant growth is proposed in the City of Barrie by the year 2031 (71,552 people plus 18,350 employment equivalent in persons).
- Due to the large residual water supply capacity, the City would experience a 2031 water supply residual capacity of approximately 101,301 people.
- The City of Barrie presently has a wastewater servicing residual planning capacity of 64,310 people. Due to the significant amount of proposed growth,

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- the City of Barrie would experience a wastewater servicing residual of 16,892 people based on the 2031 proposed growth.
- As detailed herein, The City of Barrie is presently undertaking an expansion of their wastewater treatment plant (WWTP) to a rated capacity 76,000 m³/day which would ensure that the City of Barrie is capable of meeting its 2031 growth needs (see previous bullet).
 - There is an opportunity to investigate the potential for utilizing the residual water capacity in the municipal systems in the City of Barrie.

City of Orillia

- The City of Orillia presently has water servicing residual capacity of approximately 45,128 people.
- Moderate growth is proposed in the City of Orillia by the year 2031 (9,779 people plus 650 employment equivalent in persons).
- Due to the City's large existing residual water supply system capacity, the City would experience a 2031 water supply system residual capacity of approximately 34,699 people.
- The City of Orillia presently has a wastewater servicing residual capacity of 12,219 people. Due to the significant amount of residual wastewater servicing capacity, the City of Orillia would have a 2031 wastewater servicing residual capacity of 1,790 people based on the 2031 proposed growth.
- There is an opportunity to investigate the potential for utilizing the residual water and wastewater capacity in the municipal systems in the City of Orillia.

CFB Borden

- Canadian Forces Base (CFB) Borden presently has water servicing residual capacity of approximately 14,840 people.
- Due to the fluctuation of employees/soldiers entering and leaving at any given time, it was assumed that there would be no change in population of the Base by 2031. As such, this facility would have a residual water servicing capacity of 14,840 people based on 2031 proposed growth.
- CFB Borden presently has a wastewater servicing residual capacity of 2,966 people. As stated, this facility is not anticipating any significant future growth. As such this facility would experience a residual wastewater servicing gap of 2,966 people based on 2031 proposed growth.

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- There is an opportunity to investigate the potential for utilizing the residual water supply and wastewater treatment capacity in the system found within CFB Borden.

5.2. Additional Opportunities and Constraints

5.2.1. Transportation Corridors

Due to geographic constraints for some municipalities within Simcoe County, the opportunity for municipalities to expand their wastewater treatment facilities may be limited to the assimilative capacity of the discharging stream. With regards to water servicing, developing groundwater supplies may not be sustainable for servicing large populations over a long period of time. As such, there is an opportunity for Inter-Municipal Agreements between neighbouring municipalities to occur to accommodate for future water and/or wastewater servicing demands. There are several examples of this approach to municipal water and wastewater servicing already in the County of Simcoe, including the existing Collingwood to Alliston water transmission main, the existing BWG-Alcona water transmission main and the planned treatment of wastewater flows from proposed growth in Nottawa and Stayner in Clearview Township by the Collingwood and Wasaga Beach wastewater treatment facilities located on or near Nottawasaga Bay. Inter-Municipal Agreements are typically formal or informal agreements between one or more municipalities to provide a use of facilities and access to services usually on a fee basis.

To facilitate the Inter-Municipal servicing opportunities, the development of inter-municipal connected water and/or wastewater systems ideally should occur along major transit or infrastructure corridors. As illustrated in **Figure 5.2.1.1** in **Appendix A-6**, there is significant opportunity within the County for future inter-municipal connected water and/or wastewater systems to be installed along Provincial Highways, County Roads, active and non-active railway corridors, infrastructure right of ways (e.g. hydro corridors) as well as major easements. For example the County of Simcoe Transportation Master Plan (2008) has proposed Right of Way expansions to accommodate potential future service trenches.

5.2.2. Private Wastewater Treatment Systems

As stated within this study, groundwater pollution from septic systems is a concern within more isolated, rural areas of Simcoe County where communities predominately rely on groundwater supply systems for their drinking water. As stated within **Section 4.22**, there are approximately 130,000 people (approximately 45% of

the population) that rely on private wastewater treatment systems for their wastewater servicing needs in the County of Simcoe. This is also illustrated in **Table 4.22.1** within this study. As such, there is potential opportunity for a portion of the population currently utilizing private wastewater treatment systems to connect to existing or future municipal infrastructure for wastewater servicing. For example, in the Town of Innisfil, approximately 15,200 private wastewater treatment system users are included in the Study Class Environmental Assessment (EA) for the Lakeshore WPCP. Therefore, municipalities have the opportunity to connect existing private septic system users to a municipal wastewater treatment system through the extension, expansion and/or the construction of these facilities to facilitate new growth.

Table 5.2.3.1 illustrates the existing wastewater treatment plants that accept septage or leachate in Simcoe County and Cities of Orillia and Barrie.

5.2.3. Landfill Leachate

Based upon information presented within **Section 4.23**, Site 10 (Nottawasaga) and Site 11 (Oro) are expecting future growth. Consequently, leachate generation within both of these sites will most likely increase in the future. Presently, the majority (approximately 40%) of leachate annually produced in Simcoe County is generated from Site 11 or the Oro Landfill Site. As such, due to the significant potential growth within the County of Simcoe, there may be an opportunity for the County to develop on-site treatments systems within strategic landfill sites which could potentially include Site 10 and 11. At this time, the majority of leachate is being transported to the neighbouring municipalities of the Town of Blue Mountains and the City of Barrie.

Landfill leachate has been shown to be treatable on landfill sites, without either excessive costs, or the use of systems that require technical management and expertise. Leachate treatment technologies typically fall into two (2) basic system types, biological and physical/chemical. These system types can also be incorporated or combined for a more effective treatment process. The most common biological treatment is activated sludge, which is a suspended-growth process that uses aerobic microorganisms to degrade organic contaminants in leachate. With conventional activated sludge treatment, the leachate is aerated in an open tank with diffusers or mechanical aerators.

Town/Township	Wastewater Treatment Plant Name	Leachate Acceptance (Yes / No)	Septage Acceptance (Yes / No)	Limit
Township of Adjala-Tosorontio	Adjala-Tosorontio WWTP	No	No	-
Town of Bradford West Gwillimbury	Bradford West Gwillimbury WWTP	No	Yes	50 m ³ /day and 1,000m ³ /year per carrier
Township of Clearview	Stayner WWTP	No	No	-
	Creemore WWTP	No	No	-
Town of Collingwood	Collingwood WWTP	Yes	Yes	None
Township of Essa	Angus WWTP	No	Yes	11.2 m ³ /day and 4,088m ³ /year
Town of Innisfil	Alcona Lakeshore WWTP	No	Yes	None
	Cookstown WWTP	No	No	-
Town of Midland	Midland WWTP	Yes	Yes	None (no limit yet)
Town of New Tecumseth	Tottenham WWTP	No	No	-
	Alliston WWTP	No	No	-
	Regional WWTP	No	Yes	None (no limit yet)

Table 5.2.3.1: Summary of Wastewater Treatment Plant Regarding Acceptance of Septage and Leachate				
Town/Township	Wastewater Treatment Plant Name	Leachate Acceptance (Yes / No)	Septage Acceptance (Yes / No)	Limit
Township of Oro-Medonte	None	-	-	-
Town of Penetanguishene	Fox Street WWTP	No	No	-
	Main Street WWTP	No	No	-
Township of Ramara	Lagoon City WWTP	No	Yes	None
	Bayshore Village WWTP	No	No	-
Township of Severn	Washago WWTP	No	No	-
	Coldwater WWTP	No	No	-
	West Shore WWTP	No	No	-
Township of Springwater	Elmvale WWTP	No	No	-
	Snow Valley Highlands WWTP	No	No	-
	Snow Valley Lowlands WWTP	No	No	-

Table 5.2.3.1: Summary of Wastewater Treatment Plant Regarding Acceptance of Septage and Leachate				
Town/Township	Wastewater Treatment Plant Name	Leachate Acceptance (Yes / No)	Septage Acceptance (Yes / No)	Limit
Township of Tay	Port McNicoll WWTP	No	No	-
	Village of Victoria Harbour WWTP	No	No	-
Township of Tiny	None	-	-	-
Town of Wasaga Beach	Wasaga Beach WWTP	No	No	-
Town of the Blue Mountains	Craigeith WWTP	Yes	Yes	Leachate: 400 m ³ /day Septage: No Limit
	Thornbury WWTP	No	No	-
City of Barrie	City of Barrie WWTP	No	No	-
City of Orillia	City of Orillia WWTP	No	Yes	None

As stated within this study, the majority of leachate generated within the five (5) active landfill sites located within Simcoe County is being transported to outside sources for the primary treatment and disposal. As result of this, leachate transportation and disposal expenses for 2009 were approximately \$720,000, of which, over 50% of the cost was related to leachate transportation.

Table 5.2.3.1 illustrates the wastewater treatment plants within Simcoe County and whether or not they accept leachate and/or septage for treatment and disposal

5.2.4. Simcoe County Marinas

A total of 31%, or 15 of the 49 marinas located within Simcoe County accept holding tank waste from marine vessels and store the waste in a holding tank for truck collection. The sewage from the holding tanks is then transported to one (1) of the wastewater treatment facilities that treat septage located within Simcoe County. As seen in **Figure 5-1**, septage is accepted at the following WWTPs: Bradford West Gwillimbury WWTP within the Town of Bradford West Gwillimbury, Collingwood WWTP within the Town of Collingwood, Angus WWTP within the Township of Essa, Alcona Lakeshore WWTP within the Town of Innisfil, Midland WWTP within the Town of Midland, Regional WWTP within the Town of New Tecumseth, Lagoon City WWTP within the Township of Ramara, Craigeith WWTP within the Town of Blue Mountains (Grey County) and the City of Orillia WWTP. The remaining marinas either discharge directly to a municipal sewage collection system or do not perform holding tank pump-outs for customers.

5.2.5. Surface Water Systems

Natural Hazards

As stated within this Document development should be directed outside of natural hazard areas. These same areas may represent constraints to future or expanded servicing within the County. **Chapter 3.0 (Section 3.2)** presents reference mapping for natural heritage features within the NVCA and LSRCA watersheds.

Surface Water Intakes

Surface water intakes represent a constraint to proposed expansions or new wastewater treatment system discharge locations. The intake protection zones within Simcoe County are presented in **Appendix A-3**.

Water Quality

As a result of a long history of nutrient loading to the water systems in the County from agricultural activities and urbanization, the water quality within some of the County's surface water features has been severely compromised. The cause of this deterioration is primarily a result of excessive phosphorus concentrations from a wide variety of sources.

As part of this Background Information Brief preparation, the CANWET™ modelling tool was used to assess current nutrient loading found within Simcoe County, as presented in **Chapter 3.0 (Section 3.2)**. Based on the CANWET modelling performed for this study, the following opportunities and constraints have been determined and have been presented within **Table 5.2.5.1**:

Table 5.2.5.1: CANWET Opportunities and Constraints for Simcoe County

LOCATION	CONSTRAINTS	OPPORTUNITIES	COMMENTS
West Holland	Contains 2 existing WWTPs, polders and impacted water quality due to NPS agricultural activities.	Both PSs and NPSs represent an opportunity to invest in decreasing loading to be used as off-sets from other impacts.	Water quality trading has not yet been adopted, but principals could still be used to demonstrate compliance with restrictions on nutrient release.
Innisfil Creeks / Barrie	Two (2) point sources discharge directly to Lake Simcoe. Under the Lake Simcoe Protection Plan no new facilities are permitted	Existing WWTPs could be upgraded to reduce loading and accommodate some new capacity requirements	
Upper Nottawasaga	NPSs in the headwaters of the Nottawasaga and PSs in the growth areas of Alliston, Angus and Cookstown prevent the consideration of additional loading sources	Both PSs and NPSs represent an opportunity to invest in decreasing loading to be used as off-sets from other impacts	Water quality trading has not yet been adopted, but principals could still be used to demonstrate compliance with restrictions on nutrient release.
Lower Nottawasaga		Dilution from upstream tributaries and in-stream attenuation may create an opportunity for some attenuation of nutrient loading	Features such as the Minesing Swamp should be considered for their net impact on nutrient loading (positive or negative) and potential sensitivity
Lower Black-Severn	Constrained by multiple WWTPs and moderate to heavy agricultural NPSs	Both PSs and NPSs represent an opportunity to invest in decreasing loading to be used as off-sets from other impacts	Water quality trading has not yet been adopted, but principals could still be used to demonstrate compliance with restrictions on nutrient release.
Collingwood Watersheds		Opportunity for NPS reductions.	WWTP is direct to Nottawasaga Bay
Severn Sound Tributaries		Opportunity for NPS reductions.	WWTPs are direct to Severn Sound
GENERAL NOTES:			
NPS = Non-Point Source PS = Point Source WWTP = Wastewater Treatment Plant			

5.2.6. Groundwater

Groundwater sources used for domestic/ICI water supply could potentially present environmental constraints within the Study Area. This is mainly due to the potential risk of groundwater contamination as result of point source contamination, e.g. potentially generated from sanitary sewer infiltration. Contamination of groundwater is difficult to detect in early stages and by the time it occurs, the result is unsafe drinking water. Shallow wells, unconfined aquifers as well as fractured bedrock areas are typically susceptible to contamination in comparison to confined deep aquifers with low permeability characteristics.

As a result of this, the extension and expansion of existing wastewater infrastructure may be limited to areas that are not within existing well head protection zones for groundwater supply systems. The current groundwater supply systems with corresponding well head protection zones are illustrated within **Appendix A-4** of this study.

5.2.7. Natural Heritage Features

As stated with Simcoe County's Official Plan, development and site alterations are strictly prohibited within areas that are considered to be key natural heritage features and hydrologically sensitive areas. As such, natural heritage features could potentially impose potential environmental constraints when considering future servicing expansions and/or inter-municipal agreements between neighbouring municipalities. The following areas are considered to be Key Natural Heritage Features and Hydrologically Sensitive Areas within the Study Area:

1. Wetlands, Kettle Lakes and minor water bodies
2. Seepage areas
3. Permanent and Intermittent streams
4. Habitat of endangered, rare and threatened species
5. Fish Habitat
6. Areas of natural and scientific interest
7. Significant valleys, woodlands and/or wildlife habitats
8. Oak Ridges Moraine
9. Niagara Escarpment

Please refer to **Appendix A-3** for Natural Heritage Features Figures for each of the municipalities within the Study Area.

6. LEVEL 2 OPPORTUNITIES

Based upon the opportunities presented in **Chapter 5.0**, the following chapter presents additional options for providing 2031 growth servicing to municipalities that cannot meet their 2031 servicing needs with their existing water and wastewater servicing systems.

6.1. Township of Adjala – Tosorontio

As identified previously in this Report, there is a 2031 residual water capacity of 5,413 people and a wastewater servicing gap of 2,955 people in the Township's municipal systems. As such, the Township of Adjala – Tosorontio has sufficient capacity to service its 2031 population with water from its existing systems but 2031 growth will be limited to new development that will support individual or communal private wastewater treatment and disposal systems. In many instances within the Township, the aforementioned systems will limit development in the Township. Based on the results of this Study the following alternatives or Level 2 Opportunities for wastewater servicing in the Township have been identified:

- 1) Utilize the existing residual 2031 wastewater treatment system capacities at either the CFB Borden WWTP (11 km to south sewers – 18 km to WPCP) or the Angus WWTP (19 km to south sewers – 12 km to Baxter) in the Township of Essa. The Borden and Angus WWTPs have 2031 residual wastewater capacities of 2,966 people and 1,540 people, respectively. **Figure OPP1, Appendix A-7** presents the feasible routes of servicing the Community of Everett in the northern limits of the Township from the Angus and CFB Borden WWTPs.
- 2) Create a new WWTP with either subsurface or surface water disposal within the Township to accommodate the new 2031 unserved growth of 2,959 people.

Given the potential challenges with designing and securing approval for a new WWTP, Opportunity #1 presented above would be preferred. Moreover, given the large expected 2031 growth in the community of Everett, which is located in generally close proximity to both existing WWTPs at CFB Borden and Angus, Opportunity #1 would be expected to be more cost effective than Opportunity #2. In addition, Opportunity #1 presents more opportunities for future expansion at the existing plants, which is generally a preferred increased servicing option. This opportunity is also explored in additional detail in **Chapter 7**.

Finally, if Opportunity #1 is selected, it should be noted that the areas of growth which could not be feasibly serviced by Opportunity #1 would still be required to develop with individual on-site wastewater treatment systems.

It should be noted that Baxter, in the Township of Essa, is located on the servicing route from Everett to Angus. This community is a proposed growth node in the Township of Essa and could potentially be a benefiting party from this alignment.

6.2. Town of Bradford West Gwillimbury

As identified previously in this Report, there is a 2031 water servicing gap of 5,886 people and a wastewater servicing gap of 783 people in the Town's municipal systems. In the 2010 report Water Supply and Wastewater Servicing Master Plan Updated – Town of Bradford West Gwillimbury completed by C.C. Tatham & Associates Ltd., the alternative presented to alleviate the water servicing gap was to secure additional treated water from the Innisfil Lakeshore WTP to service the population growth. The aforementioned report also concluded that expanding the Bradford WPCP with effluent discharge to the Holland River was the preferred solution to the wastewater servicing gap. The Phase 3 expansion of the Alcona WTP and the Bradford West Gwillimbury (BWG) Innisfil transmission main is expected to meet all of the 2031 water servicing requirements for the Town of BWG.

A Class Environmental Assessment for the Bradford Water Pollution Control Plant (WPCP) has been proposed to consider the methods and opportunities to increase the wastewater treatment capacity to 25,100 m³/day, as well as increasing the level of treatment for phosphorus removal. Phases 1 and 2 of the Class EA planning process were completed and a notice issued March 31, 2011. The Town of Bradford West Gwillimbury is continuing Phases 3 and 4 of the Class EA to consider methods and opportunities to increase the wastewater treatment capacity in accordance with the Town's Water Supply and Wastewater Servicing Master Plan Update. The Master Plan Updated determined that the Town's wastewater treatment capacity should be increased from the currently approved rated of 17.4 MLD to a capacity of 23.3 MLD. The Class EA is to be completed in 2011, approved by the Town and implemented soon thereafter. As such, the Township of Bradford West Gwillimbury has proposed a plan that has sufficient capacity to service its 2031 population with water and wastewater servicing on implementation of the planned infrastructure identified herein, presuming the plan has addressed requirements of the Lake Simcoe Protection Act.

6.3. Township of Clearview

As identified previously in this Report, there is a 2031 water servicing gap of 5,721 people and a wastewater servicing gap of 10,020 people in the Township's municipal systems. As such, the Township of Clearview does not have sufficient capacity to service its 2031 population with water or wastewater from its existing systems. The Township of Clearview has an existing agreement to convey sewage flows from Stayner (Clearview) to Wasaga Beach to address part of their wastewater servicing gap as shown in **Figure OPP2, Appendix A-7**.

However, this solution will not address all of the Township's 2031 growth servicing needs. Based on the results of this Study, the following alternatives or Level 2 Opportunities for water and wastewater servicing in the Township have been identified:

- 1) Utilize the existing residual 2031 wastewater treatment system capacities at either the CFB Borden WWTP (9.5 km) or the Angus WWTP (8.5 km) in the Township of Essa to service the Community of New Lowell within the Township of Clearview. The Borden and Angus WWTPs have 2031 residual wastewater capacities of 2,966 people and 1,540 people, respectively. **Figure OPP2, Appendix A-7** presents the proposed servicing route from New Lowell to the Angus WWTP along County Road 9 and County Road 10. This opportunity is also explored in additional detail in **Chapter 7**.
- 2) Utilize the existing Collingwood to Alliston pipeline to service Stayner's water servicing needs (3.9 km) as presented in **Figure OPP2, Appendix A-7**.
- 3) Utilize the proposed (with expansion) residual 2031 wastewater treatment system capacity at the Collingwood WWTP to service the Town of Nottawa. **Figure OPP2, Appendix A-7** presents this 4.3 km servicing route along Nottawasaga Sideroad 36 & 37 then up the railway corridor to Poplar Side Road as detailed in the Class EA document entitled *Township of Clearview Long Term Sewage Collection and Treatment for Nottawa Schedule B Municipal Class Environmental Assessment* prepared by R.J. Burnside & Associates Ltd.
- 4) Create a new WWTP with either subsurface or surface water disposal within the Township to accommodate the new 2031 unserved growth of 2,959 people and create a new WTP to accommodate the new 2031 unserved growth of 5,722 people.

Given the potential challenges with designing and securing approval for a new WWTP and WTP, Opportunities #1, #2 and #3 presented above would be preferred. Finally, it should be noted that those areas of growth which could not be feasibly serviced by the opportunities presented herein would still be required to develop with on-site communal or private individual water and wastewater treatment systems.

6.4. Town of Collingwood

As identified previously in this Report, there is a 2031 water servicing gap of 11,040 people and a wastewater servicing gap of 6,024 people in the Town's municipal systems. The Town of Collingwood proposes to expand its water treatment system to 60,000 m³/day (eventually a maximum rated capacity of 90,000 m³/day) to address its 2031 water servicing gap. The Town has also initiated a Class Environmental Assessment to improve its existing wastewater treatment facility to address the 2031 proposed growth. The facility would be expanded by an additional 12,000 m³/day implemented in two (2) 6,000 m³/day phases. As such, the Town of Collingwood will have sufficient capacity to service its 2031 population with water and wastewater servicing with the implementation of the proposed/planned infrastructure detailed herein.

6.5. Town of Innisfil

As identified previously in this Report, there is a 2031 water servicing gap of 8,716 people and a wastewater servicing gap of 20,794 people in the Town's municipal systems. The Town is fully aware of their servicing issue and has proposed to expand the Alcona Lakeshore Water Treatment System to address the 2031 water servicing gap (Class EA completion December 3, 2010). The Alcona Lakeshore Wastewater Treatment Plant will be expanded to alleviate the proposed 2031 wastewater servicing gap (Class EA completion December 3, 2010). As such, the Town of Innisfil will have sufficient capacity to service its 2031 population with water and wastewater servicing once the planned infrastructure in the municipality is implemented. With the location of the Town of Innisfil's water and wastewater infrastructure as well as the proposal for an economic district on Highway 400 in the Town, there is an opportunity for extension of services from Innisfil to its presently unserved communities and to neighbouring municipalities to provide a net public benefit, particularly as it relates to water quality improvements. These opportunities are also explored in additional detail in **Chapter 7**.

6.6. Township of Oro-Medonte

As identified previously in this Report, there is a 2031 residual water capacity of 8,201 people and a wastewater servicing gap of 8,395 people in the Township's municipal systems. As such, the Township of Oro-Medonte does not have sufficient wastewater treatment capacity to service its 2031 population with its existing systems. The 2031 growth will be limited to new development that will support individual or communal private wastewater treatment and disposal systems. In many instances within the Township, the aforementioned systems will limit development in

the Township. Based on the results of this Study the following alternatives or Level 2 Opportunities for wastewater servicing in the Township have been identified:

- 1) Implement a new WWTP with either subsurface or surface water disposal along Horseshoe Valley Road East to facilitate the proposed Skyline Development, Craighurst, Horseshoe Valley and Coulson. **Figure OPP3, Appendix A-7** presents the proposed location of a 31 km wastewater servicing route along Horseshoe Valley Road West which would service Craighurst, Jarratt, Horseshoe Valley, and Coulson. This option would also facilitate expansions to Hillsdale (5.6 km) and Warminster (3.9 km). The Township initiated in 2010 a project to assess the ability to provide services (water and wastewater) for both the Horseshoe Valley and Craighurst Settlement Areas. It is anticipated this project will proceed forward into 2010 to finalize recommendations for the Township regarding servicing both Settlement Areas which are the identified location for the majority of growth in the Township.
- 2) Pump sewage to the City of Orillia. The 39 km pipeline to the City of Orillia and is proposed to run along Highway 12 to Horseshoe Valley Road and facilitate the proposed Skyline Development, Hillsdale, Marchmont, Craighurst, Horseshoe Valley, Coulson and Warminster.
- 3) Limit future growth areas to private or communal wastewater treatment facilities.

Given the proposed development in the area, Opportunity #1 will address the current and future servicing demands of the Township. Both older and new developments could utilize the system to minimize to costs to the Township but servicing the proposed Skyline Development would be challenging under this option. Wastewater servicing of growth within the Coldwater River watershed will have to have regard for the assimilative capacity of the watershed and ultimately the receiving water body (Severn Sound). Development in Horseshoe Valley and Craighurst is within the headwaters of this Coldwater River watershed. As presented in **Chapter 3**, the phosphorus concentrations within this watershed are nearing or at Provincial Water Quality Objectives.

Opportunity #2 is a solution that utilizes existing capacity within the neighbouring Town of Orillia. Since the Township surface water flows to Severn Sound, in order to maintain a water balance under Opportunity #2, drinking water from Orillia would be required to service development in the sewage pipeline service area. It should be noted that those areas of growth which could not be feasibly serviced by the identified opportunities would still be required to develop with individual on-site wastewater treatment systems.

6.7. Town of Penetanguishene

As identified previously in this Report, there is a 2031 residual water capacity of 3,652 people and a wastewater servicing gap of 263 people in the Town's municipal systems. The Town is aware of their proposed servicing needs and given the minor wastewater servicing gap it is expected that the Town of Penetanguishene has sufficient capacity to service the proposed 2031 growth. Moreover, the Town is currently undertaking an optimization program of the Main Street STP which will address the minor 2031 servicing gap.

The Waypoint wastewater treatment plant in Penetanguishene has a rated capacity of 565 m³/day and operated at approximately 50 percent of its rated capacity. The plant services the Provincial facility (hospital) and Waypoint Centre. Treated wastewater is then discharged into the outer Penetanguishene Harbour. This plant is owned by the Province of Ontario and operated by OCWA. The Province (through Infrastructure Ontario) is reviewing the plant and future upgrades to the plant. This upgrade could possibly facilitate a regional partnership for waste treatment at this facility (e.g. septage). This opportunity is explored in additional detail in **Chapter 7**.

6.8. Township of Ramara

As identified previously in this Report, there is a 2031 water servicing gap of 1,329 people and a wastewater servicing gap of 4,517 people in the Township of Ramara's municipal systems when compared with the proposed 2031 growth. As such, the Township of Ramara does not have sufficient capacity to service its 2031 population with water or wastewater from its existing systems. Without improvements, 2031 growth in the Township will be limited to new development that will support communal or individual private wastewater treatment and disposal systems. In the Township of Ramara's 2004 Master Servicing Plan Update an expansion of the Lagoon City WWTP is proposed to be implemented with the population increase. Based on the results of this Study the following alternatives or Level 2 Opportunities for water and wastewater servicing in the Township have been identified:

- 1) Implement the proposed Lagoon City WWTP expansion.
- 2) Convey sewage along Highway 12 to the City of Orillia which has a residual wastewater servicing capacity of 1,790 people. **Figure OPP4, Appendix A-7** presents the 22.7 km proposed wastewater servicing route along Highway 12 to the Orillia WWTP. An expansion of the existing Orillia WWTP would be required to accommodate all of the Township's 2031 growth and there is also the potential to expand the Orillia WWTP to address additional growth in the neighbouring municipalities.
- 3) Create a water transmission line along Highway 12 from the City of Orillia to

-
- Brechin, servicing the communities along the transmission route. The City of Orillia has a residual water servicing capacity of 34,699 people and could easily supply water to surrounding communities. **Figure OPP4, Appendix A-7** presents the proposed water servicing route along Highway 12 to the Orillia WTP.
- 4) Construction of new municipal, communal water and wastewater treatment facilities to service growth in the Rama Road corridor and Atherley/Uptergrove Settlement area.
 - 5) Limit future growth areas to private individual or communal water wells and wastewater treatment facilities.

Given the proposed development, Opportunity #1 will address the current and future servicing demands within the Township. Opportunities #2 and #3 would address the future water and wastewater servicing from Brechin and communities along Highway 12 by connecting to the existing treatment facilities within the City of Orillia. However, the Township has noted that with cost considerations, it is expected that new or improved wastewater treatment facilities will be constructed at Lagoon City and to service Rama Road and Atherley/Upetergrove Settlement Areas to accommodate the 2031 growth. Also, the Township has noted that cost considerations will likely result in the expansion or construction of existing or new water treatment facilities in the Township to facilitate the 2031 growth. Finally, it should be noted that those areas of growth which could not be feasibly serviced by the proposed opportunities would still be required to develop with private individual or communal on-site water and wastewater treatment systems.

6.9. Township of Severn

As identified previously in this Report, there is a 2031 residual water capacity of 778 people and a wastewater servicing gap of 2,109 people in the Township's municipal systems. Based on the results of this Study the following alternatives or Level 2 Opportunities for wastewater servicing in the Township have been identified:

- 1) Expanding one (1) of the Township's existing WWTPs. It is recommended that WWTP near the community of Washago is expanded to alleviate the servicing gap that currently exists as well as to facilitate the proposed 2031 growth in this area of the Township.
- 2) Convey sewage from the north western communities in the Township to the Township of Tay systems in Port McNichol and Victoria Harbour which have a residual wastewater servicing capacity of 1,199 people. **Figure OPP7, Appendix A-7** presents an 11.3 km wastewater servicing route along Highway 12 which would convey flows from Coldwater, Fesserton and Waubaushene to the Township of Severn WWTPs.
- 3) Limit future growth areas to private or communal wastewater treatment

facilities.

Finally, those areas of growth which could not be feasibly serviced by the opportunities would be required to develop with individual private or communal on-site wastewater treatment systems.

6.10. Township of Springwater

As identified previously in this Report, there is a 2031 residual water capacity of 7,945 people and a wastewater servicing gap of 4,804 people in the Township's municipal systems. In the Township of Springwater Class Environmental Assessment Study for the Midhurst Water, Wastewater and Transportation Waste Plan Phase 1 and 2 Report prepared by the Ainley Group, the preferred alternative for wastewater is constructing a new wastewater treatment plant on the west side of the Carson Road Development area in Midhurst with average daily flows of 10,600 m³/day (with the possibility of future expansion to 12,314 m³/day). This facility will discharge effluent from the plant to Willow Creek. The Township has also identified that there is residual capacity within the Elmvale and Snow Valley systems to accommodate the population growth in the near future. As such, the Township of Springwater believes that the water and wastewater facilities will be able to accommodate the 2031 proposed growth.

6.11. Township of Tay

It was identified in this report that there is a 2031 residual water capacity of 906 people and a residual wastewater servicing capacity of 1,199 people in the Township's municipal systems. As such, the Township of Tay will have sufficient capacity to service its 2031 population with both water and wastewater with the capability. The Township could provide servicing to neighbouring Townships such as the Township of Oro-Medonte or Township of Severn. Please note that the full Skyline Development proposal has not been considered in they would exceed residual capacity assessments presented herein, as we understand they exceed the Township's proposed 2031 OP growth projections. Wastewater servicing of growth within the Sturgeon River watershed in the Township will have to have regard for the assimilative capacity of the watershed and ultimately the receiving water body (Severn Sound). As presented in **Chapter 3**, the phosphorus concentrations within this watershed are nearing or at Provincial Water Quality Objectives.

6.12. Township of Tiny

As identified previously in this Report, there is a 2031 residual water capacity of 8,268 people and a wastewater servicing gap of 2,696 people in the Township of

Tiny's municipal systems. As such, the Township of Tiny has sufficient capacity to service its 2031 population with water from its existing systems but 2031 growth will be limited to new development that will support individual private or communal wastewater treatment and disposal systems. The Township is undertaking a Class Environmental Assessment to establish the preferred approach for providing septage and holding tank waste disposal services to the residents on the Township. The following alternatives are being assessed:

- Do Nothing;
- Collect and treat sewage;
- Contract septage collection for disposal at Regional WWTPs; and
- Construct a partial or full septage treatment system.

In lieu the indentified alternatives from the Class, this Study identified the following alternatives or Level 2 Opportunities for wastewater servicing in the Township in previous drafts:

- 1) Planning, design and construction of a new WWTP in the Township that would service the communities along County Road 6, potentially including the development along Tiny Beaches Road, Perkinsfield, Wyevale and Lafontaine. This WWTP would also need to treat sewage from holding tank cleanouts from the private homes and cottages within the Township and surrounding areas. By creating this facility it would alleviate the need of transporting all of the private septage to facilities within other areas such as the Town of Midland, Town of Collingwood and the Town of Orillia. **Figure OPP5, Appendix A-7** presents a proposed servicing route for the above mentioned system and location for the WWTP. The servicing distance from Lafontaine to Wyevale is 18.2 km with an optional 7.6 km expansion to service Elmvale as well. The discharge location would be determined as part of the WWTP siting.
- 2) Improvements at nearby existing wastewater treatment plants to accept septage waste from Tiny Township (e.g. the Waypoint WWTP in Penetanguishene).
- 3) Limit future growth areas to private or shared septic treatment facilities.

The Class Environmental Assessment that is currently being undertaken will address more opportunities for the Township and the feasibility of implementing the alternatives. It should be noted that a new WWTP in Tiny Township would provide an opportunity of also servicing proposed growth in neighbouring communities such as Midhurst and Elmvale, in the Township of Springwater. Finally, the communities of Bluewater and Woodland Beach can be serviced by the proposed scheme detailed herein or potentially by the Town of Wasaga Beach wastewater collection and treatment system.

6.13. Town of Wasaga Beach

As identified previously in this Report, there is a 2031 water servicing gap of 4,965 people and a residual wastewater capacity of 15,648 people in the Town of Wasaga Beach's municipal systems. As presented herein, the Town will be allocating some of its WWTP residual capacity to the Township of Clearview specifically for growth in Stayner. With respect to addressing the 2031 water system capacity the following Level 2 Opportunities have been identified:

- 1) Expanding the current WTP to facilitate the increased water servicing demands in 2031.
- 2) Implementing a connection along Highway 26 from the Town of Collingwood's WTP to the Town of Wasaga Beach to facilitate the increasing water servicing demands within the Town. **Figure OPP6, Appendix A-7** presents a servicing route to connect the Wasaga Beach water system to Collingwood's WTP. The route would extend from County Road 10 (water tower), along Knox Road W, continuing down Rambleswood Drive to Highway 26 in Wasaga Beach to the WTP within Collingwood. There is an existing pipeline along Highway 26 that would need to be investigated further for demand capacity should this option be chosen.
- 3) Limit future growth areas to private water facilities.

Given the potential challenges with designing and securing approval for a new WTP or expansion, Opportunity #2 presented above would be preferred.

6.14. City of Barrie

As identified previously in this Report, there is a 2031 residual water capacity of 101,301 people and a wastewater servicing gap of 16,892 people in the City's municipal systems. The City is presently undertaking an expansion of their WWTP which would ensure that the servicing needs for 2031 would be met. As such, the City of Barrie will have sufficient capacity to service its 2031 population with water and wastewater servicing as well as the potential ability to service neighbouring Townships and Cities.

A significant portion of the proposed growth in the City of Barrie is proposed to be treated at the existing (improved) Barrie Wastewater Treatment Plant (WWTP). The Barrie WWTP discharges to Kempenfeldt Bay, in Lake Simcoe. In 2003, the Province embarked on the Inter-Governmental Action Plan (IGAP) process, which included the preparation of an Assimilative Capacity Study for the Lake Simcoe Basin. In December 2006, it became public that Trent University would be publishing new science stating that the major fish rearing section (or "nursery") of

Lake Simcoe is not the larger section but instead Kempenfelt Bay. In the spring 2007, the Lake Simcoe Region Conservation Authority advised it had these findings and the research was presented to its Board of Directors. The research concluded:

- Increasing phosphorus loads (without suitable mitigative controls) to Kempenfelt Bay could impact the dissolved oxygen – temperature regime by decreasing the habitat zone for newborn and smaller fish to avoid larger adult fish; and,
- Any additional phosphorus loading stress could provide increased predation within Kempenfelt Bay and specifically from May–August for any given year.

It is the City of Barrie's position that draft versions of the Visioning Strategy document made reference to science undertaken earlier by Trent University and also alluded to the potential impact from projected increased phosphorus discharges to Kempenfelt Bay. The City understands that the background science and documents, along with other related reports, were considered during the development of the *Lake Simcoe Phosphorus Reduction Strategy*, June 2010, which is the confirmed policy of the Ministry of the Environment. Under this strategy, phosphorus loading from the Barrie Water Pollution Control Centre, along with all sewage treatment plants in the Lake Simcoe watershed, is capped at a combined reduced level from previous certificates of approval. It is also the City's position that effluent phosphorus loading from the Barrie WPCP will not increase proportionally with population and employment growth and may further decrease upon a future review of the Lake Simcoe Phosphorus Reduction Strategy. The City of Barrie has recently completed construction of its plant expansion and has initiated Class EA Wastewater Treatment Master Plan, as part of the secondary planning process, which will review the alternatives available for maintaining compliance with the Lake Simcoe Protection Act and accommodate projected growth to both 2031 and 2051.

6.15. City of Orillia

As identified previously in this Report, there is a 2031 residual water capacity of 34,699 people and a residual wastewater capacity of 1,790 people in the City's municipal systems. As such, the City of Orillia will have sufficient capacity to service its 2031 population with water and wastewater servicing as well as the ability to expand and potentially service neighbouring Townships and Cities.

6.16. CFB Borden

As identified previously in this Report, there is a 2031 residual water capacity of 14,840 people and a residual wastewater capacity of 2,966 people in the CFB's municipal systems. As such, CFB Borden will have sufficient capacity to service its 2031 population with water and wastewater servicing as well as the ability to potentially service neighbouring Townships and Cities.

6.17. Simcoe County Marinas

Within the County of Simcoe there are 49 marinas. Each of these facilities was contacted to determine if sewage pump-out services were provided to their boating clients. Of the 49 marinas, 8 dispose the pump-out sewage waste into Town sewers, 18 stores the waste in a holding tank and have it pumped out via a trucking system, 9 marinas did not respond and 14 do not pump sewage at all. The sewage from private holding tanks is treated at the Town of Collingwood, City of Orillia, or the Town of Midland WWTPs. The closest facility to the areas that require the most pumping is the Town of Midland. The rates of treating sewage in the Town of Midland is approximately three (3) times that of the other facilities, but due to its proximity to the marinas it is utilized the most. The opportunities discussed under the Septage and Leachate section presented herein will also present the opportunities to address the marina pump-out septage disposal in the County.

6.18. Septage and Leachate

There are a limited number of WWTPs that accept leachate and septage within Simcoe County. The few that accept leachate are: Collingwood WWTP within the Town of Collingwood and the Craigleith WWTP within the Town of Blue Mountains. Septage is accepted at the following WWTPs: Bradford West Gwillimbury WWTP within the Town of Bradford West Gwillimbury, Collingwood WWTP within the Town of Collingwood, Angus WWTP within the Township of Essa, Alcona Lakeshore WWTP within the Town of Innisfil, Midland WWTP within the Town of Midland, Regional WWTP within the Town of New Tecumseth, Lagoon City WWTP within the Township of Ramara, Craigleith WWTP within the Town of Blue Mountains and the City of Orillia WWTP. The cost for disposing of septage ranges in costs from \$30/1000 gal. to \$205/1000 gal. at municipal WWTPs in the County of Simcoe. The WWTPs that accept sewage and leachate are presented in **Chapter 5, Table 5.2.7.1**. Opportunity to increase the number of facilities that accept septage, or increased volumes exists within the County. Such opportunity specifically exists with new or improved facilities in the following locations to better serve those areas with the large majority of septic systems in the County:

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- Improved septage handling facility in Angus to serve the Township of Essa and the Township of Adjala-Tosorontio;
 - Improved septage handling facility in the Town of Innisfil to service Innisfil and the eastern portions of the Township of Essa and potentially the Town of New Tecumseth and Bradford West Gwillimbury;
 - Improved septage facilities as required in Orillia to service the septage for the Townships of Oro-Medonte, Severn and Ramara;
 - New or improved septage handling facilities in Wasaga Beach or Tiny Township to service the Townships of Tiny, Springwater and Clearview; and/or,
 - New or improved wastewater system or septage handling facilities in the Town of Penetanguishene or Midland.

7. LEVEL 3 OPPORTUNITIES

This Chapter provides a comprehensive review of opportunities (Level 3 assessment) for selected (sample) municipalities to assess the servicing constraints and opportunities in additional detail, including: servicing gaps; water quality impacts; potential to service more than one community or municipality; and, high level cost implications. For the purpose of this assessment we have selected one (1) municipality located in each of the three (3) major receiving watersheds in the County, namely:

- Town of Innisfil – Lake Simcoe (via the Innisfil Creeks Subwatershed);
- Township of Essa/Canadian Forces Base Borden – Nottawasaga River; and,
- Town of Penetanguishene – Severn Sound.

7.1. Town of Innisfil 6th Line Corridor Servicing Project

As identified previously in this Report, there is a 2031 water servicing and wastewater servicing gaps in the Town's municipal systems. The Town is fully aware of their servicing issue and has proposed to expand the Alcona Lakeshore Water Treatment System to address the 2031 water servicing gap (Class EA, March 2011). The Alcona Lakeshore Wastewater Treatment Plant will be expanded to alleviate the proposed 2031 wastewater servicing gap (Class EA, November 2010). As such, the Town of Innisfil will have sufficient capacity to service its 2031 population with water and wastewater servicing once the planned infrastructure in the municipality is implemented. With the location of the Town of Innisfil's water and wastewater infrastructure as well as the proposal for an economic district on Highway 400 in the Town, there is an opportunity for extension of services from Innisfil to its presently unserviced proposed growth areas (including employment lands), unserviced communities and potentially to neighbouring municipalities to provide a net public benefit, particularly as it relates to water quality improvements. The Town's Water Treatment Plant and Wastewater Treatment Plant Class EA's have had regard for proposed growth in the Town's Official Plan Amendment No. 1, including the Hwy. 400 Economic District.

7.1.1. Planning Rational

As presented herein, the County of Simcoe Employment Area Sub-committee recommended that two (2) major employment nodes be established in south Simcoe County along Highway 400 – namely, in the 1) Town of Bradford West-Gwillimbury, and 2) Town of Innisfil.

This regional-based direction is reflected in the adopted Simcoe County Official Plan, which designates the area formerly known as Innisfil Heights as an Economic District. The Economic District designation allows for the servicing and continued growth of the area formerly known as the Innisfil Heights employment area, and which is key to the long term, balanced growth of Innisfil. The detailed location is presented in Official Plan Amendment (OPA) No. 1, Schedule A, as approved by the County of Simcoe on 14 October 2009. OPA 1 Schedule A is provided in **Appendix A-8** of this Report. As detailed in OPA 1, the Economic District is comprised of a first phase of 180 ha which would satisfy the target of 1 job per 3 residents for the proposed 65,000 Innisfil population (2031) and an additional 220 ha designated as Future Expansion Area to meet a target of 1 job per 2 residents.

Industries today want to be located close to major highways to take advantage of visibility and access opportunities, and where practical, to also utilize lower cost/green energy sources. As well, the location of the Innisfil Economic District is unique since it is bounded to the north by the City of Barrie. These types of employment areas are typically located with immediate and superior access to Ontario's 400 series highways (typically 1,000 meters plus proposed interchanges). It has also been confirmed that the Innisfil Economic District is less than 1 hour for commuter travel from the farthest boundaries of Simcoe County (north and west), as well as from the northern fringe of the Greater Toronto Area that is transected to the south by Highway 400 and through the City of Vaughan.

The jobs creation priority of the Town's OPA 1 is also reflected in the Province of Ontario's document entitled "*Simcoe Area: A Strategic Vision for Growth* (June 2009)" and subsequently the Growth Plan Amendment No. 1. The landmark report clearly lays out the Province's vision for sustainable growth in the Simcoe area that is aimed at boosting job creation and improving quality of life – but while curbing sprawl and protecting the natural environment and farmland. As presented above, the document identifies two (2) specific nodes along Highway 400 as strategic employment areas that are important for supporting job growth and economic prosperity for the Simcoe Area, as well as the rest of the Greater Golden Horseshoe, and includes Innisfil Heights (the proposed Economic District in the Town of Innisfil OPA 1). These areas are identified as having the potential to house clusters of manufacturing and industrial employment that serve major markets and are in close proximity (less than 1 hour commuting distance) to a skilled labour force. The development of the Innisfil Economic District will therefore be a key area for employment growth for the Town of Innisfil, County of Simcoe and Province of Ontario.

7.1.2. Scope of the 6th Line Infrastructure Project

For the Innisfil Economic District to be successful, it is necessary that servicing be extended to the Highway 400 as soon as practical. As such, the Town of Innisfil is proposing the 6th Line Infrastructure Project that will include the following core infrastructure elements:

- Sanitary collection infrastructure extended 11.5 km from the Water Pollution Control Plant (WPCP) westerly on the 6th Line to Highway 400, and related WPCP upgrades;
- Water distribution infrastructure extended 15.5 km from St. John's Road, westerly on the 6th Line to Highway 400, and related Lakeshore Water Treatment Plant (WTP) upgrades; and,
- 11.5 km of a separate sanitary effluent (purple) pipe system in order to provide an immediate/local and ultimate/regional water reclamation infrastructure, as well as a providing an immediate "green energy" source to service the employment lands.

For illustration purposes, possible water, sanitary and effluent reclamation (purple) pipe infrastructure is shown as Phase '1' and Future Phases on the 6th Line of Innisfil in **Appendix A-8**. All proposed infrastructure sizing will facilitate growth for the ultimate development of the Economic District, Campus Node, Residential lands in Alcona South Secondary Plan (adjacent to the 6th Line) plus residual capacity for potential benefitting areas in Churchill, Cookstown, Alcona South or outside the municipality (e.g. Town of Bradford West Gwillimbury, Thornton in the Township of Essa). The water and wastewater infrastructure planning tool developed by the Greenland Group (called CANWET™) was used in this assessment. This integrated nutrient, water budget and climate change model is endorsed by the Lake Simcoe Region Conservation Authority and was used by the Province in June 2010 to prepare the Lake Simcoe Protection Plan. The updated model for this Project confirmed that the works can be integrated into a municipal-wide strategy for stringent wastewater targets at Lake Simcoe. Specific details of the CANWET™ are presented in **Section 7.1.3**.

At this time, the proposed project will include the first proposed phase of upgrades (11,000 m³/d) at the Lakeshore Water Pollution Control Plan (WPCP) as detailed in the *Lakeshore WPCP Class Environmental Assessment Environmental Study Report* (November, 2010). This would bring the plant capacity from 14,370 m³/d to 25,370 m³/d.

As detailed in the above referenced ESR, the existing connected and existing and approved unconnected population requires a WPCP capacity of 27,253 m³/d (or an equivalent population of 72,136), where existing and existing unconnected capacity represents 12,776 m³/d or 89% of the existing 14,370 m³/d capacity. As such the first phase expansion of the WPCP is required for the employment growth on the 6th Line Employment/Servicing Corridor, as well as approved, infill and special policy growth, to occur. Also, proceeding with the first phase of upgrades at the WPCP potential facilitates servicing of other areas of interest in the vicinity of the 6th Line Corridor. Required WPCP capacity requirements for the 6th Line Employment/Servicing Corridor are presented in **Table 7.1.2.1**.

Table 7.1.2.1: WPCP Capacity Requirements for 6th Line Corridor Growth Areas

Growth Area	Equivalent Population	Average Flow Capacity Requirement (m ³ /d)
Alcona South Secondary Plan Area ¹	7,875	2,953
First Phase of Campus Node	2,644	992
First Phase of Economic District (Hwy 400)	5,400	2,025
Subtotal Initial Phase	15,919	5,970
Ultimate Campus Node (Remaining)	1,256	471
Ultimate Economic District (Remaining)	6,600	2,475
Total	23,775	8,916
NOTES: 1. Assumes 75% of Alcona North and Alcona South OPA 1 Growth		

Finally, the Lakeshore Water Treatment Plant (WTP) existing capacity is 25,797 m³/d (28,000 m³/d maximum daily demand less 10% waste). The current demand at the plant, including all existing development areas and the Town of Bradford West Gwillimbury (BWG) demand is approximately 43,000 equivalent persons or 22,462 m³/d. There is residual capacity at the WTP equivalent to approximately 7,100 persons. Since the required equivalent population for the 6th Line Corridor lands is approximately 16,000 in the interim phases and greater than 23,000 in the ultimate requirements, the next planned upgrade of the WTP of 36ML/d is required to accommodate the growth facilitated by this Project. The WTP expansions are detailed in the *Lakeshore Water Treatment Plant Environmental Study Report*, March 2011.

It should be noted that as part of the first expansion approximately 30% of the demand will be required to service the Town of BWG. As such, in the cost calculations provided in Section 7.1.4, only 70% of the total 36ML expansion is indentified in this funding request (the Innisfil portion).

7.1.3. Project Benefits

The many benefits of the proposed Project are summarized as follows:

1. The Town of Innisfil and County of Simcoe recognize that the proposed Economic District, due to its proximity to Highway 400 as a strategic employment node, is also critical to future economic prosperity for the municipality and the broader region. The Town of Innisfil has also recognized the proposed Campus Node development will serve as key employment area. Therefore, servicing of the Economic is paramount to job creation in the Town and County and can be achieved by this Project.
2. Development of the Economic District area:
 - Allows for the near development of 42 ha of new institutional employment and ultimately 180 ha of new Highway 400 industrial employment lands and also the future development of an additional 220 ha of employment lands in the Economic District area. This would allow for the creation of more than 13,000 jobs and will achieve the Town, County and Provincial goal of 1 job for every 2 residents.
 - Presents the future potential opportunity for residential development within 5km of the Campus Node and ultimately 10 km of the Economic District area.
3. Opportunities afforded by servicing include:
 - i) The proposed Campus Node with a new Hospital, health care-focused University and environmental health Centre of Excellence;
 - ii) The Economic District area; and,
 - iii) Existing and proposed (including a heritage village theme) developments within the Alcona, Churchill and Cookstown communities.

Development within these areas supports other important factors that will satisfy additional goals of the Town, County and Province, in order to:

- Attract employment close to population centres;

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- Create complete communities with a greater mix of housing choices and services;
 - Help to further attract skilled labour to urban nodes and support existing local businesses;
 - Reduce development pressure on agricultural lands;
 - Reduce chronic flooding problems now impacting residences and businesses near Lake Simcoe, as well as agricultural lands along the South Innisfil Creek Drain system;
 - Achieve a feasible Lake Simcoe phosphorus reduction of approximately 20% per current legislative requirements of the Province and over existing conditions, while also reducing nutrients that are conveyed to the Nottawasaga River system (see details presented in **Appendix A-8**);
 - Reclaim treated WPCP effluent for re-use within a purple pipe system and initially for local irrigation and other non-potable water taking needs affecting agricultural and the future development lands. This water reuse system could ultimately be connected to regional systems that would service lands within the Lake Simcoe Basin and/or other to the west within the County of Simcoe;
 - Provide a clean energy solution (subject to further investigation) and based on positive observations from the subject MSS, including local heat recovery opportunities from the treated wastewater and integration with the proposed purple pipe (water reuse) system to initially service the Campus Node and ultimately the Economic District; and
 - Take advantage of existing infrastructure and create economies of scale necessary to enable green infrastructure investments.

Section 7.1.4 presents an opinion of probable capital costs for the works.

7.1.4. Project Costs - Opinion of Probable Cost For the Works

The priority of this propose Project in the Town of Innisfil is to provide servicing infrastructure for a regional-based employment creation initiative referred herein as the Innisfil Economic District and a proposed Campus Node, as well as the design/construction of a separate sanitary effluent (purple) pipe system to provide water reclamation infrastructure and a green energy (opportunity) source. The current Project costs for the scope presented as an opinion of probable costs, summarized in **Table 7.1.4.1**.

Table 7.1.4.1: Updated Infrastructure Project Opinion of Probable Capital Cost

Item	Description	Opinion of Probable Cost
1	<i>Trunk Sewers, Sewage Pumping Station and Forcemain</i>	<i>\$29.9 M</i>
	1.1 Sewage Pumping Stations	\$8.0 M
	1.2 Sewage Forcemains	\$1.7 M
	1.3 Trunk Gravity Sewers	\$10.2 M
	1.4 Treated Effluent Water Reclamation System (Purple Pipe)	\$10.0 M
2	<i>Lakeshore Water Pollution Control Plant Expansion</i>	<i>\$66.0 M</i>
3	<i>Trunk Watermain, Storage and Booster Pumping</i>	<i>\$16.6 M</i>
	3.1 Trunk Watermain and Appurtenances (Incl. PRV)	\$12.6 M
	3.2 Storage and Pumping – Campus Node Only	\$4.0 M
4	<i>Lakeshore Water Treatment Plant Expansion</i>	<i>\$35.0 M</i>
	Sub-Total Opinion of Project Probable Capital Costs	\$147.5M
5	<i>Contingency and Engineering (Design, Peer Review and Inspections)</i>	<i>\$36.9M</i>
	Total Opinion of Project Probable Capital Costs	\$184.4 M
NOTES:		
1. All costs include restoration to existing conditions.		
2. Costs do not include Hwy 400 interchange at the 6 th Line, widening the 6 th Line to 4 lanes, water storage requirements or HST.		
3. \$M = Millions of CDN Dollars.		

Please note that these costs are subject to change depending on the final scope and phasing of the 6th Line Infrastructure Project.

7.2.Essa/CFB Borden WWTP Capacity Servicing Project

As presented in **Chapter 6**, there is an opportunity to utilize the available 2031 residual wastewater servicing capacity in the Angus (Township of Essa) and Canadian Forces Base (CFB) Borden Water Pollution Control Plants to provide servicing to neighbouring communities (Municipalities) that cannot meet their respective 2031 growth with their current wastewater treatment systems.

7.2.1. Planning Rational and Capacity to Service Growth

Based upon the information obtained from the Township of Clearview and Township of Adjala Tosorontio through this Study, 2031 growth within these municipalities will include the communities of New Lowell and Everett, respectively.

Within the Township of Clearview *Direction for Growth: A Growth Plan for Clearview (2009 -2031)* document an estimated 500-1200 new Greenfield units are expected in New Lowell. At an 850 average unit growth between 2009 and 2031 and a person per unit rate of 2.8 persons, New Lowell would expect to growth by 2,380 people over the next 20 years. Coupled with the existing serviced population of 955 in New Lowell (water servicing only), the future service population for New Lowell will be approximately 3,335 person by the year 2031. Presently, there is no municipal wastewater treatment system to service this population, as such, the Township needs to explore opportunities for wastewater servicing to accommodate this growth or limit growth to areas in the community which could support communal or individual wastewater treatment systems.

In the 2005 *Township of Adjala Tosorontio Growth Management Plan*, the Community of Everett was proposed to accommodate 50% of the proposed 2026 growth or 886 new residential units. Using the same logic, it would be expected that 50% of the 2031 proposed in the County Official Plan (3,115) would be accommodated in Everett or 1,558 persons. Within the community of Everett there is one (1) municipal subsurface discharge wastewater treatment system (New Horizon Subdivision) that presently has a residual capacity of 406 persons. Therefore, the Township needs to explore opportunities for wastewater servicing to accommodate this growth or limit growth to areas in the community which could support communal or individual wastewater treatment systems.

Finally, the community of Baxter located within the Township of Essa has 75 residential units. A 250 unit subdivision is draft plan approved for Baxter, all of which would be on private individual wastewater treatment systems unless a viable alternative is proposed. As such, by 2031, there is an estimated population 878 persons existing and proposed for the Community of Baxter.

Chapter 5 of this Report documented that the proposed 2031 populations within the Community of Angus and at CFB Borden would leave residual servicing capacity at the water pollution control plants located in the respective communities.

Table 7.2.1.1 summarizes the 2031 capacities at these plants and the projected 2031 flows from the nearby communities requiring future (2031) wastewater treatment.

Table 7.2.1.1: Updated Infrastructure Project Opinion of Probable Capital Cost

Community	2031 Equivalent Population	WPCP Capacity (m ³ /d)	2031 Wastewater Treatment Requirement (m ³ /d) ¹
Angus	12,371	5,511	4,416
Borden	8,000	4,060	2,962
Subtotal	20,371	9,571	7,378
Baxter	878	-	313
New Lowell	3,335	-	1,191
Everett	1,558	-	556
Subtotal	5,771	-	2,060
Total	26,142	9,571	9,438
NOTES:			
1. Angus WPCP average existing flow rate of 357 Lpcd used except for CFB Borden calculation.			

As such, as presented herein, there is a need and opportunity to provide wastewater treatment servicing for a significant amount of 2031 growth for communities located within a relatively short distance from one another.

7.2.2. Scope of the New Lowell and Everett Infrastructure Projects

Based on the foregoing and building upon the opportunities presented in **Chapter 6.0** and **Appendix A -7**, to service the communities of New Lowell, Everett and Baxter the following scope of work is proposed:

- Provide wastewater services in New Lowell by collecting the existing and new (2031) population (3,335) wastewater with discharge to a sanitary pumping station which in turn pumps to the existing WPCP at CFB Borden (9.5 km) or in the Community of Angus (8.5 km).
- Given the projected 2031 population, only the WPCP at CFB Borden has enough residual capacity to accept all the projected 2031 wastewater from New Lowell.
- The forcemain route would be east along County Road 9 to County Road 10, County Road 10 south to the intersection with the Barrie-Collingwood rail line,

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- south east along the rail corridor (or continuing on the County Road) to and south on Mill Street to Cambrai Road and ultimately the CFB Borden WPCP.
- Provide wastewater services in Everett by collecting sewage flows from the proposed 2031 new growth (1,558 people) with discharge to a sanitary pumping station which in turn pumps to the existing WPCP at CFB Borden (11 or 18 km) or in the Community of Angus (19 km).
 - Given that Baxter requires wastewater servicing and that Baxter is located along the County Road 10 route to the Angus WPCP (12 km from Everett), efficiency in infrastructure would suggest conveyance to the Angus WPCP would be most efficient and does not rely on existing infrastructure within.
 - The forcemain route would be east along the 10th Sideroad to King Street, north on King Street to Murphy Road, east on Murphy Road to County Road 10, County Road 10 north to south sewers (south of Mill Street) in Angus (subject capacity analysis) and ultimately the CFB Borden WPCP.

The final detailed routing will be subject to existing infrastructure (sewer) capacities in the community of Angus and CFB Borden, as well required planning and design approvals (e.g. Agreements with Township of Essa/CFB Borden, environmental assessments and MOE Certificates of Approval).

Also, proposed growth within the neighbouring communities may exceed residual capacity at the Borden and Angus plants based on individual planning projections by each of the neighbouring municipalities above Provincial or County projections. In this case, capacity increases at the existing plants would need to be explored to accommodate the additional growth under the options presented herein, or new alternatives to service the additional growth will need to be explored.

7.2.3. Project Benefits

The many benefits of the proposed Project are summarized as follows:

- The existing capacities at the CFB Borden and Angus plants are fully utilized while not impacted growth in each of these communities over the next 20 years;
- Facilitates growth within the communities of New Lowell, Everett and Baxter, where treatment and disposal of wastewater is addressed in a sustainable fashion without concerns of future impacts on groundwater or surface water environments due to improper construction or maintenance; and
- Creates opportunities for efficient infrastructure use, operation and maintenance.

As part of this assessment, a CANWETTM nutrient model of the Nottawasaga River was updated and assessed for the above referenced scenario, namely maximizing

the capacity at each of the CFB Borden and Angus WPCPs to the limits of their Certificates of Approval and assessing the impact on the receiving watercourse, the Nottawasaga River. A detailed assessment is provided in **Appendix A-8**. Based on this assessment the loading in the Pine and Nottawasaga Rivers increase, however, the impact on the watercourse in-stream concentration is insignificant (increase 1-2%). **Section 7.2.4** presents an opinion of probable capital costs for the works.

7.2.4. Project Costs - Opinion of Probable Cost For the Works

The Project costs for the scope discussed herein are presented as an opinion of probable costs in **Table 7.2.4.1**.

Table 7.2.4.1: New Lowell/Everett to Angus/CFB Borden Opinion of Probable Capital Cost

Item	Description	Opinion of Probable Cost
1	<i>New Lowell to CFB Borden Trunk Sewers, Sewage Pumping Station and Forcemain</i>	<i>\$5.2 M</i>
	1.1 Sewage Pumping Stations	\$1.3 M
	1.2 Sewage Forcemains	\$3.9 M
2	<i>CFB Borden WPCP Development Charge (\$5000/m³/day Based on Angus WPCP)</i>	<i>\$6.0 M</i>
1	<i>New Lowell to CFB Borden Trunk Sewers, Sewage Pumping Station and Forcemain</i>	<i>\$8.9 M</i>
	1.1 Sewage Pumping Stations	\$0.9 M
	1.2 Sewage Forcemains	\$8.0 M
2	<i>CFB Borden WPCP Development Charge (\$5000/m³/day Based on Angus WPCP)</i>	<i>\$4.3 M</i>
	Sub-Total Opinion of Project Probable Capital Costs	\$24.4M
5	<i>Contingency and Engineering (Design, Peer Review and Inspections)</i>	<i>\$6.1M</i>
	Total Opinion of Project Probable Capital Costs	\$30.5 M
NOTES:		
1. \$M = Millions of CDN Dollars.		

7.3. Nottawasaga River Basin Wastewater Servicing Project

One (1) option that has not been presented previously within this document is a proposal to collect sewage from all of the existing wastewater treatment plants within the Nottawasaga River Basin and convey the treated effluent for discharge to Nottawasaga Bay (Collingwood to Wasaga Beach). This proposal has existed and various forms, informally, for a number years and included areas within and outside of the Nottawasaga River (and Nottawasaga Bay) basin. The critical parameter that limits the assimilative capacity of the Nottawasaga River for discharge by wastewater treatment plants within the basin is total phosphorus (TP). The following section of this Chapter investigates the impact of existing phosphorus loading on the Nottawasaga River basin and explores the benefit of removing the nutrient loading (TP) from the basin by conveying sewage flows from the basing wastewater treatment plants for direct discharge to Nottawasaga Bay.

7.3.1. Planning Rational and Capacity to Service Growth

Based upon the information obtained from the municipalities that discharge to the Nottawasaga River, all the of existing municipal wastewater treatment plants that discharge to the watercourses in the basin have capacity to address their current and 2031 populations (except the Township of Adjala Tosorontio and Township of Clearview). These municipalities include: Township of Essa (Angus plant); Town of Innisfil (Cookstown lagoons); Town of New Tecumseth (Alliston, Regional and Tottenham plants); and CFB Borden (Borden plant).

7.3.2. Scope of the Project

The project would primarily involve the construction of a series of new pumping stations and a connecting forcemain from Tottenham, Cookstown to Alliston to Angus and from Angus to Nottawasaga Bay. As detailed in **Appendix A-8**, the project would connect the following facilities to the new sewage pipeline:

- Community of Tottenham (Town of New Tecumseth)
- Sir Frederick Banting (Town of New Tecumseth)
- Regional WPCP (Town of New Tecumseth)
- C.F.B. Borden (Township of Essa)
- Community of Angus (Township of Essa)
- Community of Cookstown (Town of Innisfil)

Additionally, it was assumed under this option that sewage from septic systems would be collected along the project route, including hamlets and other settlement areas of Loretto, Colgan, Everett, Rosemount, Baxter and New Lowell.

There are a number of potential construction routes, including the rail corridor routing of the Collingwood to Alliston water pipeline (approximately 57 km).

7.3.3. Project Benefits

Based on the foregoing the only benefit to discharging treated flows to Nottawasaga Bay directly would be to potentially address future growth beyond 2031 or to reduce treatment costs for phosphorus removal at the existing plants.

As part of this assessment, a CANWET™ nutrient model of the Nottawasaga River was updated and assessed for the above referenced scenario, namely, removing the discharges from the Nottawasaga River basin wastewater treatment plants to Nottawasaga River and conveying them for discharge at Nottawasaga Bay. A detailed assessment is provided in **Appendix A-8**.

In summary, the results indicate that there is a reduction of phosphorus loading in the upper reaches of the Nottawasaga River basin as a result of the removal of the wastewater plant discharges in these areas. However, the change in the in-stream concentrations appear to be negligible (i.e. less than 2% difference over existing conditions) and in some cases the concentrations increase as the dilution provided by the plant flows has been removed. Moreover, the Nottawasaga River provides an assimilative capacity for the discharged TP from the plants which consumes the TP through the various reaches of the River system. As such, under this proposed project there would be a significant increase in the TP loading (> 100% increase) at the outlet, unless additional TP treatment is provided at the discharge point to Nottawasaga Bay.

7.3.4. Project Costs - Opinion of Probable Cost For the Works

Given the various pumping, routing and potential wastewater treatment options required for consideration for this project it is not possible to determine a reasonable estimate for an opinion of probable cost at this stage. However, as a point of comparison, the capital costs for the Collingwood to Alliston 600 mm – 57 km waterline was \$27 M in 1999 or an equivalent \$35 M in 2011 dollars (using a 2.14% inflation average).

7.4. Waypoint Wastewater Treatment Plant Improvements

As presented in **Chapter 6**, The Waypoint wastewater treatment plant in Penetanguishene is an activated sludge plant which has a rated capacity of 565 m³/day and is operated at approximately 50 percent of its rated capacity. The plant services the Provincial facility (hospital) and Waypoint Centre. Treated wastewater is then discharged into the outer Penetanguishene Harbour. This plant is owned by the Province of Ontario and operated by OCWA. The Province through Infrastructure Ontario is reviewing the plant and future upgrades to the plant. This upgrade could possibly facilitate a regional partnerships for waste treatment at this facility (e.g. septage). This opportunity is explored in the following subsections.

7.4.1. Planning Rational and Capacity to Service Growth

As detailed within this Report, the municipalities of Penetanguishene and Midland have existing residual wastewater treatment plant capacity to address their proposed 2031 growth. However, there are significant number of marinas as well as residential units in the area (particularly Tiny Township) on septic systems that require a facility for acceptance and treatment of the generated pump out and septage waste, respectively.

The Township of Tiny is presently completing a Class Environmental Assessment to address septage waste disposal in the Township. As presented in **Chapter 6**, the following alternatives are being assessed:

- Do Nothing;
- Collect and treat sewage;
- Contract septage collection for disposal at Regional WWTPs; and,
- Construct a partial or full septage treatment system.

The Township of Tiny, through the Class EA, has identified that approximately 27,000 m³/yr of septage will require disposal by 2031 from systems in the Township of Tiny, Penetanguishene, Midland and Beausoliel Island.

7.4.2. Scope of the Project

As discussed in **Chapter 4** of this document, the Province of Ontario through Infrastructure Ontario is proposing upgrades to the Waypoint Water Pollution Control Plant (WPCP). It is proposed through this project that the Waypoint Water Pollution Control Plant (WPCP) be upgraded as regional septage and holding tank disposal facility.

Currently, the limiting criteria for discharge from the Waypoint WPCP is total phosphorus, as detailed in the *Severn Sound RAP Stage 2 Report (1993)* evaluation of effluent targets for Severn Sound Area sewage plants (Table 4.1 – provided in **Appendix A-8**). The current plant capacity is 568 m³/d, with a TP discharge concentration of 0.19 mg/L or an annual loading of 39 kg/yr.

Recent technology investigations for TP removal in wastewater treatment plants completed for the Town of Innisfil indicate that reliable technology exists for use in the Province of Ontario that can meet discharge criteria of 0.03 mg/L (e.g. membrane filtration).

At the technically feasible discharge criteria, the plant could be expanded from a current design flow rate of 568 m³/d to 3,600 m³/d, assuming all other discharge criteria can be achieved in accordance with MOE and Severn Sound RAP requirements.

The Environmental Protection Agency (EPA) 1994 document entitled: *Guide to Septage Treatment* indicates that an activated sludge wastewater treatment plant can accept approximately 2.4% of its plant capacity in septage assuming the 0.16 ratio of average plant flow (568 m³/d) to design flow capacity (3,600 m³/d). This equates to a septage flow rate of 86.4 m³/d.

As such, the potential upgrading of the Waypoint WPCP to a 3,600 m³/d would be able accommodate the average annual 2031 septage and holding tank disposal requirement of 27,000 m³/yr or 74 m³/d, as detailed in **Section 7.4.1** presented herein. It is likely that a storage facility accepting hauled waste will need to be constructed to allow for flow equalization and measured addition of septage to the Waypoint WPCP waste stream.

7.4.3. Project Benefits

The benefits of this proposed project are numerous and include:

- Promotes infrastructure efficiency by utilizing and improving the existing Waypoint WPCP;
- Addresses a water quality concern in the area by accepting from residential, commercial and marina holding tank and septage waste from the Township of Tiny, Penetanguishene, Midland and Beausoleil Island; and
- Addresses potential groundwater and drinking water aquifer concerns in the area due to inadequate disposal locations from waste haulers and elimination of land application of septage waste by providing a sustainable disposal location at the Waypoint WPCP.

Given the need to service more than one (1) community within the County of Simcoe, it would be desirable for this facility to continue to owned and operated by the Province, a regional servicing board of the County of Simcoe.

7.4.4. Project Costs - Opinion of Probable Cost For the Works

Given that the existing plant design and condition assessments are not available for incorporation into this project at this time, a detailed opinion of probable cost for this Project cannot be completed. However, utilizing a standard cubic per metre per day cost for a new WPCP, the cost for a 3,600 m³/d would be in the order of \$20M to \$25M.

8. CLOSURE

This Report addresses the objective of the County Resolution CCW-007-09, namely: to prepare a Background Information Brief and Servicing Gap Analysis that assesses existing water and wastewater system requirements for member municipalities, the separated cities, and federal lands within the County.

This objective was achieved by:

1. Assessing the existing water and wastewater system capacities (Project Year 2009) of the member municipalities, cities of Barrie and Orillia as well as CFB Borden, with respect to servicing existing and proposed population growth identified in the County of Simcoe adopted Official Plan (OP);
2. Compiling a general review of existing environmental (natural, socio-economic) conditions for the County of Simcoe; and,
3. Preparing individual summaries of water and wastewater servicing opportunities and constraints for each municipality.

In addition, the Report includes an assessment of alternative solutions for those communities and municipalities that cannot service their proposed 2031 growth with their existing water and wastewater systems.

Based upon the foregoing it is recommended that:

- The Water and Wastewater Visioning Strategy document and recommended next steps be endorsed by County of Simcoe Council;
- County staff proceed with implementing the recommended Water and Wastewater Visioning Strategy policies through modifications to the adopted County Official Plan; and
- County staff implement the Water and Wastewater Visioning Strategy recommended next steps.

The following next steps have been developed and it is recommended that they be completed using the information contained within this document:

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- Following endorsement of the Water and Wastewater Visioning Strategy document by County Council this document should be circulated to each of the member municipalities for review and consideration.
 - All future planning applications and municipal Official Plans (5 Year Reviews) within the County should be reviewed with regard for the constraints and opportunities identified in this Report.
 - Based upon Policy 6.3.2 in the January 2012 Province of Ontario's *Growth Plan for the Greater Golden Horseshoe* (Simcoe Sub-Area), the County of Simcoe may redesignate additional agricultural or rural lands for urban uses in settlement areas, up to a total amount of land across the County equivalent to what is needed to accommodate 20,000 people. This redesignation should have regard for the conclusions and recommendations of this document. This document can serve as background information and the modeling tool used further to complete technical and environmental analyses required to assess potential redesignations and cost-effective infrastructure strategies. This ecosystem approach should also have regard for subwatershed-based nutrient (point and non-point sources) constraints and opportunities; instream assimilative capacity limits; climate change factors; and, consideration of additional BMP's and/or related partnerships that can be implemented for nutrient load offsetting (trading) considerations.
 - The Report should be reviewed with the Province of Ontario with respect to how this document addresses the Growth Plan Amendment document's **Next Steps** section which indicates, the Province of Ontario will "...undertake a Simcoe area infrastructure plan, including a strategy for water and wastewater in the Simcoe area that includes mechanisms for service delivery".
 - Workshops (hosted by the County of Simcoe) for the Public, development industry, and/or provincial and federal agencies, should be held in 2012 to gain additional "feedback" on the contents of this report, particularly as it relates to opportunities and constraints for service delivery in 2031.
 - A Charrette (hosted by the County of Simcoe) with representation from all municipalities, P3 Canada and Infrastructure Ontario should be held in 2012 to explore the feasibility of PPPs (Public-Private-Partnerships) and funding sources for business models (incl. operate and maintain components) available to implement any of the Level 2 and Level 3 opportunities identified in this report or other servicing strategies being contemplated by other parties.

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- Given the magnitude and County-wide nature of septage, leachate and marina holding tank disposal requirements detailed in this document at the above referenced Charrette, the County should consider direct involvement in the administration and implementation of wastewater treatment and disposal of this nature, with its member municipalities.
 - Future revisions to this document should include additional modeling and analysis for the Severn Sound subwatersheds, such that the level of analysis, conclusions and recommendations are equivalent for all County watersheds.
 - Future revisions to this document and modelling tools should include additional modeling and analysis with consideration for climate change, water reclamation (regional “purple pipe” for delivering reclaimed wastewater effluent) and regional infrastructure project delivery models (including “P3s”).

APPENDIX A-1: GENERAL BACKGROUND INFORMATION AND FIGURES

**APPENDIX A-2: COUNTY OF SIMCOE AND SURROUNDING
AREA: EXISTING LAND USE DESIGNATIONS
FIGURES**

**APPENDIX A-3: COUNTY OF SIMCOE AND SURROUNDING
AREA: NATURAL HERITAGE FEATURES
AND TRANSPORTATION CORRIDORS
FIGURES**

**APPENDIX A-4: COUNTY OF SIMCOE AND SURROUNDING
AREA: MUNICIPAL WATER SERVICING
PLANS AND WELL HEAD PROTECTION
ZONES FIGURES**

**APPENDIX A-5: COUNTY OF SIMCOE AND SURROUNDING
AREA: MUNICIPAL SANITARY SERVICING
PLANS FIGURES**

**APPENDIX A-6: COUNTY OF SIMCOE AND SURROUNDING
AREA: INFRASTRUCTURE CORRIDORS**

**APPENDIX A-7: COUNTY OF SIMCOE AND SURROUNDING
AREA: LEVEL 2 OPPORTUNITIES**

**APPENDIX A-8: COUNTY OF SIMCOE WATERSHEDS
NUTRIENT MODELING ASSESSMENT**
